

सीएसआईआर-भारतीय पेट्रोलियम संस्थान, देहरादून



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प्राक्थन



वर्ष 2025-2026 के लिए संस्थान का वार्षिक प्रतिवेदन प्रस्तुत करते हुए मुझे अत्यंत हर्ष एवं गौरव का अनुभव हो रहा है। यह वर्ष उल्लेखनीय वैज्ञानिक प्रगति, संस्थागत विकास तथा देश की ऊर्जा एवं पर्यावरण संबंधी प्राथमिकताओं के प्रति निरंतर योगदान का वर्ष रहा है। इस प्रतिवेदन में वर्ष 2025-2026 के दौरान संस्थान की वैज्ञानिक एवं प्रौद्योगिकीय उपलब्धियों, मानव संसाधन विकास, जनसम्पर्क गतिविधियों तथा वित्तीय निष्पादन का समग्र विवरण प्रस्तुत किया गया है।

इस वर्ष के दौरान संस्थान पेट्रोलियम विज्ञान एवं प्रौद्योगिकी के क्षेत्र में अनुसंधान एवं नवाचार को आगे बढ़ाने के अपने मिशन के प्रति दृढ़तापूर्वक प्रतिबद्ध रहा। साथ ही, इसने वैकल्पिक ईंधन, जलवायु परिवर्तन, ऊर्जा दक्षता तथा बायोमास से रसायन जैसे उभरते क्षेत्रों में भी अपनी सक्रिय उपस्थिति दर्ज कराई। ये प्रयास ऊर्जा सुरक्षा तथा पर्यावरणीय संवहनीयता के राष्ट्रीय लक्ष्यों के अनुरूप अत्याधुनिक अनुसंधान की दिशा में सीएसआईआर-भारतीय पेट्रोलियम संस्थान (सीएसआईआर-भापेस) की प्रतिबद्धता को प्रतिबिंबित करते हैं।

मैं, उन सभी गणमान्य अतिथियों के प्रति अपनी हार्दिक कृतज्ञता व्यक्त करता हूँ, जिन्होंने वर्ष 2025-2026 के दौरान संस्थान द्वारा आयोजित प्रमुख कार्यक्रमों की गरिमा बढ़ाई, इनमें एयर वाइस मार्शल के. ए. ए. संजीव एवं विंग कमांडर ए. एस. सचान; राष्ट्रीय आपदा प्रबंधन प्राधिकरण (एनडीएमए) के माननीय सदस्य डॉ. डी. के. असवाल; भारतीय सुदूर संवेदन संस्थान (आईआईआरएस) के निदेशक डॉ. आर. पी. सिंह; दून विश्वविद्यालय की कुलपति प्रो. सुरेखा डंगवाल; भारतीय प्रौद्योगिकी संस्थान, रुड़की के निदेशक प्रो. के. के. पंत तथा इंडियन ऑयल के निदेशक (अनुसंधान एवं विकास) डॉ. आलोक शर्मा प्रमुख हैं। इसके अतिरिक्त, "किफायती ऊर्जा एवं रसायन के माध्यम से सतत भविष्य का उत्प्रेरण" विषय पर सीएसआईआर-भापेस के छात्रों एवं युवा शोधकर्ताओं द्वारा "ऊर्जा भविष्य का निर्माण: चुनौतियाँ एवं अवसर (सेफ़को)" के सातवें संस्करण का आयोजन किया गया, जिसमें सम्पूर्ण विश्व के प्रतिष्ठित वैज्ञानिकों ने सहभागिता की।

प्रौद्योगिकी विकास एवं रूपांतरण के क्षेत्र में भी सीएसआईआर-भापेस ने इस वर्ष उल्लेखनीय प्रगति की है। केंद्रीय सड़क अनुसंधान संस्थान (सीआरआरआई) के साथ संयुक्त रूप से विकसित कृषि बायोमास से जैव-बाइंडर (KrishiBind™) प्रौद्योगिकी का 23 कंपनियों को हस्तांतरण किया गया। यह जैव-बाइंडर हरित एवं संवहनीय सड़कों के निर्माण में उपयोग किया जाएगा। इसके अतिरिक्त हमने सीएसआईआर-भापेस एवं बीपीसीएल द्वारा संयुक्त रूप से विकसित Thoxcat™ स्वीटनिंग उत्प्रेरक का भी एक प्रमुख रिफाइनरी में सफल परीक्षण संपन्न किया, जिसके परिणाम अत्यंत उत्साहवर्धक रहे। उत्तराखंड सरकार एवं उत्तराखंड राज्य विज्ञान एवं प्रौद्योगिकी परिषद (यूकॉस्ट) के सहयोग से भिंगराड़ा, चम्पावत में स्थापित हमारी पिरूल (चीड़ की सूखी पत्तियाँ) ब्रिकेट निर्माण प्रौद्योगिकी को स्कॉच पुरस्कार-2026 प्राप्त हुआ है। हमें विश्वास है कि जल्दी ही इस प्रौद्योगिकी का विस्तार उत्तराखंड के अन्य जिलों में भी किया जाएगा। हमारी उन्नत गुड़ निर्माण संयंत्र प्रौद्योगिकी के लाइसेंस धारकों की संख्या बढ़कर 69 हो गई है। यह बताते हुए मुझे अत्यंत प्रसन्नता है कि हमारा सीसीडीएस प्रभाग जलवायु परिवर्तन संबंधी अनुसंधान के क्षेत्र में सीएसआईआर-भापेस को वैश्विक स्तर पर स्थापित करने हेतु निरंतर कार्य कर रहा है तथा पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय (एमओईएफसीसी) के साथ मिलकर देश की ग्रीनहाउस गैस (जीएचजी) सूचीकरण प्रक्रिया में महत्वपूर्ण योगदान दे रहा है। इसके अतिरिक्त, हमने ऊर्जा क्षेत्र में एक पृथक पाँच वर्षीय संस्थागत यूएलआईपी परियोजना तैयार की है, जो मुख्यतः आयात प्रतिस्थापन, ऊर्जा दक्षता तथा मूल्यवर्धित उत्पादों पर केंद्रित है; रूपांतरण एवं परिनियोजन के अतिरिक्त इससे अवसंरचनात्मक विकास, एनएबीएल प्रत्यायन तथा प्रायोगिक एवं विश्लेषणात्मक सुविधाओं में वृद्धि होगी।

मुझे यह बताते हुए खुशी हो रही है कि सीएसआईआर-भापेस ने इस वर्ष मौलिक विज्ञान के कई क्षेत्रों में महत्वपूर्ण योगदान दिया है। संस्थान ने प्रतिष्ठित पत्रिकाओं में 130 शोध पत्र प्रकाशित किए, जिनका औसत प्रभाव कारक 4.79 था; संस्थान ने 6 भारतीय और 7 अंतर्राष्ट्रीय पेटेंट दाखिल किए; और संस्थान को 1 भारतीय तथा 6 अंतर्राष्ट्रीय पेटेंट प्राप्त हुए। सीएसआईआर-भापेस में 22 नए सदस्यों सहित 110 शोध छात्रों का एक सक्रिय युवा अनुसंधान समूह है। वर्ष 2025-26 के दौरान 12 शोध छात्रों ने अपनी पीएचडी पूर्ण की।

युवा प्रतिभाओं का प्रोत्साहन देने और वैज्ञानिक अभिरुचि विकसित करने के लिए, सीएसआईआर-भापेसं ने जिज्ञासा कार्यक्रम के अधीन नियमित छात्र संपर्क दौरे, आवासीय अनुसंधान कार्यक्रम और 'एक दिन एक वैज्ञानिक के रूप में' (ओडीएस-2025) जैसे विशेष प्रयास सतत जारी रखे, जिनसे 1,000 से अधिक छात्र लाभान्वित हुए। इसके अलावा 375 से अधिक प्रतिभागियों ने कौशल विकास और तकनीकी प्रशिक्षण कार्यक्रमों में भाग लिया। संस्थान ने अपने सहयोगियों और प्रायोजकों के सतत समर्थन से इस वर्ष 19.93 करोड़ का बाह्य नकदी प्रवाह (ईसीएफ) अर्जित किया।

मैं, इस अवसर पर संस्थान के सभी सहयोगियों, साझेदारों, औद्योगिक भागीदारों तथा प्रायोजकों को उनके समर्थन के लिए हार्दिक धन्यवाद देता हूँ तथा हमारे दृढ़ संबंधों और हमारे देश की चुनौतियों और आवश्यकताओं के लिए समाधान प्रदान करने वाले कार्यक्रमों के निर्माण हेतु हमारी प्रतिबद्धता की पुष्टि करता हूँ, ये कार्यक्रम आने वाले वर्षों में संस्थान की प्रतिष्ठा में अभिवृद्धि करेंगे।

जय हिंद।

Foreword



It is indeed my privilege and pleasure to present the Annual Report of the Institute for the year 2025–2026, a period marked by significant scientific progress, institutional growth, and continued contribution to the nation's energy and environmental priorities. This report presents a comprehensive account of the Institute's scientific and technological achievements, human resource development, outreach activities, and financial performance during 2025–2026.

Over the course of the year, the Institute has remained steadfast in its mission to advance research and innovation in petroleum science and technology, while expanding its footprint into emerging areas such as alternate fuels, climate change, energy efficiency, and chemicals from biomass. These initiatives reflect CSIR-IIP's commitment to aligning cutting-edge research with the nation's goals of energy security and environmental sustainability.

I am thankful and wish to express my sincere gratitude to the many dignitaries who graced major events organised by IIP during 2025–2026. These include Air Vice Marshal K A A Sanjeeb and Wing Commander A S Sachan; Dr D K Aswal, Hon'ble Member, NDMA; Dr R P Singh, Director, IIRS; Prof. Surekha Dangwal, Vice Chancellor, Doon University; Prof K K Pant, Director, IIT Roorkee; and Dr Alok Sharma, Director (R&D), Indian Oil. In addition, students and young researchers of CSIR-IIP organised the 7th edition of "Shaping the Energy Future: Challenges and Opportunities" (SEFCO), themed "Catalysing a Sustainable Future with Affordable Energy and Chemicals", where renowned scientists from across the world participated.

In technology development and translation, CSIR-IIP has made significant progress this year. Bio-binder from agricultural biomass (KrishiBind™) technology, co-developed with CRRRI, was transferred to 23 companies; this bio binder will be used for making greener and sustainable roads. We also completed trials of the CSIR-IIP and BPCL-developed Thoxcat™ sweetening catalyst at a leading refinery, with encouraging results. Our Pirul (pine needle) briquetting technology, implemented at Bhingrara, Champawat, in collaboration with Uttarakhand Government and Uttarakhand State Council for Science & Technology (UCOST), received the SKOTCH 2026 award, and we look forward to rolling it out across other districts of Uttarakhand soon. The number of licensees for our improved jaggery-making plant technology has grown to 69. I am happy to report that our CCDS division has been working hard to position CSIR-IIP on the global map in climate change research and is contributing for GHG inventory estimation of the country along with Ministry of Environment, Forest & Climate Change (MoEFCC). Going forward, we have drawn up a separate institutional five-year ULIP project in the energy sector, focusing on import substitution, energy efficiency, and value-added products; beyond translation and deployment, this will also entail infrastructure development, NABL accreditation, and the augmentation of experimental and analytical facilities.

I am pleased to report that CSIR-IIP has also made significant contributions this year across several areas of fundamental science. The Institute published 130 research papers in peer-reviewed journals with an average impact factor of 4.79; filed 6 Indian and 7 international patents; and was granted 1 Indian and 6 international patents. CSIR-IIP has a vibrant young research community of 110 research scholars, including 22 new joinees. During 2025–26, 12 research students completed their Ph.D.

To nurture young talent and develop scientific temperament, CSIR-IIP, under Jigyasa Program, continued its regular outreach visits, residential research programmes, and special initiatives such as One-Day-as-a-Scientist (ODAS-2025), benefiting over 1,000 students. In addition, more than 375 participants underwent skill development and technical training programmes. With the continued support of our collaborators and sponsors, the Institute achieved an External Cash Flow (ECF) of ₹19.93 crore this year.

I take this opportunity to express my sincere thanks to all IIPians, collaborators, industry partners, and funding agencies for their support, and I reaffirm our commitment to building strong ties and programmes that address the challenges and needs of our country, while enhancing the Institute's visibility in the years ahead.

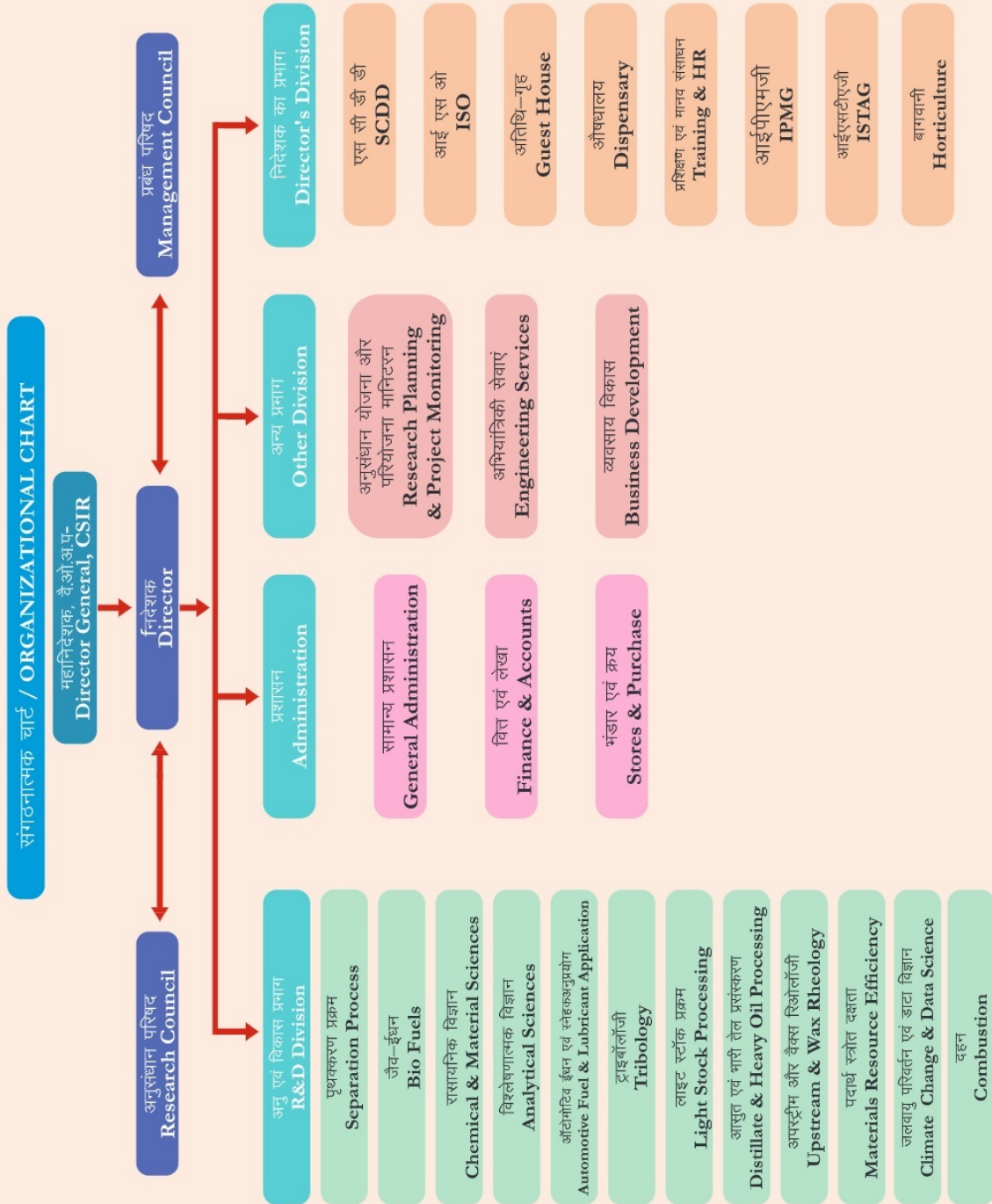
Jai Hind.

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9.6	श्रद्धांजलि / Condolences	



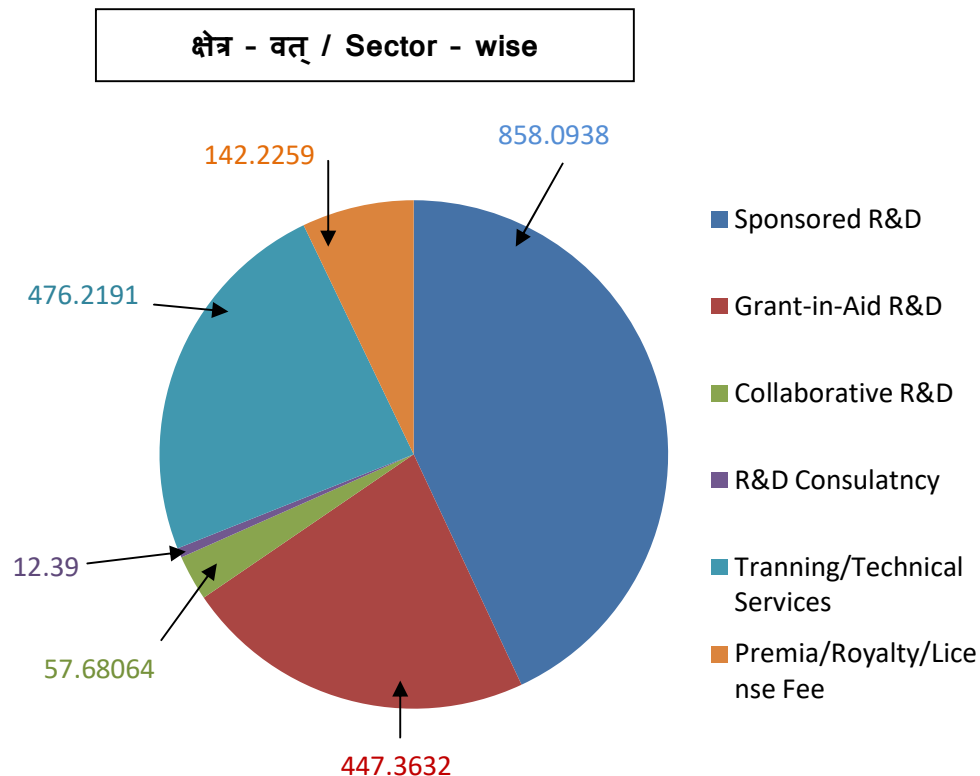
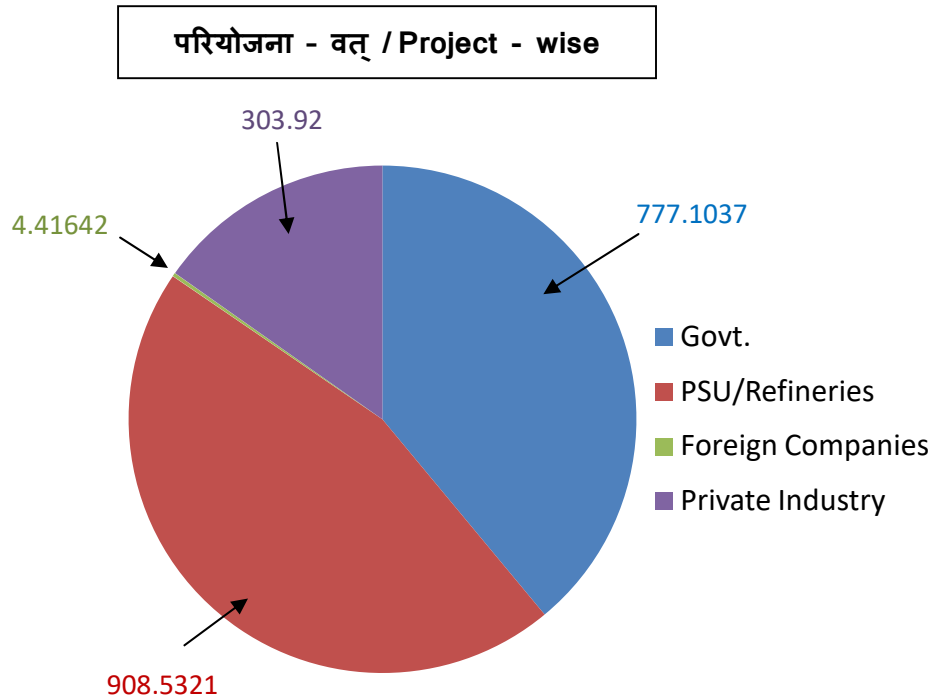
उपलब्धियाँ एक नज़र में

ACHIEVEMENTS AT A GLANCE

Papers in Journals	130
Papers in International Journals	130
Papers in SCI Journals	130
Average Impact Factor	4.79
Papers in Conference	99
Number of Persons Attended Seminars and Conferences	305
No. of Patents Filed in India	06
No. of Patents Filed Abroad	07
No. of Patents Sealed in India	01
No. of Patents Sealed Abroad	06
No. of Training Programmes	13
No. of Persons Attended Training Programmes	295
No. of Sponsored Training Programmes	13
No. Skill Development Programmes	10
No. of Persons who attended Skill Development Programmes	83
No. of Ph.D Awarded	12
No. of Foreign Visits	03

बाह्य नकदी प्रवाह से वित्तीय वर्ष 2025-2026 के दौरान सीएसआईआर-भापेसं की आय:
रु० 1993.97226 लाख

The CSIR-IIP's ECF during the Financial Year 2025-2026: Rs1993.97226 lakhs.





CHAPTER 1



1.0 विज्ञान एवं प्रौद्योगिकी में योगदान / Contributions to Science and Technology

1.1 पृथक्करण प्रक्रिया प्रभाग / SEPARATION PROCESSES DIVISION

1.1.1 Impact Studies of LPG Quality Parameters on Pipeline Corrosion: Experimental and CFD Simulation Activities Sponsor: GAIL/ Collaboration with CMSD, CSIR-IIP

Objective of the Project

One objective of the project is to carry out CFD study to understand the effect of impurities like moisture, H_2S , mercaptans, etc in LPG pipeline corrosion and to supplement the experimental team for carrying out bench-scale experiments. Based on the experimental and CFD studies, the limits for quality parameters like moisture, H_2S , total sulphur, and odorants in LPG will be prescribed.

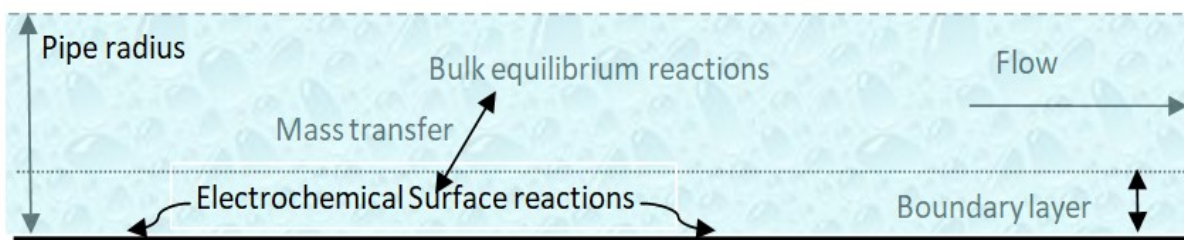
GAIL operates 2038 km of LPG pipeline with a transmission capacity of 3.8 MTPA. The LPG is transported through a pipeline complying with IS: 4576:2021 standards for impurities. The LPG pipeline safety and integrity is of concern as the impurities like moisture, H_2S , odorants, etc. can overshoot the prescribed limits during the off-spec gas supply. To understand the effect of excess impurities, R&D efforts are required through simulations and experiments.

Work done in the Project

CFD simulation study has been carried out to understand the moisture impurity effect on the LPG pipeline internal corrosion. Preliminary simulations were performed using the 1D geometry, accounting for the boundary layer thickness in the pipeline. The tertiary current distribution interface was used to account for the electrode surface reactions, bulk equilibrium reactions and mass transfer in the system. The effect of impurity concentration, temperature and pressure on the corrosion rate is being studied.

Key Findings of the Study/Project

The preliminary simulation results shows that the oxygen dissolved in the moisture is the main component responsible for corrosion reaction happening at the surface. The increase in temperature and pressure also influence the corrosion rate by altering the corrosion reaction kinetics. The model developed is based on the literature-based kinetic data and will be further validated with the experimental data being generated.



Modelled Corrosion Mechanism Involving Electrochemical Reactions in the Pipeline

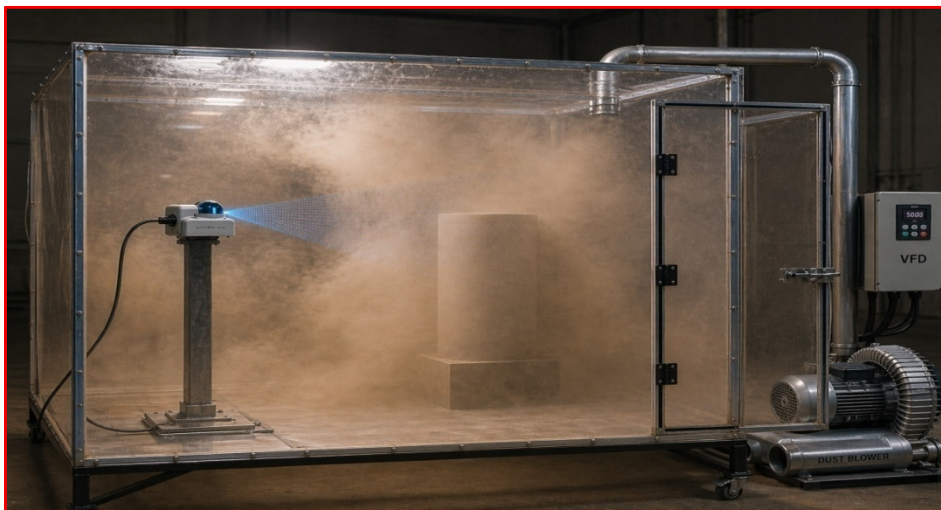
1.1.2 Conceptualizing Robotics Application in Oil & Gas Industry: the Case Study on Unloading of Catalyst from Large Tanks In-house / Sponsored by CSIR-IIP

Objective of the Project

The objectives of the project are to discover sensors suitable for visual sensing in a dark confined space having a dusty environment and an inert atmosphere and to conceptualize a robotic intervention system with the discovered sensor and demonstrate it on a dust chamber mimicking the catalyst holding tank system.

Work done in the Project

Theoretical evaluations of various sensors suitable for object detection, tracking, and 3D mapping in dusty environments have been carried out. The sensors evaluated included LiDAR, ultrasonic sensor (HC-SR04), and mm-Wave radar (TIWRL6432). Their performance characteristics, including range, resolution, dust susceptibility, and reliability, were analyzed. Based on the study, a multi-sensor fusion approach using LiDAR, ultrasonic sensors, and mm-Wave radar has been identified as the most suitable solution for the proposed experimental setup, as it improves detection reliability under challenging environmental conditions. A dust box has been fabricated for conducting experiments to establish the proof of concept. Its installation and commissioning is currently in progress. Detailed sensor evaluations will be conducted during the experimental runs using the dust box.



Dust Box for the Experiments to Establish the Proof of Concept and Sensor Selection

1.1.3 Utilization of Waste Plastic Pilot Plant Residue (WPPPR) as Filler for Bituminous Road/ Binder: Feasibility Studies (IHP-240015; In-house)

Objective of the Project

The objective of this study is to investigate the use of waste plastic pyrolysis pilot plant residue WPPPR derived from the degradation of various types of polyolefins/post-consumer waste to improve the bituminous properties as per BIS specification.

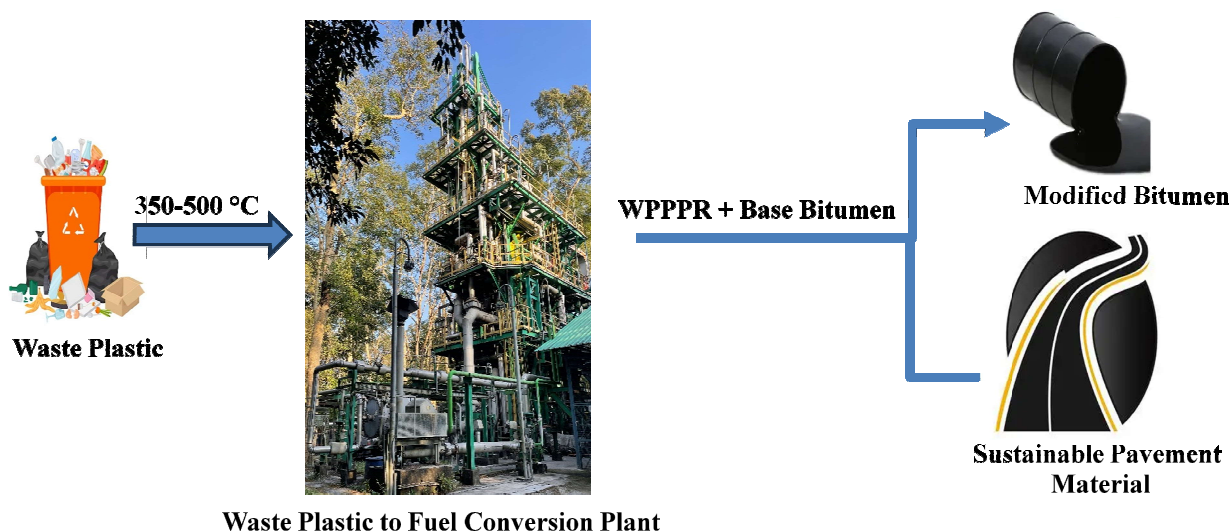
Work done in the Project

The present study explores the feasibility of utilizing waste plastic pyrolysis pilot plant residue (WPPPR) as a filler/modifier in bituminous binders, offering a potential pathway for value addition to solid by-products of chemical recycling. Mixed plastic waste was subjected to high temperature chemical recycling yielding gaseous products, liquid hydrocarbons, and a solid residue fraction. The residue yield varied between 8–25 wt%, depending on operating conditions, indicating a significant quantity of material requiring effective utilization.

Three representative residue samples (WPPPR1, WPPPR2, WPPPR3) obtained from a 1 TPD waste plastic pyrolysis pilot plant were systematically characterized. Based on solubility in trichloroethylene, WPPPR1 exhibited the highest solubility (81–83 wt%), suggesting better interaction with the bituminous matrix and making it the most promising candidate for further evaluation. In comparison, conventional VG10 and VR bitumen grades showed solubility greater than 99 wt% in TCE, establishing a baseline for acceptable performance. Performance evaluation of VG10 bitumen modified with WPPPR1 at concentrations of 5 and 10 wt% revealed notable changes in key properties such as penetration, softening point, and viscosity. Increasing residue content led to excessive softening of the binder, adversely affecting its suitability for pavement applications. Similarly, modification of VR/base bitumen (BB) with WPPPR1 indicated that while 5 wt% addition marginally satisfied VG40 grade specifications, higher concentrations resulted in deterioration of desirable properties.

Key Findings of the Study/Project

The study concludes that the direct utilization of WPPPR as a bitumen modifier present challenge, limited feasibility exists in specific cases. In particular, VR bitumen of low penetration (20 dm) with 5 wt% WPPPR1 shows marginal potential for VG40 grade applications. However, VG10 is not suitable for modification with these residues due to excessive softening. The findings highlight the need for further optimization, pre-treatment of residues, or blending strategies to improve compatibility and performance, thereby enabling sustainable utilization of plastic waste-derived residues in road construction.



1.1.4 Studies in Assessment of a Pressure/ Vacuum Swing Adsorption (PVSA) Process for Biogas Purification Sponsor: In-house exploratory study

The Membrane and Adsorption Separation Laboratory at CSIR-Indian Institute of Petroleum (CSIR-IIP), Dehradun, is actively engaged in the development of advanced adsorption and membrane technologies for energy, environmental, and industrial separation applications. One of the major ongoing research activities focuses on biogas upgradation to produce biomethane, a cleaner, renewable substitute for natural gas.

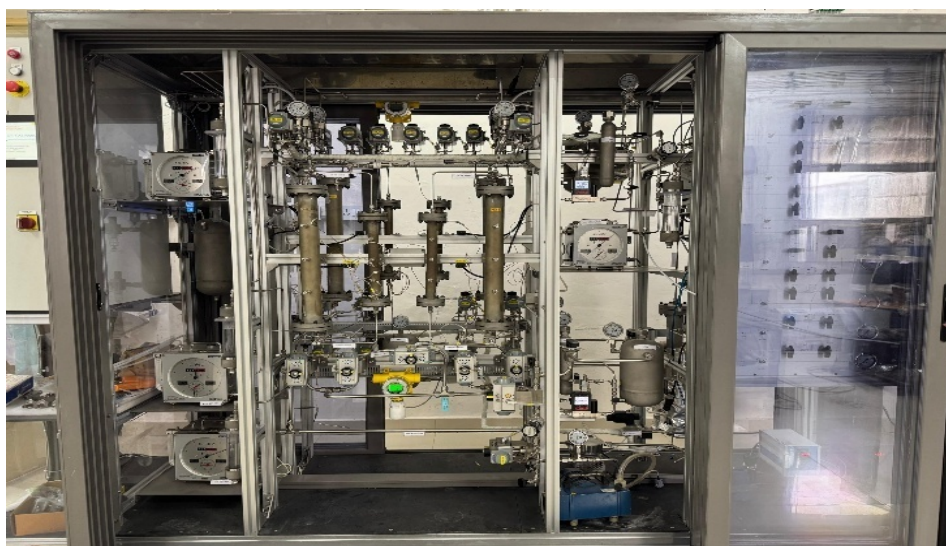
Objective of the Project

The objective of this study is to assess the application of a new process configuration for reduced CAPEX and OPEX for Biogas Purification

Work done in the Project

A new process configuration has been conceptualized with an aim to produce biomethane meeting BIS 16087 specifications. So far the process configuration has been partly validated with Aspen Adsorption simulation using a cost-effective adsorbent. Laboratory experimental studies using the bench-scale 4-Bed Pressure Vacuum Swing Adsorption (PVSA) set up has been planned to validate the leads derived from the simulation studies.

The overall work planned comprises of computer simulation, experimental validation and techno-Commercial assessment of the concept. This study will enable CSIR-IIP to develop a more competitive process for biogas purification.



4-Bed Pressure Vacuum Swing Adsorption (PVSA) Unit

Another aspect of this study is to assess application of membrane separation for a stand-alone membrane or hybrid-PVSA-Membrane process for biogas purification

The ongoing research is focused on the development of high-performance polymeric, mixed-matrix, and hollow fibre membranes for selective CO₂/CH₄ separation. Different membrane materials and formulations are being investigated to achieve a suitable combination of CO₂ permeability, CO₂/CH₄ selectivity, mechanical strength, and long-term stability. The activities

include membrane synthesis, modification, surface coating, characterization, and gas permeation testing. In particular, hollow fibre membranes are being developed as a promising platform for gas separation due to their high surface-area-to-volume ratio, compact module configuration, and potential for scale-up. The research also includes process optimization and the design of multi-stage membrane systems to simultaneously achieve high methane recovery and product purity.

To support these research activities, a dedicated membrane and Hollow Fiber Membrane (HFM) facility has been established at CSIR-IIP. The facility provides an integrated platform for the development of advanced membranes for both gas and liquid separation applications. It enables the synthesis of polymeric and mixed-matrix membranes, incorporating functional materials such as carbon materials, COFs, MOFs and other advanced fillers, as well as the fabrication and evaluation of hollow fibre membranes. The recently established HFM facility enables the preparation of membranes through dry-wet phase inversion techniques. The system supports controlled membrane spinning, potting of hollow fibers into modules, and precise cutting and preparation of membrane modules for subsequent testing.



Hollow fibre membrane spinning, potting and cutting system at CSIR-IIP

The facility is equipped to undertake various stages of HFM development, starting from material selection and membrane formulation to fibre spinning, post-treatment, coating, module fabrication, and performance evaluation. The developed membranes can be tested for CO₂/CH₄ and other gas separations, as well as selected liquid separation applications. This integrated capability significantly strengthens the institute's ability to undertake research from material development to membrane fabrication and module-level performance evaluation, thereby facilitating the transition of laboratory-scale membrane concepts towards practical applications.

1.2 रसायन और पदार्थ विज्ञान प्रभाग / CHEMICAL AND MATERIAL SCIENCE DIVISION

1.2.1 सिंथेटिक रसायन विज्ञान और पेट्रोसायन क्षेत्र /Synthetic Chemistry and Petrochemicals Area

1.2.1.1 From CO₂ to Carboxylic Acids: C(sp²)-H bond Functionalization using Earth-Abundant- Transition Metals Sponsor: SERB (ANRF)-Power Fellowship

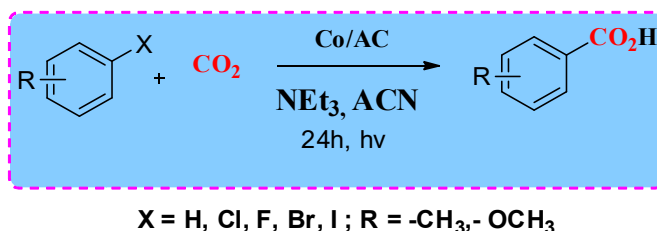
Objectives of the Project

- Design and synthesis of complexes of earth abundant transition metals such as (Ni, Co and Fe) containing macrocyclic ligands and their heterogenized analogues.
- Screening of the developed catalysts for the carboxylation of different C(sp²)-H bond containing compounds including aromatics, heteroaromatics and aliphatic with CO₂ without using sacrificial agents.
- Identification of the products by using the combination of various spectroscopic tools (GC-MS, HPLC, NMR) and DFT calculations.

Work Done in the Project

Activated Carbon Supported Co(II) Phthalocyanine (Co/AC) for the Carboxylation of Aromatic Compounds with CO₂

An efficient methodology for the carboxylation of a variety of aromatic compounds with CO₂ as an inexpensive, abundant and non-toxic carbon source has been developed using activated carbon supported cobalt(II) phthalocyanine (Co/AC) as a photoredox catalyst under mild reaction conditions, providing a number of aryl substituted carboxylic acids in good to excellent yields (Scheme 1).



Scheme 1: Co/AC catalyzed carboxylation using CO₂

CO₂ Adsorption Studies

The CO₂ adsorption isotherms of active catalyst Co/AC and bare support (AC) are displayed in Figure 1. The samples were degassed at room temperature for 12h before the analysis. The bare AC is found to be adsorbed 1 - 2.5 cm³/gm CO₂ at the lower pressure range and 2.5-4.5 cm³/gm at the higher pressure. However, active catalyst shows higher CO₂ adsorption at all the pressure ranges. At lower pressure, the CO₂ adsorption is found to be 0-4.3 cm³/gm that increased significantly with pressure up to 7.5 cm³/gm. The higher CO₂ adsorption ability of the catalyst Co/AC is evident in its higher catalytic activity for the carboxylation reaction.

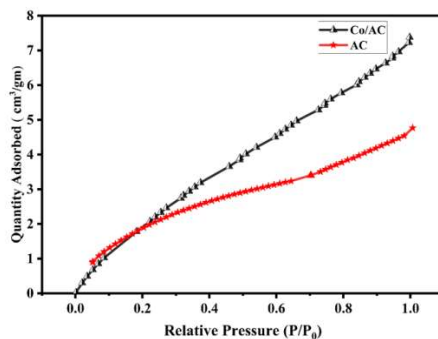


Figure 1: CO₂ Adsorption Isotherm of Co/AC and AC

Carboxylation of Aromatic Compounds with CO₂

To test the catalytic activity of the prepared Co/AC catalyst, chlorobenzene was chosen as a model substrate for the initial screening under different experimental conditions. The reaction did occur neither in the absence of the catalyst nor using the bare AC support. The catalyst prepared by grafting of CoPc over the activated carbon (Co/AC) was found to be most efficient and provided almost quantitative conversion (96%) with the 95% isolated yield of the benzoic acid under the light irradiation by 20W LED for 24h. The remarkable catalytic activity of the Co/AC catalyst may be attributed to the strong interaction between support and Co(II) complex and its higher light absorption. The base was found to be one of the crucial parameters as there was no reaction observed in the absence of base. Further, the use of inorganic bases such as K^tOBu and KOH remained inefficient and afforded poor conversion of chlorobenzene. Hence, triethylamine was selected for further experiments. Further, the reaction was performed in various organic solvents such as acetonitrile, CCl₄, DMSO, DMA, and DMF under described conditions. The reaction did proceed neither in CCl₄ nor in DMSO; whereas, DMA and DMF resulted to the poor conversion. The catalyst loading 20 mg was found to be optimum as further increase in the amount did not improve the yield to any significant extend. Based on the above screening experiments the optimized experimental conditions remained as: catalyst (Co/AC; 20 mg), solvent (acetonitrile) and reaction time (24h).

Key Findings of the Study/Project

- Developed a cost-effective, reusable, and easily accessible earth-abundant cobalt-based catalyst for direct carboxylation of a wide range of aromatic compounds with CO₂ in moderate to high yields.
- A diverse range of substrates starting from the benzene, halo benzenes, and substituted benzenes, this cost-effective and operationally simple protocol provided the synthesis of structurally diverse and industrially important carboxylic acids.
- The developed protocol can be applied in the future to synthesize numerous valuable industrially important carboxylic acids in shorter steps using CO₂ as a sustainable C₁ feedstock

1.2.2 संक्षारण / Corrosion

1.2.2.1 Development of Corrosion Inhibitor Formulation for Upstream and Midstream Applications

Objective of the Project

Development of an effective corrosion inhibitor formulation for oil and gas industry applications to protect carbon steel from corrosion

Work done in the Project

In this project, organic-based corrosion inhibitors were developed and evaluated for their anticorrosion performance in the acidic environment against carbon steel. The developed

molecules have been proven effective in protecting carbon steel in an acidic environment, with an efficiency of > 95%. In addition, corrosion inhibitor formulations have been developed for the pickling solution and acidizing solution. These formulations have proven their effectiveness, with an inhibition efficiency (η %) of 99% at the considered dosage level against carbon steel. The same formulation can be used in both sour and sweet corrosion environments to protect carbon-steel pipelines from degradation. In addition, we have developed a cationic surfactant that is effective even at low dosage levels (<10 ppm), with an inhibition efficiency of >95% against carbon steel in an acidic environment.

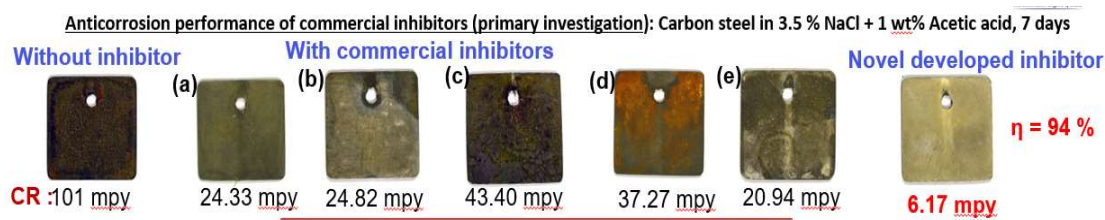
Key Findings of the Study/Project

Gravimetric corrosion investigation results indicate 5 % HCl for carbon steel (C1010) at 65 °C, with a duration of 6 hours

Examples		Metal loss (g)	Corrosion rate(mm/y)	η %
Without inhibitor		0.754	145.89	-
Presence	1000 ppm	0.00373	0.723	99.50
	125 ppm	0.00757	1.465	98.99

Gravimetric corrosion investigation results indicate 15 % HCl for carbon steel (C1010) at 90 °C, with a duration of 6 hours

Examples		Metal loss (g)	C.R. (mm/y)	η %
Without inhibitor		5.0589	1470	-
Presence	5000 ppm	0.0079	1.54	99.84
	2000 ppm	0.0165	3.19	99.67



Impact Studies of LPG Quality Parameters on Pipeline Corrosion: Experimental and CFD Simulation Activities, Sponsored by GAIL(India) Limited (Ongoing)

Objective of the Project

- Impact studies of LPG with individual impurities and their cumulative mixture on the corrosion of carbon steel subject to the various temperature (5-40°C) and pressure (2- 60 bar), considered impurities are moisture, H₂S, total sulphur, and odorants.
- CFD study to understand the effect of impurities like moisture, H₂S, sulfur, etc in LPG pipeline corrosion and to supplement the experimental team for carrying out bench scale experiments.
- Based on the studies, the limits for quality parameters like moisture, H₂S, total sulphur, and odorants in LPG will be prescribed.

Work done in the Project

The main part of the work is the analysis of the effects of LPG and its impurities on the corrosion of carbon-steel pipelines (API 5L X65). The well-polished API 5L X65 carbon steel was used for gravimetric analysis and placed in the reactor, which was filled with LPG (8-9 bar). After 15 days of exposure, the API 5L X65 carbon steel coupon was removed, washed with water, followed by toluene- isopropyl alcohol mixture (1:1). These steel coupons were photographed. After photographing, the coupons' corroded surfaces were cleaned with a de-rusting solution. The weight of each coupon was recorded and used to calculate the corrosion rate. The following formula is used to calculate the corrosion rate (mm/year)

$$\text{Corrosion rate} = \frac{87.6 \Delta W}{A T D}$$

Where:

- ΔW = (Initial weight – final weight) weight loss (mg)
- A = surface area (cm²)
- T = time (hours)
- D = density (g/cm³)

Note: Required preferably weight loss of more than 5–10 mg

1.2.3 पॉलिमर सामग्री / Polymeric Materials Area

1.2.3.1 Studies on the Development of the Additive for Diesel Methanol Blend (Phase-I)

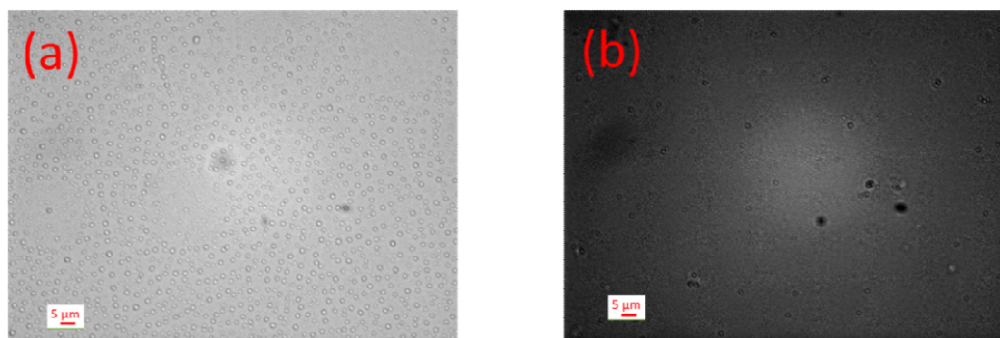
Objective of the Project

The objective of this study is to develop additives for the diesel methanol blend. It also aims to assess the stability of the repaired diesel-methanol blend over 20 days at 10-40 °C and to meet the ASTM 1460 specification.

Work done in the Project

In this study, a series of additives was developed to prepare stable diesel-methanol blends. In this project, the detailed physicochemical properties of diesel and methanol, including dynamic and kinematic viscosity, density, pour point, and flash point, were studied. Also, diesel and methanol are characterized by FT-IR spectroscopy, and the resulting spectra match those reported in the literature. We have developed additives to prepare the diesel methanol blend. The developed additives are characterized using spectroscopic techniques. The diesel methanol blend stability studies were performed at room temperature and also at 40 °C. The results reveal that DM1EP1+T20 and DM5ROP exhibit excellent stability, with lifetimes of 105 and 100 hours, respectively, at room temperature. The DM-4, NK-247, T20, Span80, and DM-4, DM38, T80, S80 show stability at room temperature and elevated temperatures up to 40 °C for a planned period of 20 days. The additive in a methanol-diesel blend does not affect the physical properties of the diesel, including viscosity, density, pH, and acid value, except for a reduction in its flash point to 40 °C from 53 °C. The blend with RMG-2, NKST, T-80, PGME, Octanol, Butanol, and AlNP has shown stability over a range of temperatures from 10°C to 40°C for up to 20 days. This blend also meets the physicochemical properties, with a Viscosity of 2.9cSt at 40 °C, a Density of 820 kg/m³ at 15 °C, a flash point of >40 °C, and a Cetane number of 46.5. The additives with pure diesel have little effect on corrosion compared to pure diesel, but when combined with methanol, they promote a slight increase in corrosion over the MS coupon; however, this is within the acceptable corrosion limit. The additives mixed with the diesel-methanol blend exhibit micro-emulsion behavior, thereby improving the blend's stability.

Key Findings of the Study/Project



Microscopic Image of the Prepared Stable Diesel Methanol Blend Blends a and b at 40x.

S. No.	Diesel Methanol Blend composition	Stability checked at 10 °C for 5 days	Stability checked at 20 °C for 5 days	Stability checked at 30 °C for 5 days	Stability checked at 40 °C for 5 days	Overall stability
1	Methanol 5%, Diesel 94.095%, additives	Stable (turbid)	Stable	Stable	Stable	20days

	0.905%					
2	Methanol 5%, Diesel 94.12%, Additives 0.88%	Stable	Stable	Stable	Stable	20days
3	Methanol 5%, Diesel 93.77%, Additives 1.23%	Stable	Stable	Stable	Stable	20days
4	Methanol 5%, Diesel 93.545%, Additives 1.455%	Stable	Stable	Stable	Stable	20days

1.2.4 स्वीटनिंग / Sweetening

1.2.4.1 Reformulation of the LPG Sweetening Catalyst/New Variants of the Re-formulated LPG Sweetening Catalyst – Thoxcat ES for the M.E. Market – BPCL (SSP -0092)

The sweetening catalyst – Thoxcat ES has been commercialized in the Middle East (M.E.). The reformulated catalyst has the capability to handle carryover issues and has been accepted in ORPIC, Oman and Aramco, Saudi Arabia for regular consumption in 2020. New variant has been developed and trialed at Kochi refinery and expected to be tested at BINA refinery shortly.

In the recent trials, the sweetening catalyst has been successfully commercialized in the LPG sweetening unit of Nayara refinery treating both SR and mixed LPG from FCC and Coker of roughly 2 MMTPA.

Achievements

- After rigorous evaluations one more variant has been identified for scale up.
- This formulation has been successfully scaled up at level 50 kg solution in LONA in August 2022.
- The trials have started at KRL (BPCL) in September 2022 in their Coker LPG sweetening Unit. After the successful trial runs, the final report from the BPCL will be submitted.
- Trials are being planned at BINA.

1.2.5 सतह विज्ञान और प्रौद्योगिकी / Surface Science and Technology

1.2.5.1 Valorization of Agro-waste Biomass into Sustainable Graphitic Biocarbon for Phenolic Pollutant Remediation

Graphitic biocarbon with an ultrahigh surface area was synthesized from Gram bean husk, an agro-waste biomass, via a two-step pyrolysis–thermochemical activation process and demonstrated for the adsorptive removal of phenolic pollutants from simulated wastewater via a batch-to-continuous column process. The graphitic domains, ample porosity, and plentiful oxygen functional groups in the graphitic biocarbon facilitate the adsorption of phenolic pollutants *via* multiple interaction pathways, including hydrogen bonding, π – π stacking, n- π interaction, Yoshida hydrogen bonding, and van der Waals interactions. Moreover, the excellent porosity accelerates the mass transfer; consequently, graphitic biocarbon displays fast adsorption of phenolic pollutants. The batch mode studies show an exceptionally high uptake capacity of graphitic biocarbon for phenolic

compounds, with *o*-nitrophenol (ONP) showing a maximum adsorption capacity of 905 mg g⁻¹. The fixed-bed continuous column experiments revealed a high dynamic adsorption capacity of 774 mg g⁻¹, highlighting the scalability and practical applicability of biomass-derived graphitic carbon for real-world phenolic wastewater treatment.

1.3 मोटर वाहन ईंधन और स्नेहक प्रयोग प्रभाग/AUTOMOTIVE FUELS & LUBRICANTS APPLICATION DIVISION

1.3.1 Study and Prototyping of a Supercapacitor Management System (SMS) for EV Application

Objective of the Project

- Design and development of control algorithm for SMS in Simulink environment.
- Performance evaluation of various SMS technique in Simulink with a target to achieve at least 10% energy share from the supercapacitor bank along with possible best fail-safe feature.
- Hardware implementation with a demo prototype of SMS.

Work done in the Project

a) Simulation Studies

The system design started with simulation where we tested the concept in simulation environment before starting with the hardware directly. Two types of simulation studies were carried out. The first one was system level simulation studies, where the conceptual methods and algorithms were tested without any components constrain. The second type of simulation is component level simulation, which is carried out with required components to be used on the actual hardware.

b) PCB Design

Circuit design was done. A 2-layer PCB was designed, and the PCB was printed by an Indian PCB manufacturing firm located at Pune.

c) Firmware

The firmware was developed for TI F28379D Launchpad controller.

d) Testing and Validation

The prototype SMS was tested on 2 types of loads. One is a static load, and the other is a dynamic load. A resistor of 2 ohms was used as static load and electric 3-wheeler (e-rikshaw) was used as dynamic load.

Key Findings of the Study/Project

The prototype Supercapacitor Management System (SMS) was successfully designed and implemented in hardware, and its performance was demonstrated under both static and dynamic load conditions. Validation under a static load was carried out using a resistive heater coil, while dynamic load testing was performed on an electric 3-wheeler. The developed system achieved a transient current reduction of approximately 50% compared to the baseline case with a battery-only configuration. In addition, key protection features including

overvoltage protection (OVP), overcurrent protection (OCP), short-circuit protection (SC), and overtemperature protection (OT) were successfully implemented and verified. During dynamic load operation, noise originating from the motor side was observed; this can be effectively mitigated by incorporating an isolated or non-isolated DC/DC converter stage. No such noise-related issues were encountered during static load operation.

The technical outcomes are as follows:

- State of charge (SOC) estimation error was calculated to be about 5%.
- State of health (SOH) estimation error found to be 3%.
- Energy share of about 25% was obtained for transient cycle in dynamic load (5 s).
- The system shows excellent response even in unbalanced conditions.



Fig. Dynamic Load Setup using 3-Wheeler E-Rickshaw



Fig. Test Setup for Static Load Experiment



Fig. Final Assembled PCB Mounted on Supercapacitor Bank along with DSP

1.3.2 NO_x Reduction using SCR Technology with Indigenous Catalyst Formulation for Hydrogen Fuelled Internal Combustion Engines under “CSIR-Hydrogen Technology Phase-II: Development and Establishing Hydrogen as Next Gen Fuel”; CSIR IIP

Objective of the Project

Development of a prototype SCR system with indigenous catalyst and its demonstration in a H₂ICE converted from a CNG-ICE (~ 6 kW) at laboratory scale, with a minimum NO_x conversion efficiency of 90 % and a maximum Ammonia slip of 10 ppm (as defined in BS6).

Work done in the Project

Catalyst Development

- CeO₂ support is synthesized at CSIR-IIP, and characterization is in progress. TGA, Powder XRD, SEM and sorption studies of the synthesized. Thermal stability analysis has been completed.
- Catalyst coating trials on small scale (1-inch cubes) are completed.

SCR system development and Engine integration

- Development of controller for injector is in progress. The Prototype controller is working at laboratory. Bread board level injector flow rate calibration has been completed.
- The Prototype controller functioning with urea injector is verified in actual test bench at typical engine level frequencies and pressures.
- The engine has been successfully installed in the test cell and integrated with the controller.

Key Findings of the Study/Project

- TGA data indicate that the synthesized catalysts are stable in both air and inert atmosphere at high temperature.
- The H2ICE smoothly operated on hydrogen fuel.

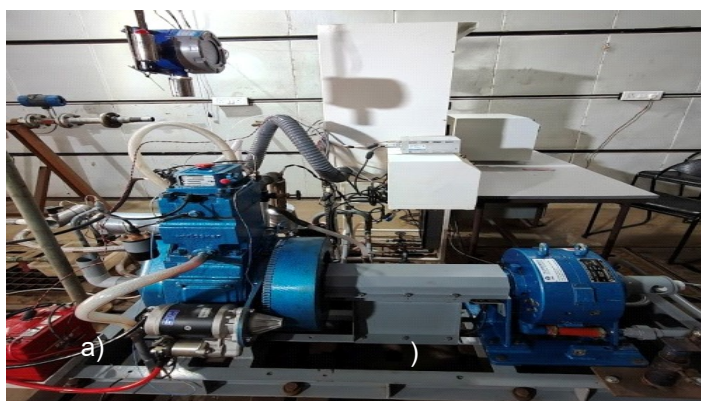


Figure H2 engine installed in test-cell

1.3.3 Development of Standalone GPS (Global Positioning System) with In-built Data Logging System

Objective of the Project

To develop a Standalone GPS (Global Positioning System) with In-built Data Logging System

Work done in the Project

An indigenous GPS-Based Vehicle Drive Analysis System that consists of a GPS Data Logger Device and a Vehicle Drive Analysis (VDAS) Software has been developed. The data logger acquires and stores vehicle drive data while the software analyses these data to provide detailed drive pattern.

The system can be used in vehicle field trials for evaluation of oil formulation, fuels, and engine/vehicle technology. Study of vehicle drive pattern and traffic condition helps in such evaluation. The system can also be used to study driver behaviour for vehicle fleet operators to train and optimize drivers and to study of traffic pattern for road and traffic improvements.

Key Findings of the Study/Project

- The system is specifically designed for local data storage and does not require a server or internet connection to function. Unlike real-time GPS trackers, which push data to a cloud server using cellular networks, the logger records data internally, thereby avoiding sharing of vehicle field trial data with a third party.
- The Vehicle Drive Analysis Software can analyse vehicle drive data from field trial or vehicle fleet operation and provide the drive behaviour in terms of acceleration, deceleration, cruising,

creeping, idling, and stop-go events, giving information vital to understand vehicle field trial or fleet operation.

- The Windows executable software can analyse millions of vehicle drive data in few minutes.

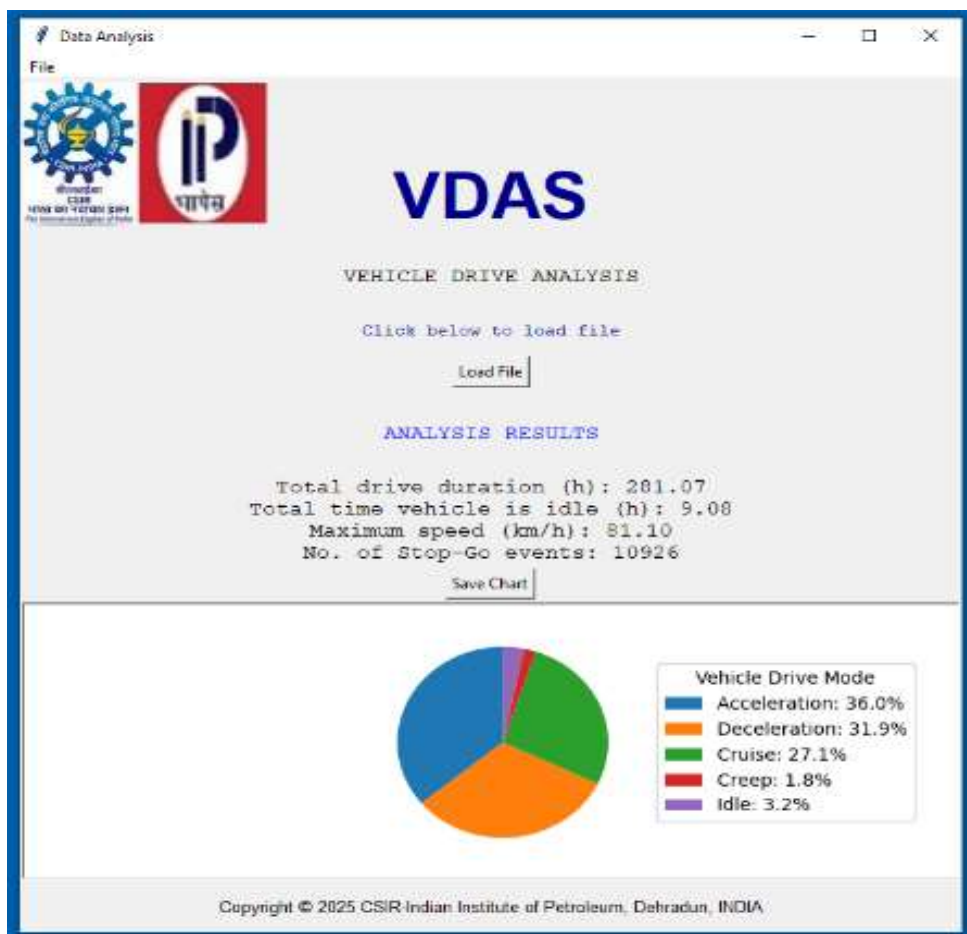


Fig VDAS Software



Fig. GPS Data Logger

1.4 जलवायु परिवर्तन एवं डेटा विज्ञान प्रभाग / CLIMATE CHANGE AND DATA SCIENCE DIVISION

The Climate Change and Data Science (CCDS) division at CSIR-Indian Institute of Petroleum focuses on using data science, AI, and machine learning to evaluate and reduce the environmental impact of the institute's technologies. The division specializes in GHG emissions assessment, GIS mapping, life cycle analysis, molecular and continue modelling, materials development, high entropy alloy and hydrogen storage. CCDS ensures technology development aligns with climate

goals by validating greenhouse gas impacts, performing environmental assessments, and enhancing technology efficiency through data-driven solutions.

1.4.1 National Greenhouse Gases Inventory for Road Transport Sector for BTR-1, BUR-4, and FNC Sponsor: MoEFCC

Objective of the Project

Systematically prepare the Greenhouse Gas Inventory of India's road transport sector. Prepare the Biennial Transparency Report (BTR1), Biennial Update Report (BUR4), and Fourth National Communication

Work done in the Project

Prepared India's First Biennial Transparency Report (BTR-1) national GHG inventories for the road transport, off-road transport and pipeline transport sectors. The United Nations Framework Convention on Climate Change (UNFCCC) Biennial Transparency Report (BTR) is a key reporting mechanism under the Paris Agreement Enhanced Transparency Framework (ETF). I have compiled data from various ministries and national databases to prepare Common Reporting Tables (CRTs) and National Inventory Document (NID) analysis. This report is very important for calculating India's GHG emission intensity reduction, which is one of India's commitments under the Paris Agreement's climate action plan.

Key Findings of the Study/Project

- India's First Biennial Transparency Report (BTR-1) for National GHG emission for the years 2005 (base-year), 2020, 2021, and 2022, containing Common Reporting Tables (CRTs) and National Inventory Document (NID) for road transport and pipeline transport sectors has been finalized by MoEFCC.
- Two new projects of Rs. 570 Lakhs have been received from MoEFCC for the determination of Net Calorific Value/Gross Calorific Value (NCV/GCV) and carbon content of fuels (gasoline, diesel, LDO, LPG, CNG, ethanol, and biodiesel) and for the BTR-2 and BTR-3 reports.
- In-house AI-enabled software has been developed for real-time vehicle monitoring and counting, designed especially for India's road transport sector.

1.4.2 Estimation of Greenhouse Gas (GHG) Emissions in Active Pharmaceutical Ingredient (API) Production using Life Cycle Assessment Study Sponsor: TCG Lifesciences Pvt. Ltd., Kolkata

Objective of the Project

Estimation of Greenhouse Gas (GHG) emissions in Active Pharmaceutical Ingredient (BHH-API) Production using Life Cycle Assessment Study.

Work done in the Project

A cradle-to-gate Life Cycle Assessment (LCA) was performed using Sima Pro LCA software for evaluating greenhouse gas (GHG) emissions of an active pharmaceutical ingredient production process. The implementation of solvent recovery reduced total GHG emissions by ~50%. These findings highlight that detailed LCA with hotspot analysis can substantially enhance the environmental sustainability of API production processes.

Key Findings of the Study/Project

- The analysis identified IPA, EDC, and NBS being key contributors to overall GHG emissions.
- The solvent usage was found to be the dominant contributor, accounting for approximately 62% of total emissions.
- The implementation of solvent recovery significantly reduced the total lifecycle GHG emissions by ~50%.
- These results highlight that targeted process optimisation, particularly solvent management and recovery, can substantially improve the environmental performance of API production systems.

1.4.3 Life Cycle Assessment of Waste Plastic to Diesel and CO₂ to Methanol Production Processes Sponsor:CSIR-HQ, New Delhi

Objective of the Project

Estimation of Greenhouse Gas (GHG) emissions in CSIR-IIP's 'Waste Plastic to Diesel' and 'CO₂ to Methanol' production processes.

Work done in the Project

Life Cycle Assessment (LCA) of the CSIR-IIP's "Waste Plastic to Diesel" process for the conversion of plastic waste to valuable diesel fuel was conducted using SimPro LCA software. The LCA results indicate that the Diesel produced in the process has slightly higher GHG emissions than conventional fossil diesel. Compared to alternatives such as landfill and incineration, the process provides improved resource recovery and moderate circularity. Overall, the study highlights waste plastic to diesel conversion as a promising waste-to-energy pathway for the circular economy and achieving Atmanirbhar Bharat. LCA study of CSIR-IIP's "CO₂-to-methanol" process demonstrates its potential to significantly reduce greenhouse gas emissions by utilizing captured CO₂ and low-carbon hydrogen pathways. This work highlights its environmental significance and strategic national importance in supporting decarbonization, carbon utilization, and sustainable energy development.

Key Findings of the Study/Project

- Diesel produced in the process has slightly higher GHG emissions than conventional fossil diesel
- Compared to alternatives such as landfill and incineration, the "Waste-Plastic to Diesel" process provides improved resource recovery and moderate circularity
- CO₂-to-methanol pathways have strong decarbonization potential, provided low-carbon hydrogen and renewable energy are utilized.

1.4.4 LCA of Corn Ethanol-to-Jet Fuel in India: Environmental and Sustainability Analysis **Sponsor: US Grains & Bioproducts Council (USGC)**

Objective of the Project

Develop an India-specific LCA model for corn-based ethanol used in SAF production.

Work done in the Project

India currently lacks a comprehensive Life Cycle Assessment (LCA) model for the ethanol-to-jet (ETJ) pathway, limiting its ability to scale Sustainable Aviation Fuel (SAF) and gain recognition under international frameworks like CORSIA. Existing US-based models do not reflect Indian agricultural practices or technologies. We have undertaken this study to develop an India-specific LCA framework for corn-based ETJ, covering the full supply chain from cultivation and transport to ethanol production, fuel conversion, and transportation. By using country-specific data on inputs, emissions, and logistics, the model is being built to provide a robust basis for assessing the environmental performance of SAF produced in India and aligning it with global standards.

Key Findings of the Study/Project

- Life cycle inventory for corn cultivation prepared with material and energy data across various states and zones of India.
- GHG emissions with corn cultivation in India approximately range to ~0.3 kg of CO₂e/kg of corn.

1.4.5 Lightweight Novel Multi Component High Entropy Alloy for Hydrogen Storage **Application Sponsor: CHT and GAIL**

Objective of the Project:

- Novel HEAs with a hydrogen storage capacity of 3 wt.% at ambient temperature and pressure 30 bar
- 85 to 90% recyclable material
- 20 kg of HEA H₂ canister generates 0.5 kg of hydrogen (System Capacity)
- Lightweight HEA H₂ canister with the life span of more than 5 years

Work done in the Project

The work carried out so far focuses on the comprehensive development and evaluation of lightweight High Entropy Alloys (HEAs) for hydrogen storage applications, integrating experimental, computational, and data-driven approaches. A set of five HEAs has been systematically screened using Machine Learning-assisted design strategies to optimize composition for enhanced hydrogen absorption capacity, reduced density, and improved thermal efficiency. The selected alloys were synthesized using the Vacuum Arc Melting Furnace, ensuring

compositional homogeneity and controlled microstructure. Detailed microstructural, phase, and crystallographic characterization has been performed using XRD and allied techniques to understand phase evolution and structure-property correlations. Hydrogen storage performance of the developed HEAs has been experimentally evaluated, while parallel efforts include the simulation and design optimization of a hydrogen storage canister.

Key Findings of the Study

- Machine Learning (ML)-assisted screening enabled the selection of 5 optimized HEA compositions, targeting lightweight design and enhanced hydrogen storage performance with hydrogen storage capacity exceeding 3 wt.%, indicating strong potential for practical energy storage applications.
- Vacuum Arcmelting was successfully employed for synthesis of HEAs.
- Process parameters derived from virtual casting simulations were effectively utilized to control alloy composition, homogeneity, and phase formation during synthesis.
- Synthesized HEAs exhibited uniform microstructure and compositional consistency, validating the reliability of the Vacuum Arc Melting route.
- XRD and microstructural analysis confirmed the formation of favourable phases (BCC and multiphase structures) associated with improved hydrogen absorption behaviour.

1.4.6 Certification of Registered Vehicle Scrapping Facility Sponsor: Private Entity

Objective of the Project

- CSIR-IIP is among the test agencies specified in Rule 126(A) of CMVR.
- CSIR-IIP is doing the regulatory and compliance audit of the Registered Vehicle Scrapping facility as per GSR 653(E)

Work done in the Project

Pre-audit, Audits and Enhancement of Audit compliance carried out for RVSF facilities as per the regulatory framework.

Key Findings of the Study

RVSF improvements suggested to the RVSF operators and necessary facility/operational implementations by RVSF operators.

1.4.7 To Study the Deposits & Distresses Characteristics of Automobile Engine Components, as per ASTM 20/21 Rating Manuals Sponsor: India's leading Automotive OEMs and MNCs

Objective of the Project

To evaluate the Product's Quality of Automotive OEMs & Fuel and Lubricants Industries.

Key Findings of the Study

- Enhanced Engine Performance and Reliability.
- Improved Fuel Efficiency
- Optimized Engine Life
- Optimized Oil Change Intervals
- Lower Maintenance Costs
- Design and Optimization of New Engines
- Extended Catalytic Converter Life.
- Reduced Emissions.
- Optimized carbon footprints by Enhancing Engine Efficiency by Selecting Above Parameters.

1.5 अपस्ट्रीम एवं मोम प्रवाहिकी प्रभाग / UPSTREAM AND WAX RHEOLOGY DIVISION

1.5.1 अपशिष्ट प्लास्टिक रूपांतरण-प्रक्रिया प्रौद्योगिकी/Waste Plastic Conversion–Process Technology Area

1.5.1.1 Data Generation and Preparation of DPR for Waste Plastic to Fuels Plant Name of Sponsor: Inhouse

Objective of the Project

- To generate the process data at 1-TPD (ton per day) waste plastic to fuel pilot plant
- To prepare Detailed Project Report (DPR) for up-scaling the pilot plant (10 TPD)

Work Done in the Project

CSIR-IIP alongwith GAIL has established a waste plastic (majorly composed of polyolefins) thermo-catalytic pyrolysis process over the years, which has scaled-up to 1 TPD. The 1 TPD plant is running in CSIR- IIP's campus. The current TRL is 6 and this project aimed to improve the TRL to 7 through technical intercessions. In the project, we successfully executed multiple continuous experimental runs (feed cuts) and catalyst regeneration at the 1-TPD Waste Plastic to Diesel Pilot Plant, during which operational data was generated to analyze throughput, product yields, and system stability. These trials enabled us to identify and troubleshoot key issues such as flow disruptions, and feed handling bottlenecks, while the catalyst regeneration restored activity and validated performance under extended operation. The cumulative findings provided critical inputs for process optimization and form the technical foundation for scaling-up of CSIR-IIP-GAIL Technology.

Key Findings of the Study/Project

- The thermo-catalytic pyrolysis process for polyolefin-rich waste plastics, developed by CSIR-IIP and GAIL, is under optimisization at the 1 TPD pilot scale, TRL-6.

- Multiple continuous experimental runs (feed cuts) generated critical operational data on throughput, product yields, and system stability, providing insights into process behaviour.
- Catalyst regeneration cycles were completed, restoring to original catalytic activity and validating catalyst performance and regeneration protocol.
- Key operational challenges such as flow disruptions and feed handling bottlenecks have been identified and are being addressed to improve operation.
- Presently the pilot scale studies are in progress; and key technical modifications are underway such as evaluation of alternate reactor design.
- Detailed Project Report for 10 TPD plant will be prepared once the evaluation of alternate reactor design at existing bench scale unit (8-10 kg per day) and pilot plant (1TPD) completed.
- The technology for waste plastic to diesel is expected to be ready for commercialization by 2027.

1.5.2 उत्प्रेरक डी पोलीमराइजेशन-क्षेत्र / Catalytic De-polymerisation Area

1.5.2.1 Feasibility of producing benzene-rich aromatics from Used cooking oil (UCO) (HCP-054) -CSIR Sponsored

Objective of the Project

Develop a proof of concept of a catalytic process for the production of benzene-rich BTX by utilising UCO at a throughput level of 1.6 -2.4 l/ day with a benzene selectivity of $\geq 20\%$.

Work done in the project

Near 70-80% conversion of UCO to >15% benzene rich aromatics were obtained with Zn based Zeolites at a reactor loading of 5g (current TRL- 3).

1.5.2.2 Development of catalyst(s) based on nano concepts for the Dehydrogenation of Propane to Propylene (GAP-0141) - SERB/ANRF sponsored

Objective of the Project

Design and development of noble metal free catalyst for the low temperature non-oxidative dehydrogenation of propane to propylene

Work done in the project

Various bi-metallic Sn-based nano-zeolites have been synthesized. Near 52% conversion with 32% propylene yield was obtained at 450°C under atmosphere pressure. Steady conversion and yield till 24h time-on-steam (current TRL- 4)

1.5.3 अपस्ट्रीमक्षेत्र / Upstream Area

1.5.3.1 CO₂ Sequestration in Subsea Sediments as Gas Hydrates. (Sponsor CSIR)

Objective of the Project

To demonstrate the feasibility of hydrate-based CO₂ sequestration and stability (CO₂ seepage) in subsea sediments collected from the north eastern Arabian Sea and understand the impact of CO₂ injection/ CO₂ seepage from hydrate sediments on oceanic organisms (e.g., Phytoplankton, Foraminifera, Seaurchins, etc.), which is essential for the deployment of all geologic carbon sequestration techniques.

Work Done in the Project

- A bench scale hydrate based CO₂ sequestration prototype representing the realistic subsea CO₂ injection process has been commissioned at CSIR-IIP for demonstrating the feasibility of hydrate based CO₂ sequestration and stability (CO₂ seepage) in subsea sediments collected from the northern and eastern Arabian Sea in collaboration with CSIR-NIO, Goa.
- In porous sandy sediment 40-45% CO₂ to hydrate conversion was achieved using amino acids in ~2 hours; however, in Arabian Sea sediments, the kinetics is too slow and takes 10-15 hours to achieve similar conversion

The enhanced Kinetics and hydrate stability results of this project will assist field-scale deployment in collaboration with oil and gas industries.

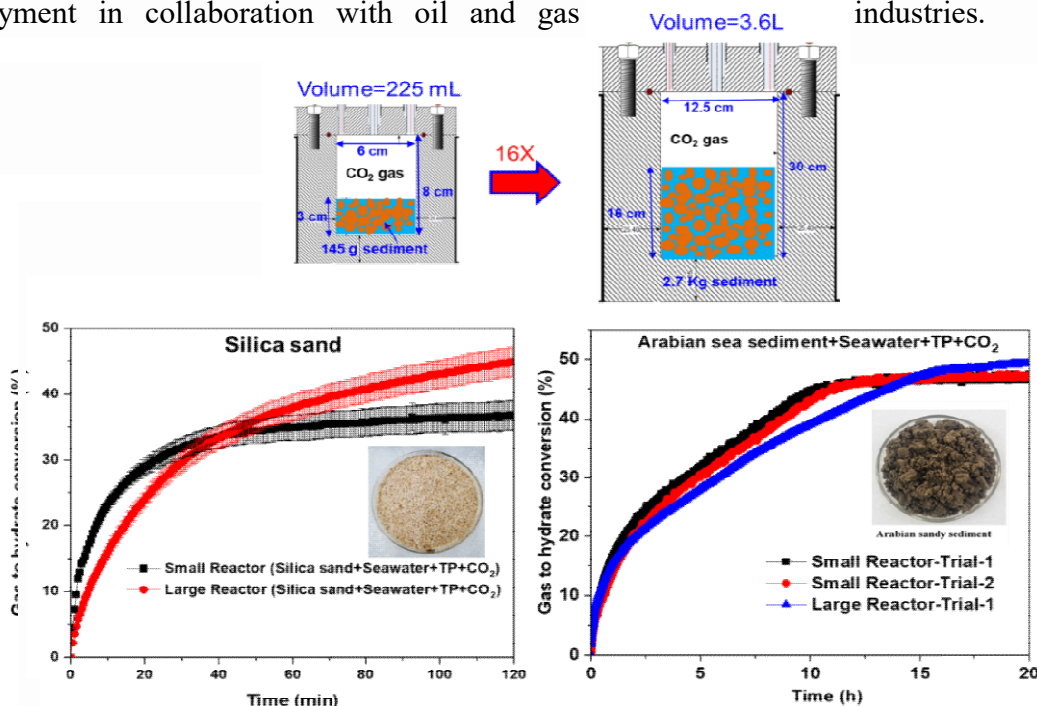


Figure: Hydrate formation kinetics in a 16 times scale-up reactor presenting the gas to hydrate conversion in porous silica sand sediments and Arabian Sea sediments

1.5.3.2 Novel in-situ microbial thermal stimulation approach of methane recovery from natural gas hydrate-bearing sediments and simultaneous carbon dioxide sequestration: Experimental investigations and modelling (Sponsor CSIR)

Objective of the Project

- To study the hybrid method of in-situ microbial thermal stimulation process along with CO₂ sequestration to enhance the methane recovery from natural gas hydrate deposits.
- To enhance the CO₂ storage capacity/kinetics using bio-surfactants.
- Develop a dynamic model for a hybrid methane recovery process under simulated natural gas hydrate reservoir conditions.

Work Done in the Project

- Rhamnolipids, bio-surfactant, were produced using different substrates, including glucose, glycerol, and used cooking oil (UCO) media, achieving a production of 15.53 g/L.
- The kinetics of hydrate formation have been established and compared with a commercial surfactant, sodium dodecyl sulfate (SDS), as well as an amino acid (a commercial hydrate promoter)
- Our in-house produced bio-surfactant, Rhamnolipid (1.0 wt% RL) offers around 30% CH₄ hydrate saturation, which is comparable to the commercial hydrate promoters (0.5 wt% SDS and TP).

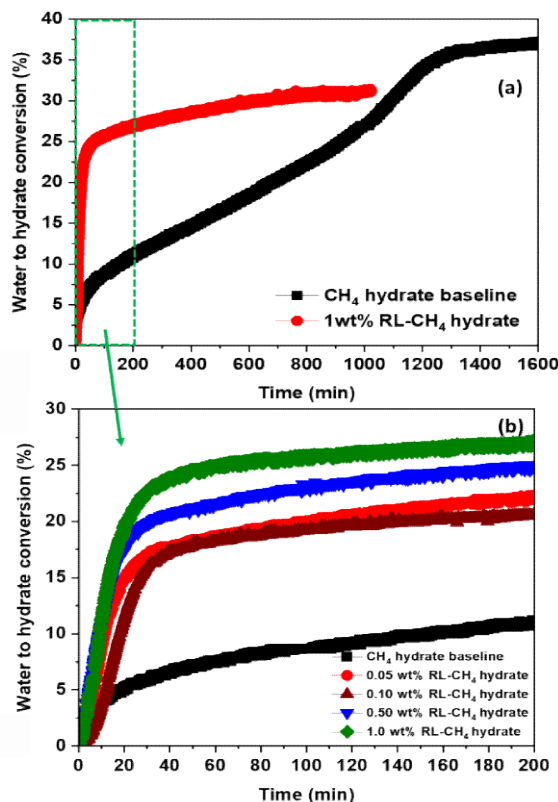


Figure: Kinetics of Methane Hydrate Formation in Arabian Sea Sediments

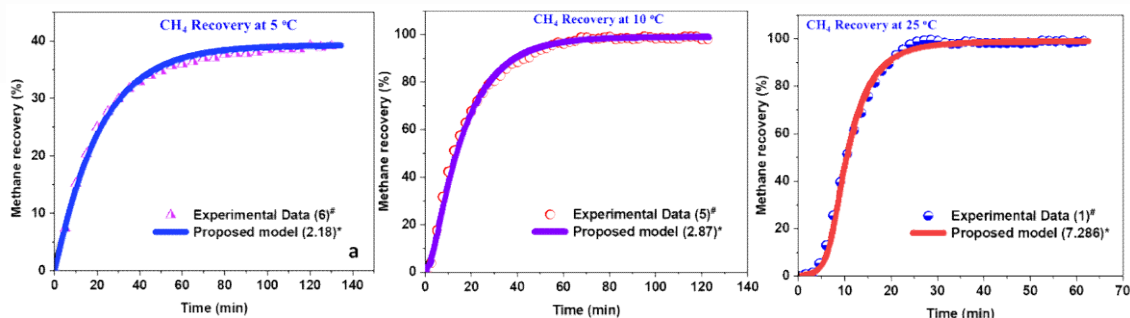


Figure: Validation of developed model with reference to experimental data acquired for the CH₄ hydrate dissociation (methane recovery) from hydrate bearing Arabian sandy sediments using thermal stimulation at 5, 10 and 25 °C temperature.

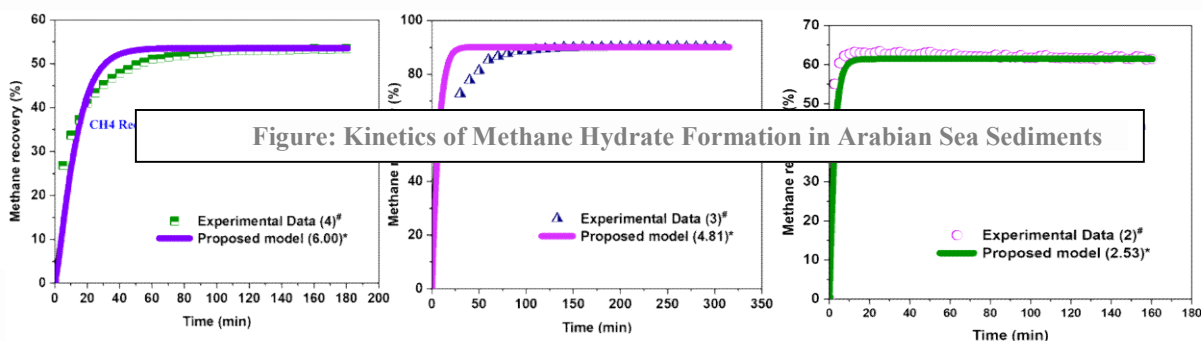


Figure: Validation of developed model with reference to experimental data acquired for the CH₄ hydrate dissociation (methane recovery) from hydrate bearing Arabian sandy sediments using depressurization at ~2 °C temperature..

1.5.3.3 Gas hydrate-based CO₂ capture & storage along with blue H₂ production from PSA tail gas of SMR plant in Petroleum refineries (Sponsor DST)

Objective of the Project

Demonstrate the lab scale CO₂ capture and storage along with blue H₂ production from PSA tail gas of SMR plant with a production of ~5kg/day of CO₂ hydrate pellets ($\geq 96\%$ CO₂) and $\geq 90\%$ H₂ recovery. (TRL: 3), and establish TEA and LCA of the process.

Work Done in the Project

- Investigation of kinetics of CO₂ capture and separation from the varying compositions of refinery tail gas along with optimization of additives and process conditions for enhanced hydrate formation is in progress
- Molecular dynamic simulations and DFT calculations to identify the potential additives (hydrate promoters) and to understand the mechanism of hydrate formation at the molecular level is also in progress in collaboration with IIT-Tirupati

1.5.4 वैक्स रियोलॉजी क्षेत्र / Wax Rheology Area

The Wax Rheology Area continued to play a significant role in addressing flow assurance challenges associated with the production, transportation, and processing of waxy crude oils. During the year, the Area conducted comprehensive rheological investigations to elucidate wax crystallization, gelation, and flow behavior under simulated pipeline conditions. Advanced rheological techniques were employed to evaluate wax appearance temperature (WAT), yield stress, viscoelastic properties, thixotropy, and structural recovery, providing valuable insights into the low-temperature behavior of crude oils and supporting the development of effective flow assurance strategies.

The Area provided scientific and technical support to the upstream oil and gas sector by evaluating the performance of pour point depressants (PPDs), flow improvers, wax deposition inhibitors, and specialty additives for crude oils and petroleum products. In parallel, research activities were expanded to focus on sustainable materials by investigating the use of waste plastic pyrolysis residue (WPPR) as a modifier for bituminous binders, demonstrating its potential to develop high-performance, environmentally sustainable pavement materials. These studies contribute to waste valorization, circular economy initiatives, and sustainable infrastructure development.

During the year, the Area successfully executed several industrial consultancy and sponsored research projects for leading national and multinational organizations. Technical services were provided to **SLB (Schlumberger)** for rheological characterization and flow-assurance studies of crude-oils.

The future research programme of the Wax Rheology Area is focused on developing next-generation flow assurance technologies for conventional, unconventional, high-wax, high-pour-point, and asphaltenic crude oils. The Area also aims to strengthen research on sustainable specialty waxes, emulsifiable waxes, and value-added bitumen modifiers derived from industrial and plastic wastes, while facilitating the scale-up and commercialization of CSIR-IIP-developed technologies.

1.6 सामग्री संसाधन दक्षता प्रभाग / MATERIAL RESOURCES EFFICIENCY DIVISION

1.6.1 Biochemistry and Biotechnology Area/MRED

1.6.1.1 Scale-up and Process Development for Stable Formulation of High-Yielding Fungal Laccase for Diverse Applications

Objective of the Project

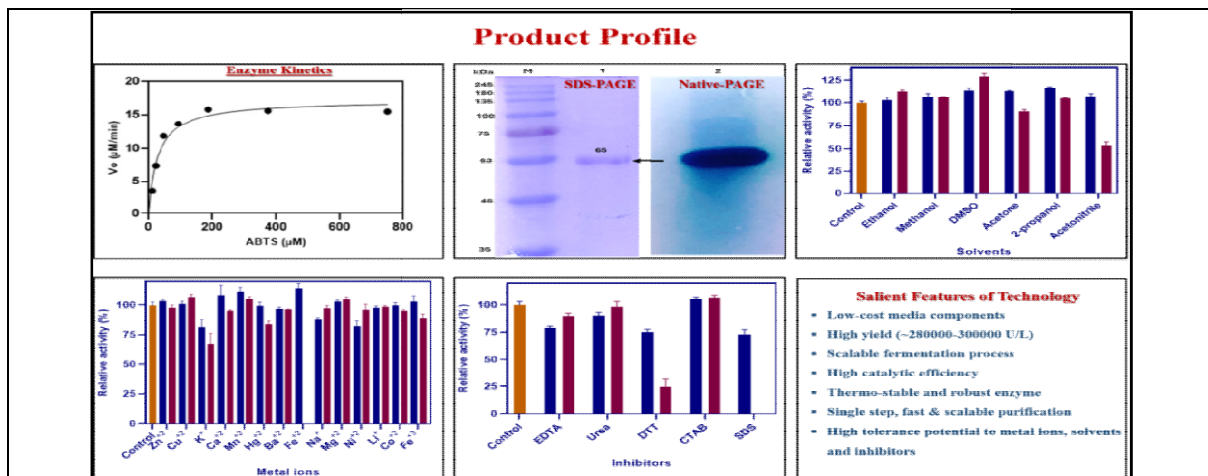
The objective of this study is to develop and scale up an efficient bioprocess for enhanced production of fungal laccase with improved yield and stability. It also aims to establish stable liquid and powder formulations for long-term storage and to evaluate the techno-economic feasibility of the developed product for industrial applications.

Work Done in the Project

In this study, process development was carried out to enhance fungal laccase production, resulting in a 2.5-fold increase (100 IU/mL to 250 IU/mL) in enzyme activity under optimized conditions. The developed process was scaled up from laboratory conditions to a 15 L bioreactor. Additionally, effective formulation strategies were established to improve enzyme stability in liquid and powder forms, ensuring long-term storage without significant loss of activity. The formulated laccase exhibited enhanced shelf stability, making it suitable for practical applications. Furthermore, comprehensive cost analysis and techno-feasibility assessments were performed to evaluate the economic viability and industrial applicability of the developed process.

Key Findings of the Study/Project

Product specifications		
Parameter	Specification	Test Method
Liquid form		
Appearance	Light brown liquid	Visual
Enzyme Unit	220-250 IU/mL	ABTS assay
pH	4.5-5.0	pH meter
Powder form		
Appearance	Light brown powder	Visual
Enzyme Unit	3.0 -3.5 IU/mg	ABTS assay
Moisture Content	≤ 6 %	Thermo gravimetric
pH	4.5-5.0	pH meter
Solubility	Aqueous buffer	Visual
Product stability profile		
Storage Condition (liquid)	Duration	Residual Activity
Liquid form		
4°C	1 month	97.46%
4°C	3 months	92%
Room temp.	3 months	70%
Powder form		
Powder at Room temp	6-12 Months	100 %
After reconstitution in buffer and storage at 4°C	1 months	95-97 %
After reconstitution in buffer and storage at room temp.	1 months	50 %
Product Profile		

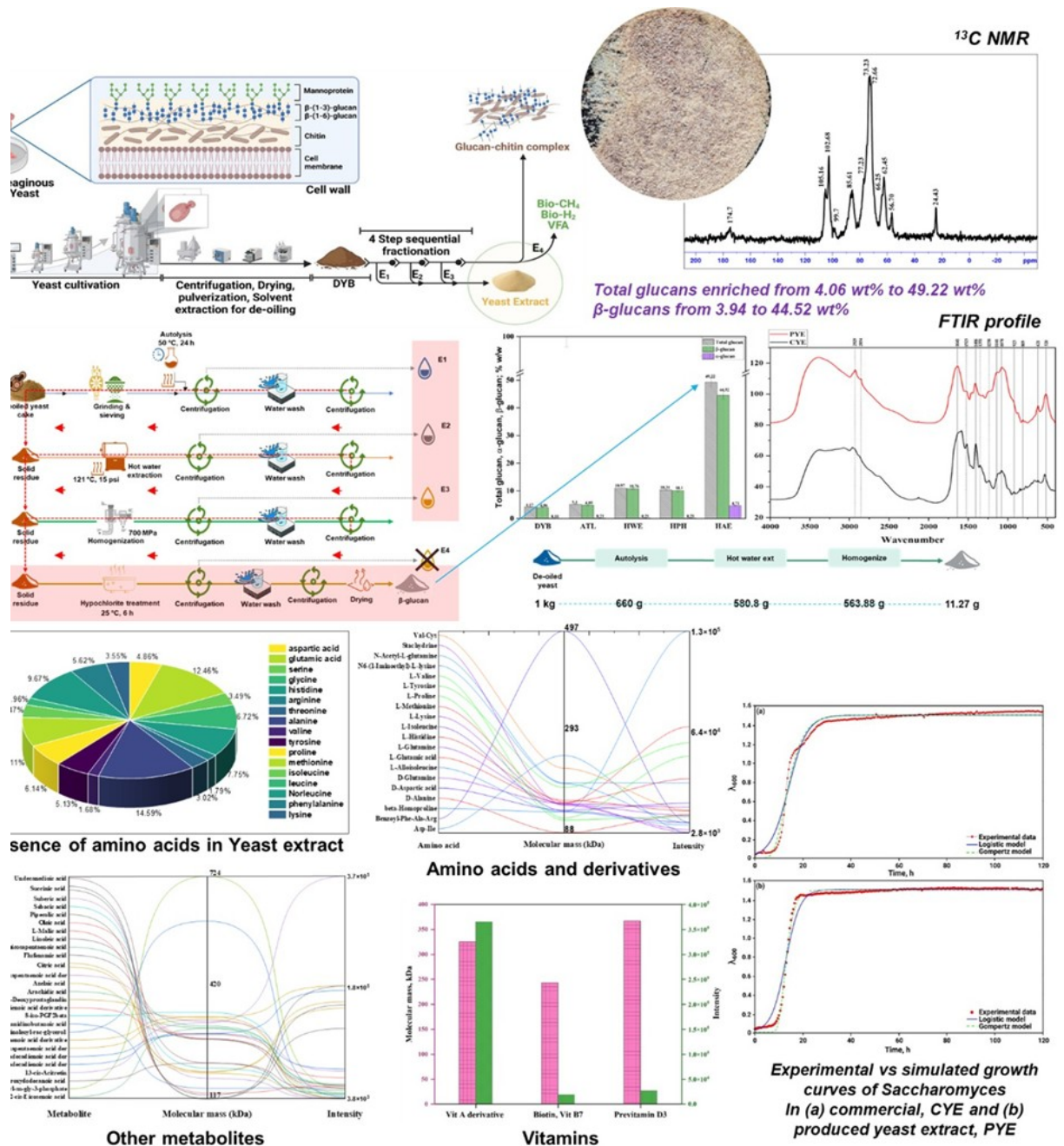


Integrated Pilot Scale Production of Pigment, Sophorolipid, and Glucan-chitin-Complex from Sabji-Mandi Waste through Yeast-Mediated Fermentation: a Waste to Wealth Scheme with a Single Process Multi-Product Biorefinery Model (WP-16) under CSIR-MM WTW (Waste to Wealth: Comprehensive Solutions Towards Circular Economy and Sustainability)

This proposal aims to map and manage 200 Kg Sabji mandi waste through yeast-mediated fermentation and develop (1) β -carotene (pigment from yeast biomass), (2) sophorolipid (biosurfactant from extracellular fermentation broth), and (3) β -glucan (carbohydrate polymer, from de-pigmented yeast biomass), as nutraceuticals and food colorant, food preservative, and food supplement respectively. The production process specifically aims to analyze techno-economics, emission (LCI), and water footprint, leading to a multiproduct biorefinery model.

Work Done in the Project

- The project successfully achieved to produce β -carotene reach pigments, along with glucan-chitin complex, yeast extract, and sophorolipid from sabji mandi waste through oleaginous fermentation.
- The project reached TRL-6 level for pigment, glucan-chitin complex, and yeast extract with detailed environment performance analysis (LCIA, PBA, WFA). Presently product economics is being evaluated to establish an industrial symbiosis (IS).
- For the processing of 1 kg spent yeast biomass (SYB) to products glucan-chitin complex and yeast extract through the proposed process, the C, N, P, water, and energy footprints are 20.74 ± 0.39 Kg-CO₂ Eqv, 0.003 Kg-N Eqv, 0.01 Kg-P Eqv, 0.99 ± 0.02 m³ and 266.16 ± 4.78 MJ-Eqv, respectively.
- To produce 1 kg GCY (glucan-chitin complex and yeast extract) from SYB through the proposed process, the C, N, P, water, and energy footprints are 128.18 ± 15.10 Kg-CO₂ Eqv, 0.02 Kg-N Eqv, 0.07 ± 0.01 Kg-P Eqv, 6.15 ± 0.75 m³ and 2262.87 ± 251.40 MJ-Eqv, respectively.
- To produce 1 kg GCC (glucan-chitin complex) from SYB through the proposed process, the C, N, P, water, and energy footprints are 26.92 ± 0.67 Kg-CO₂ Eqv, 0.004 Kg-N Eqv, 0.015 Kg-P Eqv, 1.29 ± 0.03 m³ and 475.20 ± 11.09 MJ-Eqv, respectively.
- To produce 1 kg YE (yeast extract) from SYB through the proposed process, the C, N, P, water, and energy footprints are 101.26 ± 9.42 Kg-CO₂ Eqv, 0.016 Kg-N Eqv, 0.06 ± 0.01 Kg-P Eqv, 4.86 ± 0.47 m³ and 1787.67 ± 156.90 MJ-Eqv, respectively.
- To attain ZLD, the actual energy footprint (the process been executed at CSIR-IIP, Dehradun, Uttarakhand, India) is being evaluated.



Selective and sequential fractionation of spent yeast biomass to produce glucan-chitin complex, and yeast extract

Technology Transfer

1.6.2 Thermocatalytic Process Area/MRED

1.6.2.1 A Process of Producing Bio-Bitumen from Pyrolysis of Lignocellulosic Biomass



The technology transfer has been done in two trenches, first time on 7th January 2026 to 14 industries and second time on 30th March 2026 to 9 industries.



1.6.2.2 New Project on Biomass to chemicals

CSIR-IIP has done the background work to initiate multi lab mission mode project aiming to develop process for conversion of surplus agro-bio waste into useful chemicals

1.7 ट्राइबॉलॉजी प्रभाग / TRIBOLOGY DIVISION

1.7.1 Characteristics Property Evaluation of Water-Glycol Fire-Resistant Hydraulic Fluid Sponsored by M/s. Quaker Chemical India Pvt. Ltd, Kolkata

Objective

To test and evaluate Water-Glycol Fire Resistant Hydraulic Fluid, to ascertain its quality and applicability in industry, mining and automotive applications.

Work Done in the Project

The work done involved testing and evaluation of the Water-Glycol Fire-Resistant Hydraulic Fluid supplied by M/s. Quaker Chemical India Pvt. Ltd., per the standard test specifications proposed in IS 10532 Part III and the 35VQ Pump Test (ASTM D: 6973), along with the post-experimental analysis. The tests proposed in IS 10532 Part III include i) Appearance, ii) Kinematic viscosity (IS 1448 P:25), iii) Foaming stability (IS 1448 P:67), (iv) Pour point (IS 1448 P:10), v) Relative density (IS 1448 P:32), (vi) Water content (IS 1448 P:40), and vii) Rust preventive characteristics.

Key Findings of the Study

The Water-Glycol Fire Resistant Hydraulic Fluid when tested for its i) Appearance, ii) Kinematic viscosity (IS 1448 P:25), iii) Foaming stability (IS 1448 P:67), (iv) Pour point (IS 1448 P:10), v) Relative density (IS 1448 P:32), (vi) Water content (IS 1448 P:40), and vii) Rust preventive characteristics confirmed the specification of IS 10532 Part III. Further, it passed the 35VQ Pump Test (ASTM D: 6973) with deviations of 1800 ± 20 RPM, $60 \pm 3^\circ\text{C}$, 20.7 ± 0.2 MPa, against 2400 ± 20 RPM, $65 \pm 3^\circ\text{C}$, 20.7 ± 0.2 MPa.

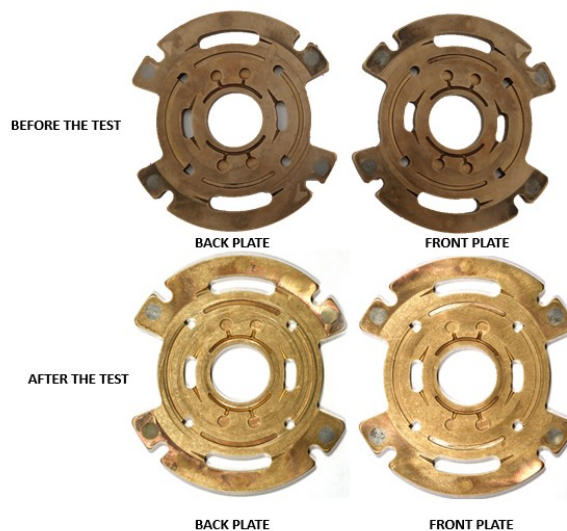


Fig.: The Front & Back Plates of the Test Cartridge Before&After the Pump Wear Test

1.7.2 Compatibility Study of Engine Oil and Lubricating Greases Sponsored by M/s. Arabian Petroleum Ltd, Ambarnath, India.

Objective

To investigate the compatibility, homogeneity, and miscibility of Arabian Petroleum's lubricants (Engine Oil and Lubricating Grease) with those manufactured by other contemporary manufacturers.

Work Done in the Project

The work done involved testing and evaluating the physico-chemical properties and tribo-performance parameters of the supplied lubricants. The tests performed on the lubricant samples varied according to the type of lubricant and its specific application domain. Various tests that were performed on the lubricant samples include;

i. Engine Oil

- a. Homogeneity and Miscibility test as per IS: 13656: 2002
- b. Physico-chemical properties (Density, Viscosity, VI, Pour Point, Flash Point, TAN, Foaming characteristics and Ash) as per IS: 1448
- c. High-Frequency Reciprocating Rig (HFRR) test as per ASTM G: 133
- d. Trace metal analysis for S, Ca, Ba, Mg, Zn, P and Na

ii. Lubricating Grease

- a. Compatibility of Binary mixtures of lubricating greases as per ASTM D: 6185-97
- b. Characteristic properties of lubricating greases (consistency of worked greases after 60 double strokes and 100000 strokes, Drop point, Leakage tendency, Water washout, Heat stability, Oxidation stability, Roll stability, Corrosion preventive properties, and Dynamic antirust properties)
- c. Performance characteristics of lubricating greases (Four-Ball wear and Four-Ball EP test)

Key Findings of the Study

In the present study, both the reference and test samples were tested separately under similar conditions and also in the desired ratios. Based on the experimental study undertaken, the following salient conclusions have been drawn;

- i. The test sample and the corresponding reference sample have similar physico-chemical properties. The anti-friction and anti-wear behaviour of the test sample, as observed in the HFRR test, is in good agreement with that of the reference sample. Further, the test sample is compatible (Homogeneous and stable suspension) with the corresponding reference sample when mixed in equal amounts. Hence, the test sample can be used as a replacement lubricant for the given application.
- ii. The test grease sample and the corresponding reference grease sample have similar characteristic properties. The anti-wear and EP behaviour of the test sample, as observed in the four-ball test, is in good agreement with that of the reference sample. Furthermore, the test sample is compatible, as observed from the compatibility of the binary mixture of lubricating greases with the corresponding reference sample at 50:50, 10:90, and 90:10 ratios. Hence, the test grease sample can be used as a replacement lubricant for the given application.

1.7.3 Assessment of Scuffing Load Capacity and Specific Wear Wt. Loss of Open Gear Lubricant using FZG Test Rig Sponsored by M/s. Stanlubes & Specialities India Pvt. Ltd, Mumbai and M/s. Tribo Industries, Medak

Objective

To evaluate the scuffing load capacity and specific wear weight loss of the girth gear lubricating greases using the FZG gear test rig.

Work Done in the Project

The work involved testing and evaluating the scuffing load capacity and the specific weight loss due to wear of the girth gear lubricating grease, in accordance with DIN ISO 14635-3 and DIN 51354.

Key Findings of the Study

The study found that the girth gear lubricating grease successfully passed the 12th load stage in accordance with DIN ISO 14635-3 and DIN 51354.

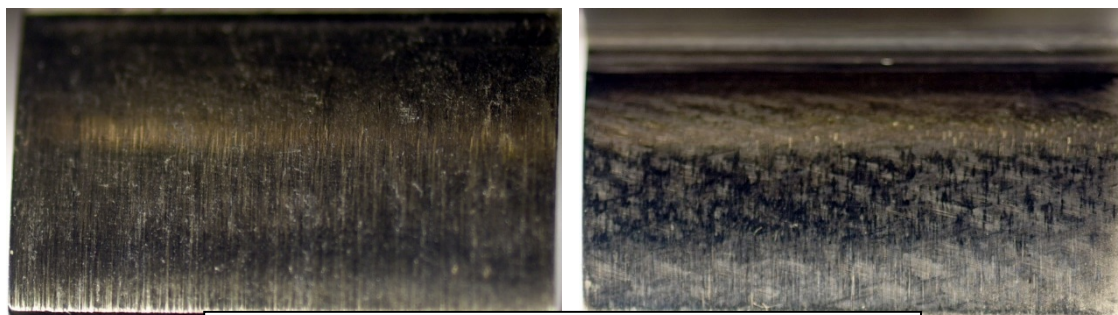


Fig.: The tested Pinion Surface after 12th Load Stage

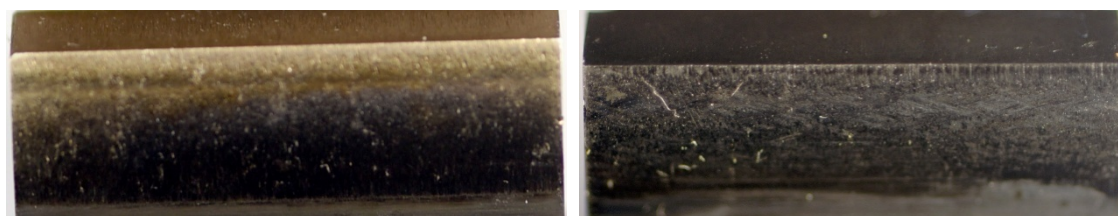


Fig.: The tested Gear Surface after 12th Load Stage

1.7.4 Analysis of Fire-Resistant Hydraulic Fluids, Sponsored by M/s. Intertek India Pvt. Ltd., Mumbai, and M/s. Lubrichem New Delhi

Objective

To test and analyse fire-resistant hydraulic fluids for their characteristic properties in accordance with IS-10532 Part V.

Work Done in the Project

The work involved testing and evaluating the fire-resistant hydraulic fluid's characteristic properties in accordance with IS – 10532 Part V. The tests performed on the lubricant were, Appearance (IS 10532 Part 5), Water content (IS 2362), Kinematic Viscosity at 40°C (IS 1448 P:25), Viscosity Index (IS 1448 P:56), Air release properties (IS 1448 P:102), Relative density (IS 1448 P:16 & P:32), Emulsion characteristics (IS 1448 P:91), Total acidity (IS 1448 P:2), Foaming characteristics (IS 1448 P:67), Corrosion copper strip (IS 1448 P:15), Rust prevention characteristics (IS 1448 P:96), Ash content (IS 1448 P:4), Hydrolytic stability (ASTM D:2619), Elastomer compatibility (ASTM D: 6546), Flash Point COC (IS 1448 P:69), Fire Point (IS 1448 P:69), Auto ignition temperature (IS 1448 P:87), Pour Point (IS 1448 P:10) and Scuffing Load Capacity (IS 10532 Part 5).

Key Findings of the Study

The study found that the Fire-resistant Hydraulic Fluid meets the specification limits set in IS 10532 (Part 5).

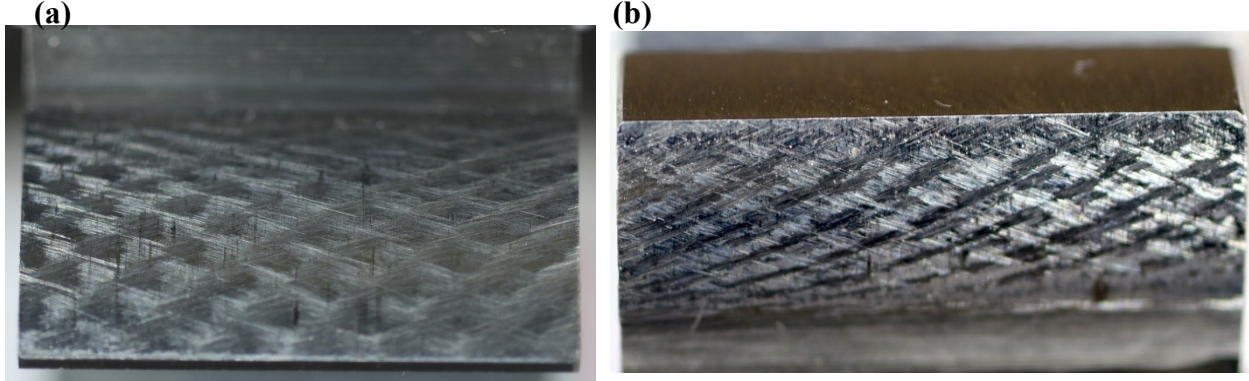


Fig.: The tested (a) Pinion and (b) Gear Surfaces after 12th Load Stage

1.7.5 Evaluation of Friction and Wear Characteristics of Friction Wedge Material, Sponsored by M/s. Asansol Steel Castings Pvt. Ltd, Howrah, M/s. Mandeep Industries, Lucknow and M/s. Neetu Yoshi Pvt. Ltd., Haridwar.

Objective

To test and evaluate the friction and wear behaviour of the friction wedge material, along with the volumetric wear, in accordance with Specification No. CONTR-02-MISC-2007(Rev-02) of RDSO Lucknow.

Work Done in the Project

The work involved testing and evaluating the friction and wear properties of the friction wedge materials. The tests were performed at different loads and reciprocating frequencies on a reciprocating tribo-tester in dry conditions. The direction of relative motion between sliding surfaces reverses periodically, so that sliding occurs back and forth and in a straight line. Friction between the contacting surfaces was continuously monitored and recorded using the data acquisition system. The wear of the test specimen was measured as weight loss by accurately weighing the specimen before and after the test using a laboratory balance. Repetitive experiments were performed to ascertain the repeatability and reproducibility of the test results. The experiments were performed in accordance with Specification No. CONTR-02-MISC-2007(Rev-02) of RDSO Lucknow.

Key Findings of the Study

The study found that Austempered Ductile Iron (ADI) make Friction wedges meet the specification limits for friction and wear, in accordance with the Specification No. CONTR-02-MISC-2007(Rev-02) of RDSO Lucknow. Further, it is also observed that the volumetric wear increases with increasing frequency, applied load, and test duration. However, this increase is not linear with frequency, load and time. The possible reasons for such behaviour can be attributed to the change in wear mechanism, i.e., from mild to severe wear as the experiment progresses. The wear transition takes place from adhesion to abrasion over time. Further, the debris entrapped within the contact is likely to cause three-body abrasion, which varies from case to case. For the

18000s test duration, the volumetric wear can be attributed to the material wearing faster initially, then slowing as the test progresses.

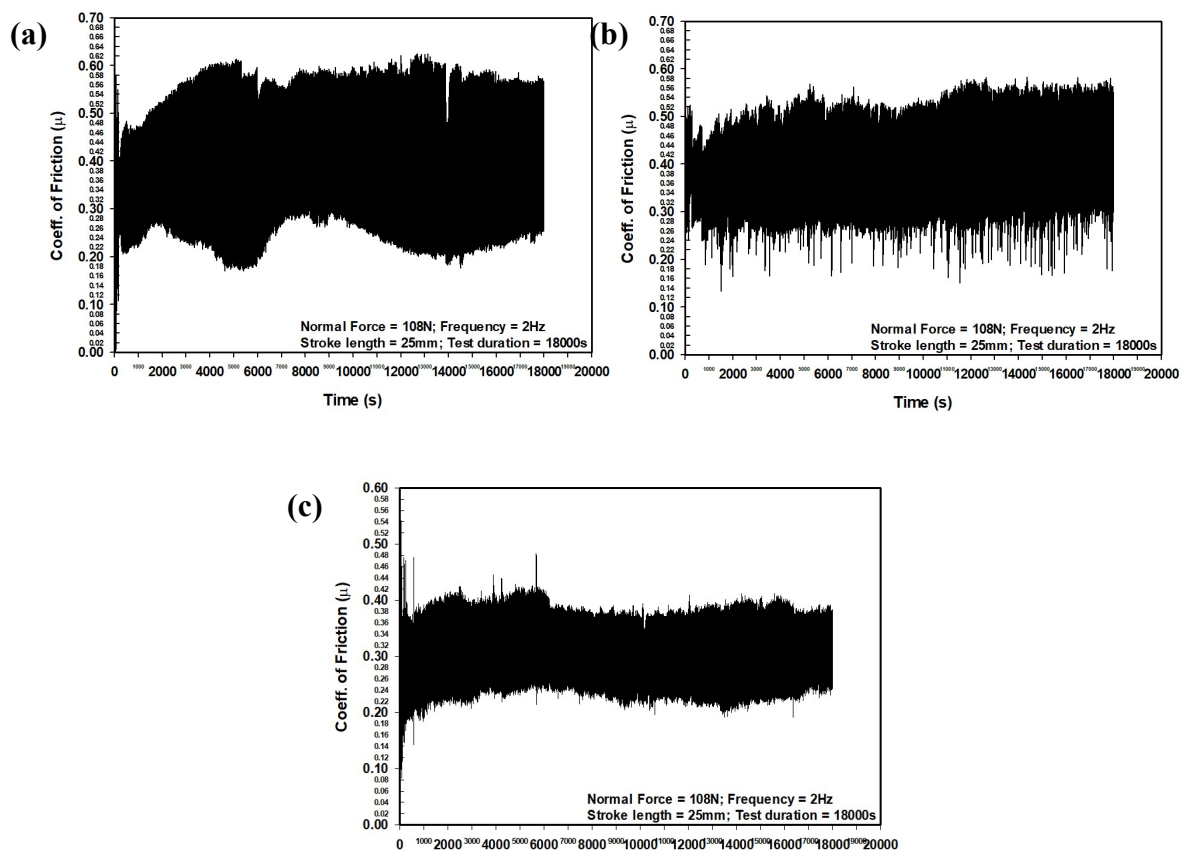


Fig.: Coeff. of friction at 2Hz and 108N for 18000s Test Duration

1.7.6 Lubricating Greases with improved Thermal and Corrosion Resistance, Sponsored by CSIR

Objective

To develop Lubricating Greases with improved Extreme Pressure (EP), Thermal and Anti-rust characteristics over Commercial ones.

Work Done in the Project

The work involved the synthesis and characterization of the synthesized products. The lubricating greases were synthesized using Gr. I and Gr II mineral base oils and complex metal soap. Fatty acids and Aromatic acids were used to synthesize the complex metal soap. A wide range of products was synthesized while optimizing concentrations and cooking parameters. The synthesized products were characterized for their consistency, water washout, leakage tendency, and anti-wear characteristics using standard test procedures. The commercial greases were procured and tested to establish the benchmark characteristics of the synthesized products.

Key Findings of the Study

Three products were synthesized at the laboratory scale, and their characteristic properties were compared with those of commercial products available in the market. The Table shows the characteristics of the synthesized products.

Table:Characteristic Properties of Synthesized & Commercial Greases

Products	Characteristic Properties					
	Thickener (%)	Drop point (°C)	NLGI No.	Water washout	Leakage Tendency	Wear Scar dia. (mm)
Product 1	12	330	3	3.25%	1.07%	0.594
Product 2	12	310	3	1.50%	2.32%	0.643
Product 3	15	207	2	2.5%	14.9%	0.576
Commercial Grease 1	--	200	3	1.75%	2.34%	0.722
Commercial Grease 2	--	315	3	1.75%	0.42%	0.457
Dielectric Grease	20	244	2	1.75%	7.85%	0.484

1.8 दहनप्रभाग / COMBUSTION DIVISION

1.8.1 Investigation of Indian Brick Kiln for the Improvement in Thermal and Combustion Performance Sponsored by: CSIR HQ, RDSF Project

Objective

Improving the thermal and combustion efficiency of the brick kilns by 5%.

Work Done in the Project

The present work investigates the heat transfer characteristics of a brick kiln equipped with a novel air circulation system. An experimental analysis was conducted on an operational high-draft zig-zag brick kiln, focusing on parameters such as kiln temperatures and emission levels. Key theoretical calculations including Reynolds number, local and average heat transfer coefficients, Nusselt number, and heat transfer rate were performed to support the experimental observations. The results offer valuable insights into enhancing the thermal performance of brick kilns by maximizing heat transfer through improved air circulation. The present work contributes to the development of energy-efficient brick kilns with lower environmental impact and reduced operational costs.

The novel air circulation system is erected in an existing zig-zag brick kiln of M/s Malik Brick Fields, Muzaffarnagar, Meerut, Uttara Pradesh. The temperature in the cooling brick sections and the chimney is collected. Similarly, the emission data is collected. It has been found that the use of novel air recirculation system improved the brick quality, reduced fuel consumption and reduced the particulate matter emissions.



Figure: The Combustion Team and the Owner of the Brick Kiln at the Data Collection Site

1.8.2 Theoretical Analysis of different Pathways to Cut Down Utilities and Reduce CO₂ Emissions of Refinerie Sponsored by: CSIR HQ, RDSF Project

Objective

To analyze different pathways to utilize low-grade waste thermal energy of a refinery system to cut-down the utilities and reduce overall CO₂ emissions by 5%.

The present study theoretically evaluates the potential of various decarbonization pathways for Indian refineries. It establishes a conceptual framework and compares the performance of the Organic Rankine Cycle and thermoelectric generators for waste heat recovery aimed at reducing CO₂ emissions. The findings indicate that a novel thermoelectric generator design can significantly lower refinery-based CO₂ emissions by converting waste heat into electricity. One key advantage of this technology is its lack of moving parts, allowing installation in inaccessible locations with minimal maintenance requirements. Overall, the study highlights the potential of thermoelectric generators as an emerging technology for reducing greenhouse gas emissions and provides a foundation for developing indigenous thermoelectric generator systems for refinery applications.

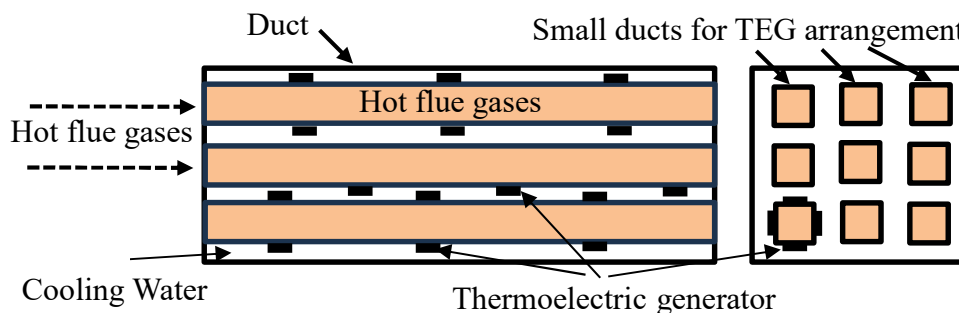


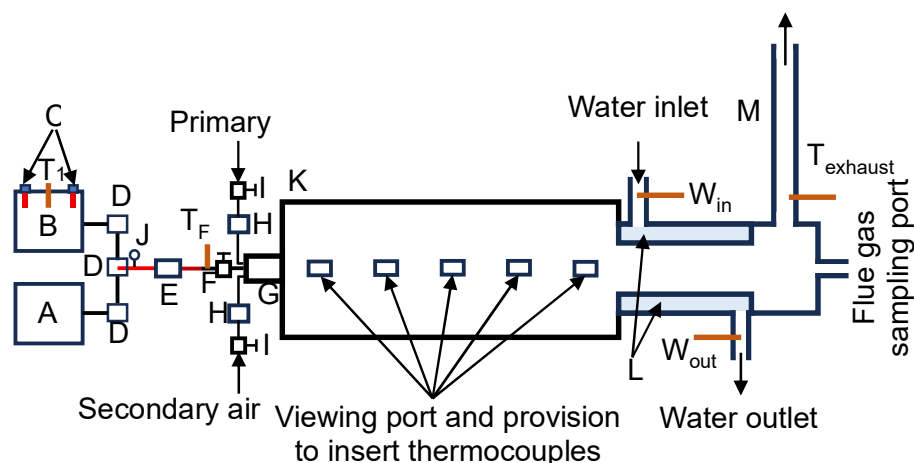
Figure : The Designed TEG Based Heat Recovery System

1.8.3 Evaluation of furnace oil additive for thermal performance enhancement in industrial furnace Sponsored by: Hindustan Petroleum Corporation Limited

Objective

Technical evaluation of fuel oil additive developed by HPCL for thermal efficiency enhancement in an industrial furnace.

This study presents a technical evaluation of a fuel oil additive developed by HPCL to enhance thermal efficiency in industrial furnaces. As part of the project, a standard operating procedure was created to assess the performance of both fuel oil with and without additive in an unloaded pilot-scale furnace. The project demonstrated the Institute's capability to conduct research on industrial-scale burners and fuels. The results indicated that the additive effectively improved the performance of furnace oil. Consequently, the findings can assist HPCL in further refining the fuel oil additive, which could then be used in their furnaces to reduce fuel consumption and lower greenhouse gas emissions. The schematic of the test furnace is shown in below figure.



A: Diesel fuel tank; B: LSHS fuel tank; C: Oil heaters; D: Oil pump; E: fuel flow meter; F: Fuel control valve; G: Burner; H: Air flow meters; I: Air control Valves; J: Pressure gauge; K: Horizontal furnace; L: Water jacket; M: Chimney; Red color line between D and F shows inline fuel heaters;

Figure : Schematic of the experimental setup

1.8.4 Technology Transferred /Commercialization

Know-how Technology Transfer of “Advanced Air Circulation System” to M/s Malik Brick Fields, Ramraj Village, Muzaffarnager district., Uttar Pradesh.



Technology know-how transfer being done with M/s Malik Brick Fields at CSIR-IIP, Dehradun

1.8.5 Know-how Technology Transfer of “Improved Jaggery Making Plant” to M/s Biomimicry, New Delhi.



Technology know-how transfer being done with M/s Biomimicry at New Delhi

1.8.6 Know-how technology transfer of “A Domestic Cooking Burner for PNG” to M/s Elgi Ultra, Coimbatore, Tamil Nadu in February 2026

A Momerendum of Understanding was signed with Small Industries Development Bank of India (SIDBI) on 17th September 2025 at New Delhi for the wide implementation of CSIR-IIP “Improved Jaggery making Plant” technology in North India with the financial support of SIDBI.



MOU signing with SIDBI at New Delhi

1.9 आसुत एवं भारी तेल प्रसंस्करण प्रभाग / DISTILLATE AND HEAVY OIL PROCESSING DIVISION

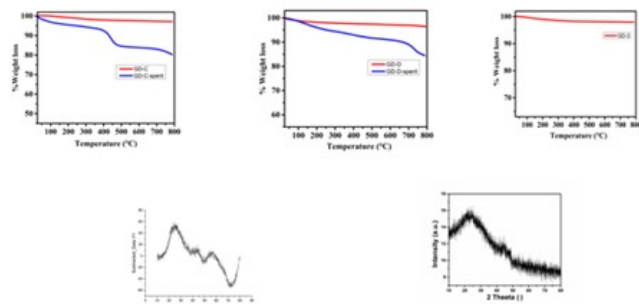
1.9.1 Feasibility Study for Hydrotreating of Pyrolysis Bio Oil and Waste Plastic Oil/Tyre Oil; Name of the Sponsor: CSIR

Objective of the Project

Development of slurry hydrotreating catalysts for pyrolysis oils/waste plastic oil /Tyre oil. Hydrotreating of blended crude oil with py-oils and Process optimization

Work Done in the Project

Bench scale (1-5g) of various materials (MoS_2 , Rh 5%/ Al_2O_3 , NiMo, Ni-Fe-Alumina, Ni-Fe oxide, and NiMo/ β -Zeolite, CoMo/ β -Zeolite, NiMo/ Al_2O_3 - SiO_2 , CoMo/Aluminium phosphate crystalline) etc. has been synthesized. The prepared characterization has been done by using XRD, TGA, and BET etc. The detailed catalyst study data is listed in below mentioned Figure 1. The prepared catalysts have been screened for hydroprocessing reaction of Plastic crude in batch reactor (Parr Instrument US, Model Number 4575A) at various reaction condition (250- 450°C temp. and 50-150 bar). The steps of reaction involved are mentioned in figure 2.



TGA and XRD Plot of Fresh and Spent Catalysts



Reaction Diagram

Key Findings of the Study/Project

The Co-processing of Crude oil with plastic and biooils gives around 40 % of diesel range hydrocarbon with reduction of 30% some of the metals.

1.9.2 Crude Oil to Chemicals: Olefins Maximization Sponsor: CSIR

Objective of the Project

To study the feasibility crude oil processing in an integrated approach of slurry hydrocracking and FCC unit to maximize light olefins and aromatics

Work Done in the Project

The slurry phase hydrocracking (SHC) catalyst was synthesized via a hydrothermal method using ammonium heptamolybdate and thiourea in an aqueous medium. The mixture was treated in an autoclave at 170 °C for 24 h to obtain a black-colored MoS₂ catalyst, which was filtered and dried at 80 °C (denoted as CAT). The hydroprocessing reaction was conducted in a 1.8 L high-pressure batch reactor using 200 g crude oil and 1.5 g catalyst at 120 bar, 420 °C, for 4 h. The liquid fraction obtained from SHC was further processed in an Advanced Cracking Evaluation (ACE-R™) FCC unit. About 9 g of catalyst (a mixture of industrial E-Cat and ZSM-5) was used in the range of 550-650°C with a catalyst-to-oil ratio in the range of 8-12. The FCC results show that light olefin yield strongly depends on feed boiling range. The IBP–150 °C fraction gave the highest total light olefin yield (17 wt%), followed by 150–250 °C (15.8 wt%) and 250–350 °C (13 wt%).

Key Findings of the Study/Project

The FCC strategy (VGO + light naphtha) further enhances olefin production, achieving high C₃–C₄ yields (~38.9 wt %) with controlled coke formation (~5 wt%), demonstrating a promising pathway for crude-to-chemicals (C₂C) applications. This work has been done in very small scale level to establish proof of concept.

1.9.3 To Investigate the Techno-Commercial Feasibility of Co-Briquetting Biomass and Waste Materials: Sponsor: CSIR

Objective of the Project

To improve the energy content and emission characteristics of the briquettes of biomass-waste material for its industrial heating application.

Work Done in the Project

Technologies for the production of high grade solid fuel by the Co-briquetting of Biomass and petroleum coke with an objective to effective utilization of petcoke and biomass (pine needle, parali etc). The proposed investigation is based on the scientific approach and fact that the briquetting is the possible way to improve the combustibility of biomass with high calorific material (petcoke). Briquetting of biomass and Petcoke have been done in different ratios. The experiment is under investigation and detailed results are awaited.

Key Findings of the Study/Project

Pine needle get utilized along with pet coke to produce energy.

1.9.4 Thermo-Chemical Hydrogen Generation through Partially Open-Loop S-I Process Involving H₂S Incineration: Coupling of Individual Sections for Laboratory Integrated Operation; Sponsor: ONGC Energy Centre

Objective of the Project

Coupling of sub-sections of S-I cycle (H₂S Incineration, Bunsen reaction and HI Decomposition) using existing lab scale glass set-up for hydrogen production @ 1 LPH.

Key Findings of the Study/Project

Coupling of H₂ distillation with catalytic HI decomposition details are mentioned in Figure 3 & 4.



Figure .3 H₂S Incinerator Setup



Figure .4 Bunsen Reactor Setup Distillation

1.9.5 A Multipronged Approach towards CO₂ Separation to Cater the Indian Oil and Gas Sector (MMP 1.2/WP 2.4); Sponsor: CSIR-CCUS Mission

Objective of the Project

Development of ceramic based catalytic membrane reactor for water gas shift to produce hydrogen and capture of CO₂ from reaction medium by simultaneous reaction and separation to get clean hydrogen

Key Findings of the Study/Project

Colloidal silica/silicic acid-based MFI membranes exhibited stable and high selectivity. Seed-assisted ZIF-8 coating produced the most uniform membrane with highest selectivity. The details are mentioned in figure 5 and 6



Figure : Membrane Reactor Set-up

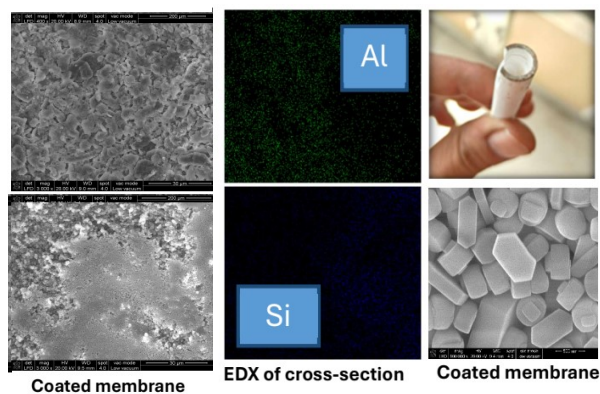


Figure . Surface Morphology of MFI membrane

1.9.6 Production of H₂ from H₂S via Thermochemical Sulfur Looping Process Sponsor: CSIR FIRST

Objective of the Project

Fundamentally explore the thermochemical conversion of H₂S into H₂ and elemental sulfur via a two-step reaction system, i.e., cyclic sulfidation and regeneration of sulfur carriers. To develop, evaluate and qualify sulfur carriers that can effectively decompose H₂S to generate high-purity H₂.

Key Findings of the Study/Project

Among several non-noble metal (Co, Mo and Ni) based catalysts, Ni-Mo/Al₂O₃ was identified as the most promising catalyst for sulfur-looping reaction and Experiments conducted at low H₂S concentrations and 550 °C. the details are mentioned in figure 7

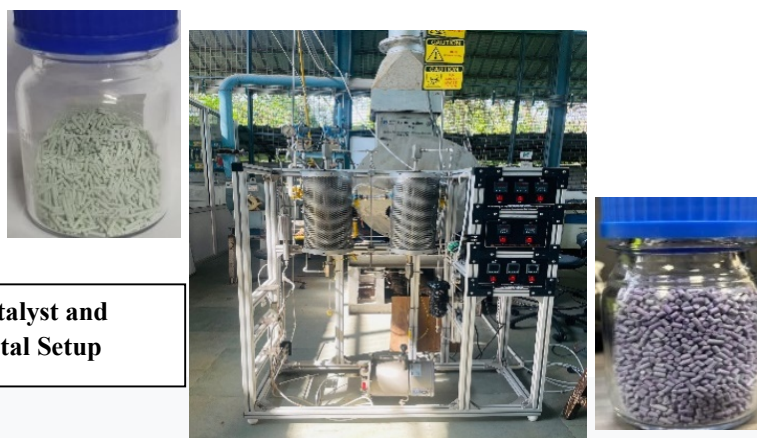


Figure . Catalyst and Experimental Setup

1.10 लाइट स्टॉक प्रोसेसिंग प्रभाग/ LIGHT STOCK PROCESSING DIVISION

Two major thermochemical routes are being actively developed and demonstrated worldwide: the Fischer–Tropsch (FT) route and the methanol-to-jet (MTJ) route. Both approaches involve the initial conversion of captured CO₂ into a synthesis intermediate—syngas or methanol—using renewable hydrogen, followed by upgrading into liquid hydrocarbons compatible with jet fuel specifications, however, the implementation of the CO₂ to jet via methanol route practically challenging due to adequate integration of intermediate processes like methanol to olefins and olefin oligomerisation. The methanol route converts CO₂ and hydrogen directly to methanol, which can be further upgraded through established methanol-to-olefins (MTO) technologies, followed by oligomerization, cracking, and hydro processing to yield jet-range hydrocarbons. This pathway offers greater modularity and process simplicity. However, challenges persist in catalyst development, selectivity control, and achieving aviation-grade fuel properties with high yield and efficiency. The overall integration of CO₂ capture, green hydrogen, methanol synthesis, and downstream conversion is currently at TRL 5–7.

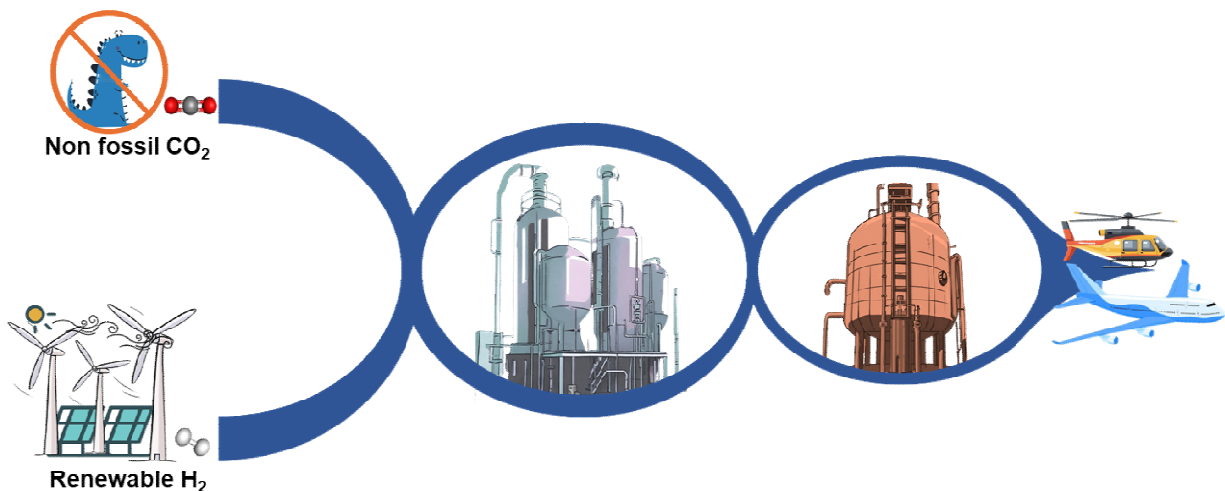
The FT route involves converting CO₂ and green hydrogen into syngas (CO+H₂) via the Reverse Water Gas Shift (RWGS) reaction or co-electrolysis, followed by FT synthesis to produce long-chain hydrocarbons. This process is well-established at commercial scale for coal- and gas-derived syngas nevertheless remains at TRL 6–7 when integrated with CO₂-based feedstocks. Challenges include the high energy demand for syngas production, complex reaction control under high

pressure and temperature, and a single reaction may not be able to generate fully formulated synthetic jet fuel in FT step and product refining systems.

Both routes face common barriers related to cost, scalability, and energy efficiency. The economic feasibility is strongly tied to the availability of low-cost renewable electricity, efficient CO₂ capture technologies, and hydrogen infrastructure. Additionally, the environmental advantage depends on ensuring net carbon reduction through life cycle emissions analysis, particularly for energy inputs and plant operations.

The major difference between the cost distribution of the FT and MeOH pathway lies in the electricity cost. The FT pathway requires significantly more electricity (mainly for RWGS heating) than is supplied by internal heat conversion. In contrast, the electricity demand and generation are almost equal within the MeOH pathway. The fixed capital investments, resulting from the major equipment estimate used, are 150M€ for the FT pathway and 240M€ for the MeOH pathway. The higher fixed capital investments required for the MeOH pathway result mainly from the larger synthesis loop and the higher-pressure level of the methanol synthesis.

Regarding policies in Indian context, India will be part of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), with the offsetting requirements expected to be applicable for India from 2027 onwards (Ministry of Civil Aviation, 2021). Government of India estimates a feedstock for a potential production of 19–24 million tons of SAF per year in the country. The estimated maximum requirement of SAF in India, by 2030, considering 50% blend, would be around 8 to 10 million tons per year. Aviation contributes approximately 2-3% of global carbon dioxide (CO₂) emissions. With India's rapid economic expansion and a growing middle-class population, air travel demand is surging. The Indian aviation sector is projected to become the third largest globally by 2030. Given the carbon-intensive nature of traditional jet fuel, the need for alternative fuels is urgent. SAF, derived from biomass, waste oils, agricultural residues, and synthetic processes, offers a promising solution.



1.10.1 उत्प्रेरक सुधार/ Catalytic Reforming

1.10.1.1 Catalytic Valorization of Bio-Ethanol through the Production of Future Fuel (On-going, GAP-0130, ANRF, GOI)

Objective of the Project

Development of a fixed bed catalytic process operating a metal functionalized acidic-basic catalyst for the efficient conversion of ethanol (>30%) with 80% selectivity to fuel grade C₄ alcohol.

Work Done in the Project

In the present study, various catalysts have been prepared and evaluated for the production of fuel grade C₄ alcohol from the bio-ethanol in a fixed bed reactor set up under optimized reaction conditions. So far, various metal functionalized acido-basic catalysts (Al₂O₃-MgO) have been prepared and physico-chemical properties were thoroughly characterized with different techniques. The influence of acidity and basicity and their synergism on the product yield was investigated. So far, the process achieved about 45% conversion of ethanol to 80% C₄ alcohol.

Key Findings of the Study/Project

- The acido-basic property and porosity of the catalyst was mainly influenced on product yield.
- The conversion of bio-ethanol into advanced bio-fuel not only increases the fuel efficiency of bio-ethanol but also improves the overall economy of the bio-ethanol production process as C₄ alcohol fuel features are similar to commercial gasoline.

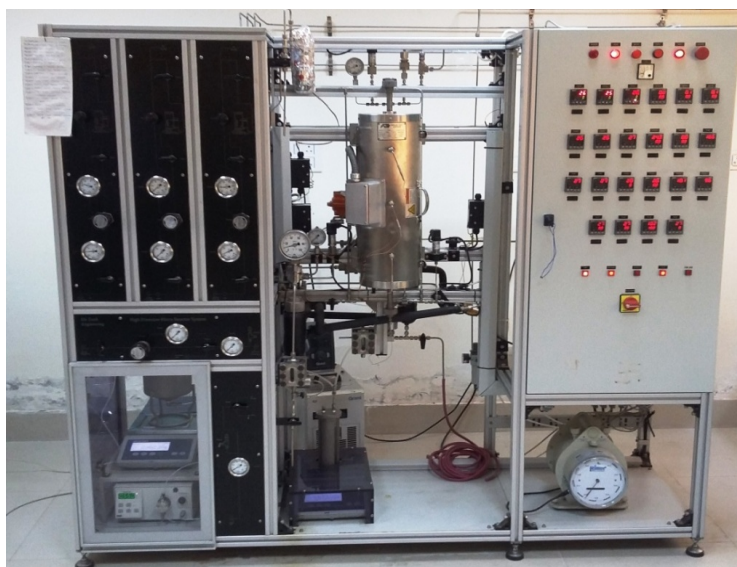


Figure. Reaction Set-up used for the Conversion of Bio-Ethanol to Future Fuel

1.10.1.2 Production of Xylene-Rich Alkylated Aromatics using CO₂ as an Alkylation Reagent (On-going, GAP -0127, SERB, GOI)

Objective of the Project

The main objective of the project is to develop single-pot catalytic process for the production of alkylated aromatics using CO₂ as an alkylating reagent.

Work Done in the Project

A novel and efficient catalytic process has been developed for the production of alkylated aromatic compounds using CO₂-derived species as active alkylating agents. Distinctively, the process utilizes a liquid organic hydrogen carrier (LOHC) to hydrogenate CO₂, thereby generating an in situ alkylating intermediate—representing a first-of-its-kind approach. Catalysts prepared in our laboratory have exhibited encouraging activity for the desired transformation; however, there remains considerable scope for further optimization to improve overall product yields.

Over the long term, this work establishes a robust platform for the design and development of related catalytic systems focused on the conversion of CO₂ into value-added chemicals, particularly in the context of aromatic alkylation. The study ultimately supports the advancement of indigenous technologies for CO₂ utilization and chemical production.

Key Findings of the Study/Project

- Developed a catalytic route for the conversion of CO₂ into value-added alkylated aromatic compounds
- Achieved approximately 35wt% yield of alkylated aromatics
- Demonstrated around 50wt% selectivity toward mixed xylenes within the aromatic product stream

1.10.2 गैस-टू-लिक्विड/ Gas-to-Liquid

1.10.2.1 Development of an Efficient Catalyst for the Hydrogenation of CO₂ to Synthetic Natural Gas (E-methane) (Completed, SSP-0138, GAIL).

Objective of the Project

Development of a lab-scale catalytic process for the hydrogenation of CO₂ to synthetic natural gas (e-methane) with CO₂ conversion >90 vol.%.

Work Done in the Project/ Key Findings of the Study/Project

A lab-scale catalytic process has been developed for the production of e-methane by CO₂ hydrogenation and the process has been tested for long-term stability up to 400 h TOS at the bench-scale level for the production of e-methane up to 2000L/Day. Also, the process has also be applied to various feedstock containing mixtures of CO₂ and (or) CO. Also, pursuing the scale-up of the catalyst and process an in-house project (OLP-1228). Further, a project has been approved for the extended bench-scale studies under CSIR FTT EED Theme in collaboration with GAIL (India) Ltd.

1.10.2.2 Bench-scale Studies for the Production of Light Olefins up to 10Kg/Day by Catalytic Steam Cracking of Naphtha (On-going, OLP-1229, CSIR-IIP).

Objective of the Project

Bench-scale validation of the catalytic steam naphtha cracking process for the production of total light olefins up to 10Kg/Day with feed conversion >90wt.%.

Work done in the Project/ Key Findings of the Study/Project

Modified the existing Bench-scale reactor set up and installed a liquid feed pump suitable for the naphtha cracking experiments. The catalyst preparation is in progress for the bench-scale catalyst testing.

1.10.3 नैनो कैटेलिसिस/ Nano Catalysis

1.10.3.1 Feasibility Studies on Sustainable Aviation Fuel Production from CO₂ (On-going, SSP-0192, CSIR and Oil India Limited, Duliajan, Assam)

Objective of the Project

- Project kick off meeting, Recruitment of temporary manpower Initiation of procurement of consumables
- Initiation of high-level collection of reports available in the literature on the subject CO₂ to SAF processes
- A high-level collection of reports available in the literature on the subjects of CO₂ to SAF processes, Grouping and classification of the reports, identification of characteristics of the process
- Analysis of the detailed process, Methodology, Instrumentation, and analysis
- Preparation and submission of the reports

Work Done in the Project

The report comprises the background and rationale of sustainable aviation fuel. It also includes different approaches towards developing synthetic aviation fuel, technology pathways and technological challenges. The report provides different flowsheets on synthesizing e-Fuels or synthetic aviation fuel (SPK) for CO₂ and hydrogen. There are two thermochemical routes, either (i) via the Fisher-Tropsch synthesis route or (ii) via the Methanol synthesis route, to obtain synthetic aviation fuel (SPK). The report also discussed the processes in detail, methodologies, equipment, and comparative flow charts. The report briefly explains the CAPEX, OPEX and GHG emissions from comparative available literature. It also covers the available technology licensors' list for related processes. The report discusses international approaches to sustainable aviation, as well as their status, policies, and commercial aspects.

Key Findings of the Study/Project

Two major thermochemical routes are being actively developed and demonstrated worldwide: the Fischer–Tropsch (FT) route and the methanol-to-jet (MTJ) route. Both approaches involve the initial conversion of captured CO₂ into a synthesis intermediate—syngas or methanol—using renewable hydrogen, followed by upgrading into liquid hydrocarbons compatible with jet fuel specifications, however, the implementation of the CO₂ to jet via methanol route practically challenging due to adequate integration of intermediate processes like methanol to olefins and olefin oligomerisation.

Both routes face common barriers related to cost, scalability, and energy efficiency. The economic feasibility is strongly tied to the availability of low-cost renewable electricity, efficient CO₂ capture technologies, and hydrogen infrastructure. Additionally, the environmental advantage depends on ensuring net carbon reduction through life cycle emissions analysis, particularly for energy inputs and plant operations.

1.10.3.2 Development of Catalyst for the Oxidative Coupling of Methane to C₂ (Ethane+Ethylene) Hydrocarbons (On-going, FTT-030509, CSIR)

Objective of the Project

- Scale-up study of the prepared CaO/La₂Ce₂O₇ catalyst up to 150gm
- Activity of the catalyst for the selective transformation of methane to C₂ (Ethane+Ethylene) hydrocarbons
- C₂ production rate of 100 Lit/day where methane conversion is ~35% and C₂ selectivity is ~75%
- Data generation for developing the technology information package (TIP) for designing a pilot plant
- Economic feasibility study

Work Done in the Project

- Catalyst scale up done upto 150gm scale
- Catalyst testing completed upto 20gm scale
- Production of 20ltr/day of C₂ hydrocarbon from methane is completed
- Extrudate form of silica (10%) and alumina (10%) given the methane conversion of 27% and 25% respectively. The selectivity of 72% and 67% was observed for silica (extrudate form) and alumina (extrudate form) respectively

Key Findings of the Study/Project

- Higher level of catalyst scale up is achieved
- 20ltr/day C₂ hydrocarbon production from methane

1.10.3.3 CSIR-Hydrogen Technology Phase - II: Developing and Establishing Hydrogen as Next Gen Fuel. (On-going, MMP-065202, CSIR)

Objective of the Project

Development of a prototype SCR system with indigenous catalyst and its demonstration in a HICE converted from a CNG-ICE (~6 kW) at laboratory scale with a minimum NO_x conversion efficiency of 90% and a maximum Ammonia slip of 10ppm (as defined in BS6).

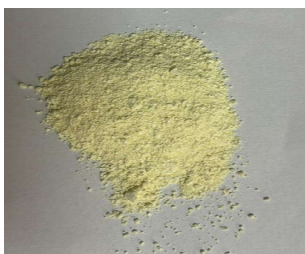
Work Done in the Project

- Catalyst CeO₂ support synthesized upto 100gm scale
- Two Ni/Co based catalyst has been synthesized in 50gm scale and some preliminary characterization is completed
- Coating of catalyst with monolith has been established using colloidal silica support (10% →30%)

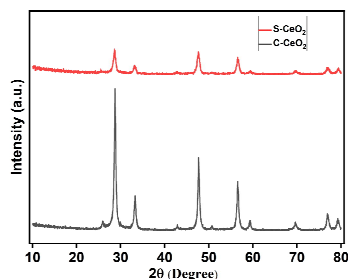
Key Findings of the Study/Project

- Catalyst synthesis completed
- CeO₂ support synthesis completed
- Thermal stability verified until 600°C

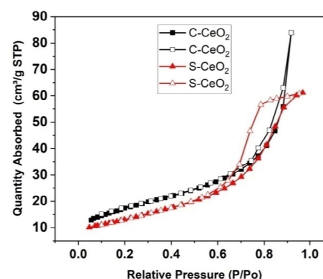
1.10.3.4 Synthesis of Porous CeO₂ Support and its Characterization



Synthesized CeO₂ support



XRD Pattern



Sorption Profiles

C: Commercial

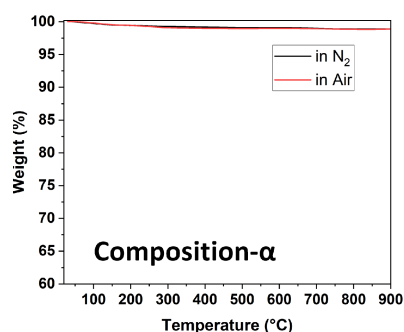
S: Synthesized

Both commercial and synthesized CeO₂ supports have the same phase as confirmed by XRD. From sorption data, it showed that the commercial CeO₂ support is non-porous, whereas the synthesized CeO₂ is in porous form

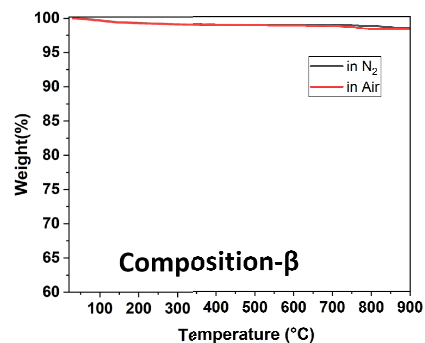
1.10.3.5 Synthesis of the Catalyst- Ni/Co-CeO₂ based Catalyst



Synthesized Co-Ni/CeO₂ support



TGA data of Ni/Co-CeO₂-based catalyst (α)



TGA data of Ni/Co-CeO₂-based catalyst (β)

TGA data of both α and β forms indicate that the catalysts are stable in both air and inert atmosphere up to 900°C

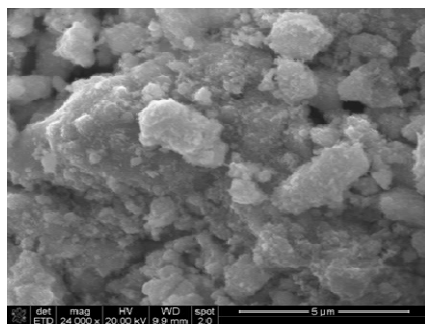
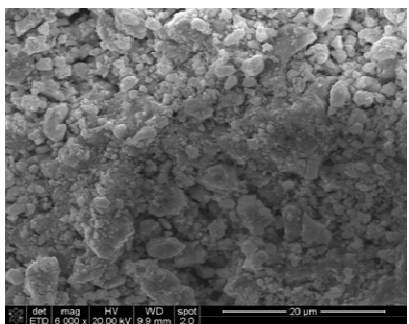
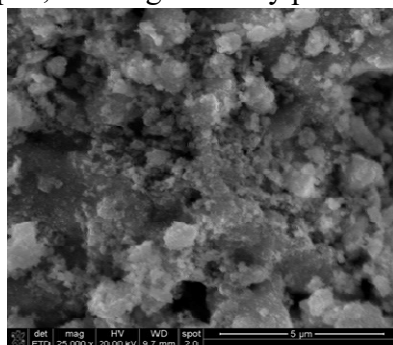
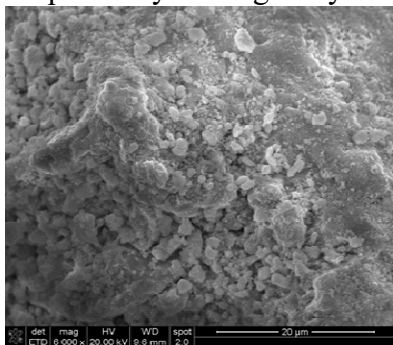
Shape: irregular with quasi-spherical

Morphology: fine granular particles forming dense agglomerates.

The surface is relatively compact with limited void spaces, indicating lower porosity

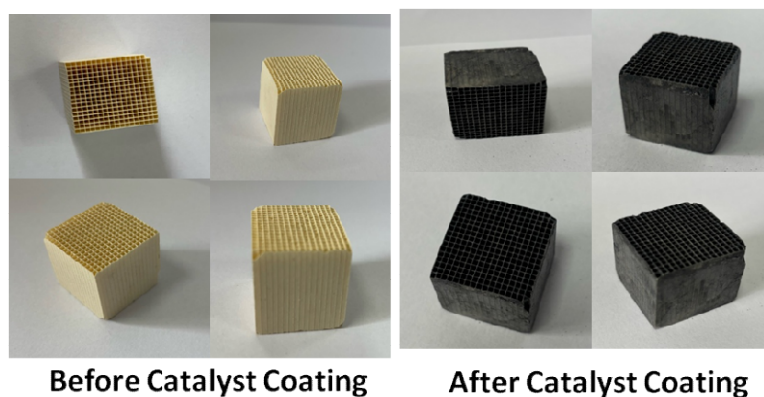
Morphology: larger agglomerated particles with rough and heterogeneous texture.

Shape: Flaky to irregularly shaped, forming a loosely packed structure



SEM images of Ni/Co-CeO₂-based catalyst

>50% of change in weight has been observed which indicates the proper coating of the catalyst without any blockage inside as well as outside the Monolith



1.11 जैव ईंधन प्रभाग/ BIO FUELS DIVISION

1.11.1 Scale-up and Field Trail for Spectral Converting Diverging Optics Integrated Solar Sharing Agrivoltaics Technology Sponsor/In-house/Collaborative: CSIR, Collaborative Project (CSIR-NIIST, CSIR SERC)

Objectives

- Design and analysis of the 3-D framework for Agrivoltaics (AV) using CFD and Ray tracing;
- Industrial-scale manufacturing of 1x2 m² Spectral Converting Diverging (SCD) optics
- kW-scale deployment and global benchmarking of SS-AV system with Cat. II AV and open field cultivation as controls for power generation and crop productivity metrics at
 - CSIR-IIP: 5 kW SS-AV Agrivoltaics (720 sqft.) pilot for Brassica carinata at location identified by CSIR IIP with a 4kWp Cat. II AV and open field cultivation as control.
- SS-AV technical report, techno-economics, and agrivoltaics project planning software required for MW-scale SS-AV deployment.

Work Done in the Project

The SS-AV plant was commissioned and installed at IMT Kashipur, covering 720 sqft. of land and capable of 4-5 kw energy generation as shown in Figure 1. 3 different crops were selected for the cropping under the SS-AV plant with the help of Punjab Agricultural University. For the May – July 2025 period, the Moong crop was selected as the seasonal crop, and Brassica carinata and Brassica juncea were selected for the October 2025 -March 2026 period.

Key Findings of the Study/Project

- Even light dispersion was observed under the integrated SS-AV for cropping activity.
- Field preparation and sowing of Moong (May – Aug 2025) and two mustard variety seeds (B. Carinata & B. Juncea) (Oct 25 – March 26) completed under the solar sharing Agrovoltaics
- Moong crop under the Agrovoltaics site showed better yield (approx.25%).
- Carinata crop (two varieties) cutting completed, and oil extraction and its analysis, conversion to FAME is in progress.
- Observed better flowering 10-12 days earlier than normal conditions in a non-edible oilseed rotational crop under the tuned solar radiation.

- Observed better yield of B. Carinata & B. Juncea 15% more under SS-AV conditions.

The studies confirmed that SS-AV technology enables dual land use for energy generation and agriculture.



Fig. Set up and Installation of SCD-AV Technology at SCG-IMT Kashipur, Uttarakhand

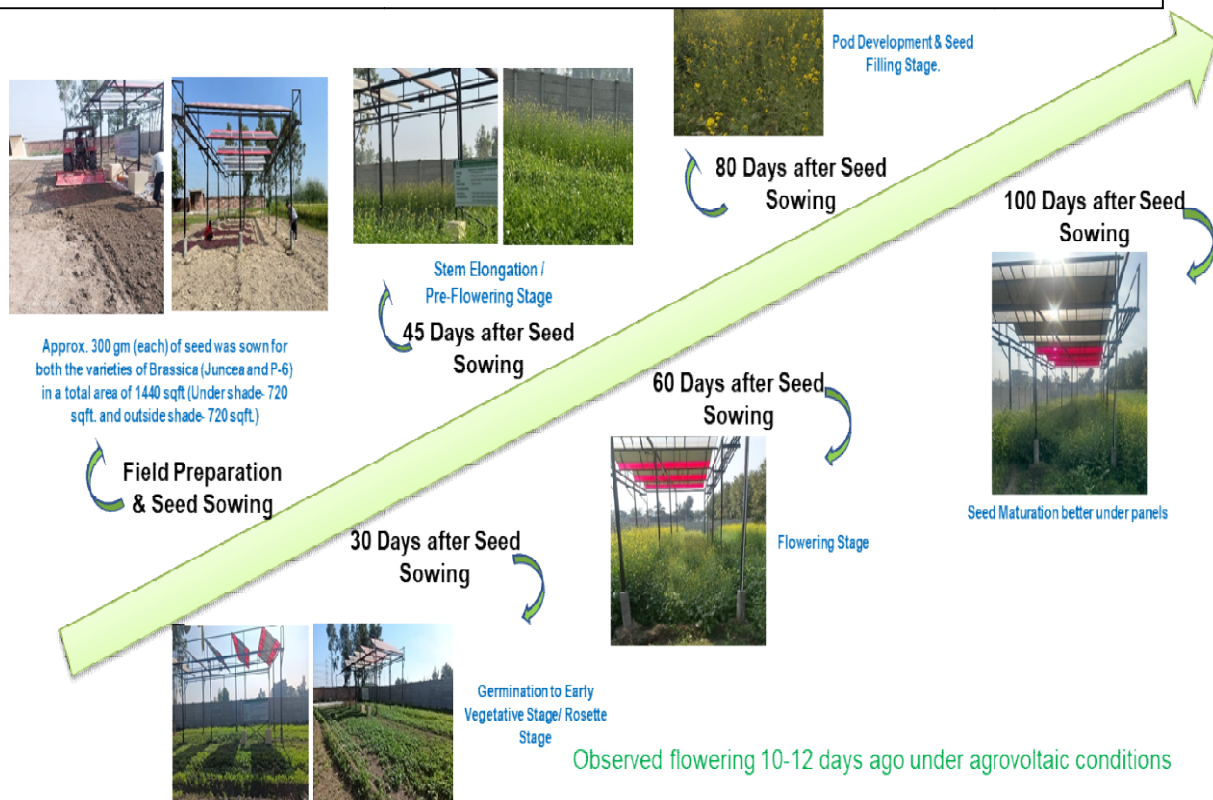


Fig . Open Field Cultivation of Carinata Cropping under SS-AV.

1.11.2 SAF Plant Facility Operation to Produce Sustainable Aviation Fuel (SAF) and Green Diesel (GD) (In-house project)

Objectives

- To operate the SAF Pilot Plant facility to assist commercialization activities
- To produce SAF and green diesel for ASTM approval, Indian Air Force (IAF) requirement
- To carry out experiments to maximize SAF yield.

Work Done in the Project

Pilot-plant experiments were carried out using maximize SAF yield and reduce the hydrogen consumption. The team performed material balance over a 12-hour balance period, collected and weighed liquid and water streams, analyzed off-gases by refinery gas analysis, and compiled reactor heart-temperature profiles across multiple thermocouple locations. The data generated was used to upscale the reactor.

- Feed blend tested: Used Cooking Oil and Palm Wastes.
- Hydrogen consumption calculated after material balance across the reactor.
- Temperature was monitored at five axial locations in the catalyst bed to assess exotherm control.

Key Findings of the Study/Project

- After the optimization, SAF yield increased from 22% to 55% on vegetable-oil basis.
- Hydrogen consumption and loss in the exit stream was about 3-5 wt% of total feed basis.

This work resulted in significant improvement in SAF yield and reactor operability.

1.11.3 Three Stage Hydroprocessing of Diesel Oil (Sponsored-BPCL)

Objectives

- Hydroprocessing of 2000 L of Diesel oil.

Work Done in the Project

The project involved conditioning of the plant using BPCL-supplied Feedf followed by loading, sulfiding, and activation of three successive catalyst, after which hydroprocessing experiments were carried out in three stages under defined operating windows of temperature, pressure, LHSV, and hydrogen-to-hydrocarbon ratio. Product samples were collected throughout the runs for density, sulfur, aromatic content, and D86 analysis, while the plant was operated round-the-clock

Key Findings of the Study/Project

The project was successfully completed with evaluation of 3 catalysts and hydroprocessing of feed supplied by BPCL as per predefined experimental condition

- The product was analyzed for detailed quality evaluation eg. density, sulfur, aromatics, and D86 testing.
- The study was designed as a continuous 24x7 pilot-plant program, indicating a refinery-relevant processing approach.

1.12 व्यवसाय विकास /BUSINESS DEVELOPMENT

1.12.1 Initiatives for Better Positioning of the Institute

To enhance the positioning and reputation of our institute, a multi-faceted approach was adopted focusing on academic interaction, industry engagement, and digital approach.

Key initiatives included understanding the present and future industry requirements, implementing outcome-based approach, and obtaining accreditations to enhance credibility of the institute.

Jigyasa's program 2.0 was conducted in the institute with the objective to promote science for the common people especially the students.

International Conference, "**Shaping the Energy Future: Challenges and Opportunities-SEFCO-2025**" on **April 23-25, 2025**. The theme of SEFCO-2025 emphasizes '**Catalyzing Sustainable Future with Affordable Energy and Chemicals**'. This Conference helped research scholars to gain knowledge from experienced speakers, interaction with scientific, academic and industry experts.

Besides this our various scientist, technical officers, PAs from the institute represented CSIR-IIP in different seminars, conference and workshop organized. These initiatives helped in better positioning and recognition of the institute.

Some of the major Seminar, Conference, Workshop attended by CSIR-IIP is:

Sl. No.	Seminar / Conference/Workshop/Exhibition program
1	22 nd Workshop on Greenhouse Gas Inventories in Asia (WGIA-22) at Phnom Penh, Cambodia during 15-18 July, 2025
2	"Bharat Development & Scheme" exhibition at Haridwar, Uttarakhand during 22-24 August, 2025
3	IGSTC-SHINE Workshop (held under Bilateral Program) Helmholtz-Zentrum Hereon, at Hamburg Germany during 21-27 September 2025

4	Global Conference for Decarbonisation of Energy and Materials (GCDEM) 2025 at Singapore during 16-19 October, 2025
5	"International Exhibition on Chemicals, Petrochemicals and Plant Machinery" (CPX) at Gandhi Nagar, Gujarat during 12-14 November, 2025

1.12.2 Mega Business Proposals

Mega Business Proposals for R&D involve large-scale research initiatives in areas like sustainable energy, advanced materials, or biotechnology CSIR-IIP has submitted business proposals to different sponsors, funding agency addressing their problems, offering solutions, along with a detailed project management plan, including timelines, resource allocation, and monitoring systems to ensure effective project execution.

Some of the major proposals undertaken by the institute during the FY 2025-26 are:

Sl. No.	Title of the Project	Sponsor
1	Estimation of Green House Gas (GHG) emissions in Active Pharmaceutical Ingredient (API) production using Life Cycle Assessment Study	TCG Life Sciences Pvt. Ltd, Kolkata
2	Performance evaluation of the three pour point depressants test on crude oil	Schlumberger Solutions Pvt Ltd, Mumbai
4	Scale-up Studies for the Oxidative Coupling of Methane to Ethylene (Phase-II)	GAIL India Ltd., Noida
5	Lightweight Novel Multi component High Entropy alloy for Hydrogen Storage application	CHT, Noida & GAIL India Ltd, Noida
6	Emission free ethylene glycol and ethanol production through an electro chemical carbon utilization technology	ANRF, New Delhi
7	To Study the Deposits & Distress characteristics of the Components of Two-wheeler engines	FEV India Pvt. Ltd., Pune
8	Analysis and Interpretation of Bio-Diesel Sample	Bhrigumuni Bio Energy Pvt. Ltd., Ballia
9	Gas hydrate-based CO ₂ capture and storage along with blue H ₂ production from PSA tail gas of Stream Methane Reforming plant in Petroleum refineries	DST (MoST), New Delhi
10	Analysis of net Calorific Value/Gross Calorific Value (NCV/GCV) and carbon content of fuels (gasoline, diesel, LDO, PLG, CNG, ethanol, and bio-diesel)	Ministry of Environment, Forest & Climate Change (MoEFCC), New Delhi
11	Analysis and Interpretation of Bio-Diesel Sample as per IS 15607:2022	NRFC Petro Pvt. Ltd., Jodhpur

12	Determination of Dimethyl Disulfide (DMDS), Ethyl Methyl disulfide and Di ethyl disulfide in Di Sulfide oil (DSO) Sample	Reliance Industries Ltd., Jamnagar
13	Investigation of Root Cause for Carbon Deposition on Intake and Exhaust Valves of Aircraft Engine	Aircraft Accident Investigation Bureau, New Delhi
14	Evaluation of Fuel Oil Additive for Thermal Performance	HPCL, Mumbai
15	Compatibility Study of Engine Oil and Lubrication Grease	Arabian Petroleum Ltd, Ambarnath
16	Three Stage Hydroprocessing of Diesel Oil	BPCL, Greater Noida (U.P)
17	Assessment of Scuffing load capacity of "TORQ APPLIX GEAR LUBE 1250" using FZG Gear Test Rig	Tribo Industries, Medak
18	Life Cycle analysis of corn Ethanol-to-jet Fuel in India : Environmental and Sustainability Analysis	U.S Grains & Bio-Products Council, New Delhi
19	Feasibility Studies of Developing a Desulfurization Process For the Petroleum Feedstock	ARC India Petroleum Pvt. Ltd., Visakhapatnam
20	Detailed assay analysis of four (4) composite samples of Assam crude oil	Oil India Ltd, Duliajan Assam

1.12.3 Indigenous Technology Commercialization

The following technologies were licensed during the FY: 2025-26

S.No	Title of Technology	Date of License Grant	Name of the Company
1	Improved Jaggery Making Plant	17.04.2025	Shivach Organic Product, Meerut
2	Improved Jaggery Making Plant	06.11.2025	Biomimicry Technologies Pvt Ltd. Delhi
3	Advanced air circulation system for brick kilns	04.12.2025	Malik Brick Field, Meerut
4	A process of producing bio-bitumen from pyrolysis of lignocellulosic biomass (Jointly developed with CSIR-CRRI)	7.01.2026	14 Companies have taken the license
5	Novel Fuel Efficient Domestic Cooking Burner for PNG	23.02.2026	Elgi Ultra Pvt Ltd., Coimbatore

6	A process of producing bio-bitumen from pyrolysis of lignocellulosic biomass (Jointly developed with CSIR-CRRI)	30.03.2026	09 Companies have taken the license
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1.12.4 Clients Added to the Organizations

- Asansol Steel Castings Pvt Ltd., Howrah
- Arabian Petroleum Ltd, Ambernath (Thane)
- Airports Authority of India, Jammu
- ARC India Petroleum Pvt Ltd., Visakhapatnam
- Alchemie Finechem Pvt. Ltd., Bharuch
- Anaj Mandi, Patiala
- Alleima India Pvt Ltd, Pune
- Asian Paints Ltd. R&D Centre, Navi Mumbai
- Biomimicry Technologies Pvt Ltd. Delhi
- Bitumenking India Private Limited, Patiala
- Bhriumuni Bio Energy Pvt. Ltd., Balia
- Balaji Amines Ltd., Madhapur, Hyderabad
- Bliss Anand Pvt. Ltd. Gurugram
- British Petroleum, Bengaluru
- Blueearth Climate, Pune
- Bitchem Asphalt Technologies Limited, Guwahati
- Bitumix India LLP, Guwahati
- Bitubin India Private Limited, Ghaziabad
- Castrol Technology Deployment, Mumbai
- Catalyst Petrochem LLP, Delhi
- Commissioner of Customs, Nava Shena
- Deepak Nitrite, Dahej
- Elgi Ultra Pvt Ltd. Coimbatore
- Engrow Carbon Energy Private Limited, Erode
- Future Universal Petrochem Private Limited, Jagadhri
- Gulf Oil Lubricants India Limited, Chennai
- Garhwal Scrap Private Limited, Roorkee
- Guren Synergy Private Limited, Purasawalkam
- GK 91 Bioeconomy Pvt Ltd, Akola
- H.P Agro Industries Corporation Ltd, Shimla
- Himadri Speciality Chemical Ltd., Kolkata
- Honeywell Technology Solutions Lab Pvt. Ltd. (Honeywell), Bengaluru
- Indian Institute of Science, Begaluru
- Intertek India Private Limited, Mumbai
- ICAR-Directorate of Cashew Research, Putur
- Indian Oil Total Pvt. Ltd., Mumbai
- Jasmino Corporation Ltd., Navi Mumbai
- Jalnidhi Bitumen Specialities Private Limited Rohtak,
- Jainsons India, Agra
- Kasturi Group, Boloor, Mangalore
- Khargaun Police, Khargaun

- Kotak Nova Green Energy LLP, Jamnagar
- Malik Brick Field, Meerut
- Mitcon Consultancy & Engineering Services Limited, Pune
- Mandeep Industries Lucknow
- Mantaka Technologies Private Limited, Bengaluru
- Madhusudan Organics Private Limited, Kolkata
- NextGen Sustainable Solutions LLP, Bhondsi
- NRFC Petro Pvt. Ltd., Jodhpur
- National Institute of Technology, Meghalaya
- Neuberg Diagnostics Labs Pvt Ltd, Ahemdabad
- Negam Care Private Limited, Namsai
- Neptune Petrochemicals Limited, Ahmedabad
- Nexxus Petro Industries Limited, Ahmedabad
- Orense Industries Pvt Ltd, Behrampur
- Ooms Polymer Modified Bitumen Private Limited, Gurgaon
- Patanjali Research Foundation, Haridwar
- Pineview Technology Private Limited, Sonipat
- PENSOL Industries Ltd.; Mumbai
- Pippalad Industries LLP, Sambalpur
- Rex Fuels Management Private Limited, Mumbai
- RK Truevalue LLP, Mumbai
- SFG Industries Pvt Ltd, Hoogly
- Sahasra EnviroPvt Ltd, Hyderabad
- Straw Biofuels, Ludhiana
- Sardar Swaran Singh National Institute of Bio Energy, Kapurthala
- Society of Digital Entrepreneurs, Delhi
- Srikari Bio fuels Private Limited, Eluru
- Schlumberger Solutions Pvt Ltd, Mumbai
- Sega Tech Solutions Pvt. Ltd., Roorkee
- Shree Kedar Enterprises Sangli Maharashtra
- Stanlubes and Specialities India Pvt. Ltd., Mumbai
- TCG Lifesciences, Kolkata
- Tridiagonal Solutions Pvt. Ltd., Khandala
- Tribo Industries, Medak
- Terra Climate Tech Private Limited. Terra
- Torchatar Membranes and Bitumen Products Private Limited, New Delhi
- Uttarakhand Pollution Control Board, Dehradun
- UFlex Limited, Noida
- Unique India Bio Fuel (UIBF), Kochi
- US Grains & Bioproducts Council, New Delhi
- UKPCB, Roorkee
- VIP Oil Products Limited, Bahadurgarh
- VR Petrochem India LLP, Ahmedabad
- Yaai Green Energy Pvt. Ltd , New Delhi
- ZF Friedrichshafen AG, Stemwede, Germany

1.12.5 Institute's Positioning in the Strategic Sector

An institute's positioning in the strategic sector involves creating a unique, sustainable value proposition offering a high-impact services in areas like **defence, aerospace, nanotechnology, sustainable development, and advanced research.**

At CSIR-IIP we are catering the needs of Strategic sector by working on strategic projects of national importance for example investigating the root cause for Carbon Deposition on Intake and Exhaust Valves of Aircraft Engine. We have worked for Sustainable aviation lubricants and MOS₂ solid lubricants which have application for the defence sector. Further, we are also working towards the problems faced by the Indian Navy.

1.13 वैश्लेषिक विज्ञान प्रभाग/ANALYTICAL SCIENCES DIVISION

1.13.1 Short Evaluation Studies on Crude Oil Sample from Bhaskar Field in Cambay Basin, Khambhat, Gujarat Sponsored by Sun Petrochemicals Pvt. Ltd. (SunPetro), Mumbai

Objective of the Project

Short assay of the crude oil.

Work Done in the Project

Physico-chemical characterization of crude as such was completed; TBP (25 °C narrow cut) distillation was done; The crude oil is distilled at atmospheric pressure and separated into various fractions (broad cuts) as desired in Crude oil distillation unit; The reduced crude oil is further fractionated under vacuum to produce gas oil fraction. Characteristics of the distillate fraction was completed; Project report was compiled and submitted

Key Findings of the Study/Project

The crude oil is found to have high API gravity with low sulphur content. Due to trace amount of water the crude oil does not need dehydration. The crude oil has a moderate wax content of and low pour point. The total distillate yield up to 350 °C was found to be moderate (about 55%) and an amount of about 40 %wt. remains un-distilled. A moderate yield of this naphtha and a moderate yield of the middle distillate fraction are available from the crude oil. The physico-chemical characteristics indicate moderate aniline point which is indicative of its relative moderate aromaticity. However, Cetane index is meeting the specification value (46 minimum) stipulated in the BIS specification (IS 1460:2005) of Bharat Stage VI for High Speed Diesel fuel.

1.13.2 Spectroscopic Input/Data as and when required by user in following Projects

SSP-0195, SSP0250, SSP0218, SSP0209, SSP0193, SSP0208, GAP0164, GAP0172, GAP1385, GAP0164, GAP0173, GAP0066, GAP0130, GAP0127, IHP 240014, IHP240001, IHP240006, ISP240015, IHP240008, IHP240006, IHP0007, FBR030302, FBR030509, FTT060510, MLP1172, HCP0048, HCP101, HCP0036, HCP0054, HCP007, OLP1125, OLP1233, OLP1222, OLP1139, OLP1136, OLP1230, OLP1224, OLP1139, OLP1224, OLP1230, OLP1204, OLP1219, OLP1136, OLP1176.

Objective of the Project

Spectroscopic analytical support when needed by Project leaders.

R&D Work Carried Out

- Spectroscopic techniques are unique analytical tools used to identify and quantify analyte of interest in terms of chemical components, intermediates, products. By measuring the unique spectral signatures, the investigators confirm the precise identification of analyte of their interest, structural elucidation and process monitoring across different states of their process and product.
- Skill India Programme on “Spectral Analytical Techniques-IR” organized by training Division & Skill India programme on “Spectral Analytical Techniques-NMR” were organized from 3rd to 8th Nov 2025 and 8th to 10th Nov 2025 under training division.
- MSc. Dissertation on “Computational Prediction of Solubility of Mangiferin in various Solvents” by Ms Anshika Sharma from Guru Ram Rai university Dehradun
- MSc. Dissertation on “Microwave Extraction of Xanthoglucosides from Mango Leaves” by Ms Anshika Kharkwal from Guru Ram Rai University Dehradun

1.13.3 Biodiesel Adulteration Studies

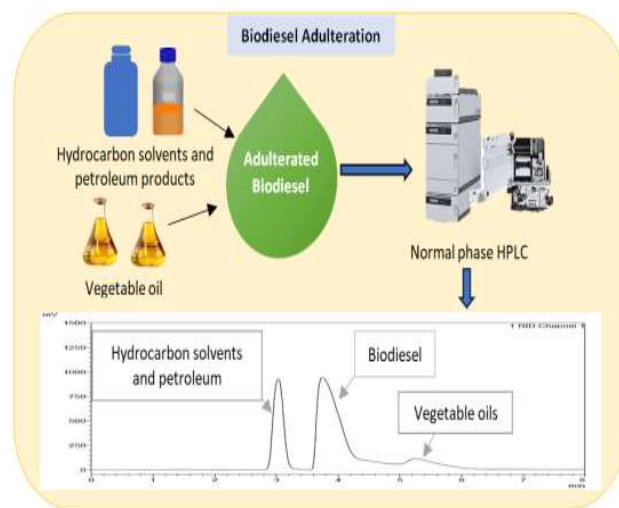
Introduction

Biodiesel contaminant and adulterants were identified and quantified to address the real-world problem of biodiesel quality control as per IS 15607

About the S&T Achievement:

Triglycerides (from vegetable oil/used cooking oil) are impurities of biodiesel and originate from the starting material. Other substances, such as low-cost hydrocarbons and petroleum products, are readily miscible with biodiesel and may be used as its adulterants. This work is about the development of an HPLC method to determine these biodiesel contaminants by separating them under optimal chromatographic conditions. Method's attributes included a good linear response range of 0.1-20% (volume) for all contaminants, high analysis speed (8 min), no sample pretreatment, high precision, and superior limits of detection & quantification. An internal validation was performed using contaminated biodiesel samples, and the method's applicability was demonstrated for all biodiesels produced from Jatropha, Karanja, Sapium, Used cooking oils, Soybean, Rice bran, Olive, Mustard, Coconut, and Palm kernel. The most significant and exclusive advantage of this method is that it identifies all fatty acid methyl esters (FAMES) as a single biodiesel signal, covering a broad carbon range from coconut oil-based caproic (C6:0) to mustard oil-based erucic (C22:1) acids. Completed in the HPLC lab.

Outcome: One paper communicated in J. Chromatogr. A.



1.13.4 Gasoline Adulteration Studies

Introduction

Development of GC-based adulteration monitoring method for motor gasoline

About the S&T Achievement:

Adherence to the regulatory specifications of automotive fuels is often challenging in many cases of their real-world adulteration. A feasible scenario of such adulteration is the unauthorized blending of solvents in gasoline with similar or higher boiling ranges. The adulterants can be low-priced industrial solvents or kerosene available at cheaper prices. This work presents multiple scenarios of gasoline adulteration and various analytical techniques used to measure adulterants like n-pentane, n-hexane, naphtha, benzene, toluene, ethanol, and kerosene. The outcomes are of much significance to developing countries, and they may be referred for gasoline adulteration monitoring off-site. They may be also considered beneficial from economic and environmental pollution mitigation viewpoints.

Outcome: 01 publication (<https://doi.org/10.1080/10916466.2024.2446627>)

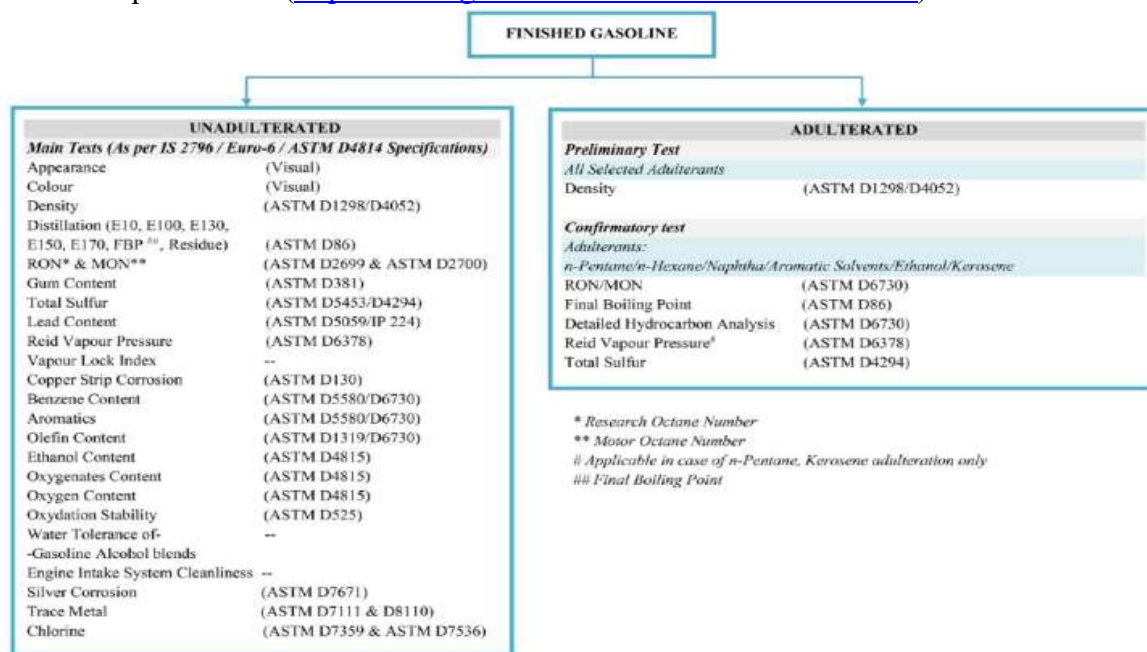


Figure 1. An overview of test methods for regulatory compliance and adulteration monitoring of finished gasoline.

1.13.5 Naphthenic Acid Biodegradation

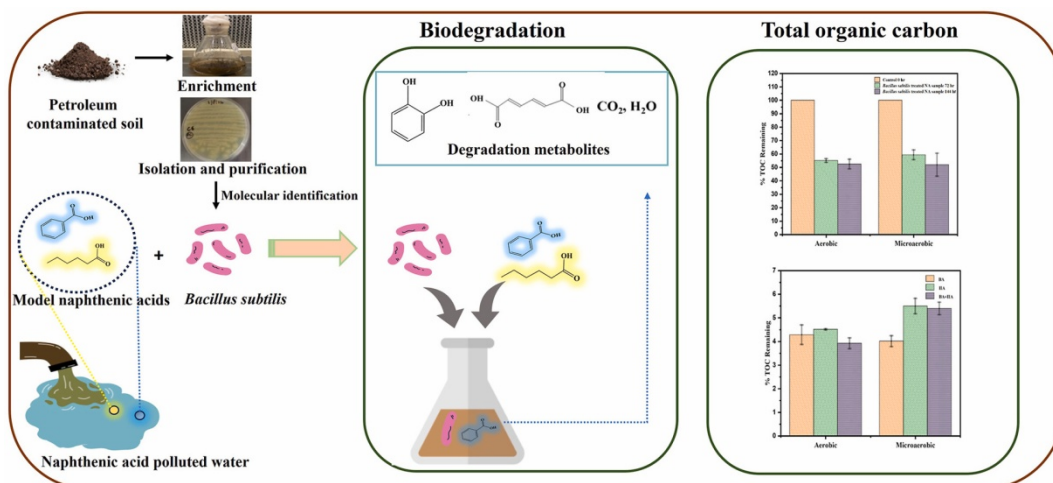
Introduction

Optimization of biodegradation of petrogenic pollutant - naphthenic acid using bacteria bacillus subtilis

About the S&T Achievement

Carried out in MRED and ASD. Naphthenic acids are toxic and persistent carboxylic acids found in petroleum contaminated water. They pose a significant environmental challenge, but bioremediation offers a promising and cost-effective solution for their treatment. The present study illustrates the ability of *Bacillus subtilis* to degrade commercial naphthenic acid (100 mg/ L) in aerobic and microaerobic settings under optimized conditions (temperature 36 °C, pH 6.0, and salinity 0.5 %). The degradation was confirmed by 47.61 ± 3.609 % reduction in total organic carbon levels within 144 h, indicating the microbial potential to mineralize organic naphthenic acid in aqueous medium as a sole carbon source.

Outcome: 01 publication (<https://doi.org/10.1016/j.envpol.2025.126383>)



Achievement

An Indigenous Standard Test Method Was Developed and published by Bureau of Indian standards (BIS), New Delhi.

Developed A Standard Test Method for Determination of Fatty Acid Methyl Esters in Biodiesel Blended Automotive Diesel Paraffinic Diesel fuels by High Performance Liquid Chromatography –Refractive Index Detection.

Standard Test Method Number : IS 1448 (Part 202) : 2025

About the Contribution: The work is based on our group's publication (<https://doi.org/10.1016/j.chroma.2020.461512>) authored by Bhanu Prasad Vempatapu, Jagdish Kumar, Pankaj K.Kanaujia

GOI Gazette notification: No. 514, Date 14-07-2025

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भारत का राजपत्र

The Gazette of India

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अतिरिक्त
नई दिल्ली, 14 जुलाई, 2025.

संस्था: HQ-PUB013/1/2020-PUB-015 (1289) - भारतीय मानक क्यूरी विभाग, 2018 के विभाग 15 के उपविभाग (1) के अनुसार में भारतीय मानक क्यूरी एनडोरा अधिभूत करता है की विन भारतीय मानकों के विवरण इसमें संग्रह अनुसूची के द्वितीय स्तंभ में विनये गये हैं. तिसरे स्तंभ में दिये गये स्थिति को स्पष्टित हो गये हैं। चौथे स्तंभ में विनये गये मानकों के विवरण, यदि कोई हो तो वे भी मान-मान्य प्राप्त रहें। अब तब वे चौथे स्तंभ में दिये गये स्थिति को ध्यान दिए जायें हैं।

क्र.सं.	स्थापित भारतीय मानकों की संख्या, वर्ष तथा शीर्षक	अतिरिक्त स्थिति	भारतीय मानको, यदि मानक विन करने हैं, हो सकता, नई मानक शीर्षक	मानक होने की तिथि
(1)	(2)	(3)	(4)	(5)
1	नई एन 446 : 2025 नई एन 2398 : 2018 मशीन मानक हनु एक एक मशीन-प्रकार - विनिर्देश	10 जनवरी 2025	नई एन 446 : 2017 नई एन 2398 : 2006 मशीन मानक हनु एक एक मशीन-प्रकार - विनिर्देश	10 जनवरी 2025

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CHAPTER 2



प्रकाशित शोध / Published Research

2.1.1 जर्नलों में प्रकाशित शोध-पत्र / Papers Published in Journals

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<https://doi.org/10.1002/cnma.202500562> (IF-2.6)
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129. Kundu, Debajyoti, Arun Barathi, Kumari Pooja, Madhava Surya, Samuel Jacob, Apurba Koley, Palas Samanta et al. "Green hydrogen pathways for a net-zero future: technologies, circular economy integration, life-cycle performance and safety dimensions." *RSC advances* 16, no. 15 (2026): 13471-13514. <https://doi.org/10.1039/d5ra09599a> (IF-4.6)
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a novel approach to agricultural waste management and resource recovery." Journal of Material Cycles and Waste Management, 28 (2026): 1389-1400.
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2.1.2 पुस्तकों /विवरणिकाओं में प्रकाशित अध्याय /लेख /Chapters / Articles Published in Books / Proceedings

1. Fundamental of green hydrogen production; Green H2 transition: A comprehensive guide to policies, supply chain and market dynamics; Springer Nature; Nisha, Raman Singh, Rajkumar Singh and Kudeep Singh.
2. Post-processing of High Entropy Alloy based coatings; High-Entropy alloy coatings fundamentals and applications; CRC Press; Pankaj Rawat, Sunil K Pathak, and Shailesh Kumar Singh.
3. Determination of Transport Fuel Adulteration; Encyclopedia of Analytical Chemistry; John Wiley and Sons; Pankaj Kanujia and Bhani Prasad Vempatapu.
4. Catalytic Conversion of biomass and wastes to aromatic feedstocks; Sustainable Production of Platform and Drop-in Chemicals from Biomass and Wastes: Opportunities and Challenges; CRC, Taylor and Francis Group, Florida, USA; Poorna Tyagi, Anubhi Semwal and Bipul Sarkar.
5. Catalytic Upgrading of Lignin to Aromatics and Phenolics; Sustainable Production of Platform and Drop-in Chemicals from Biomass and Wastes; Opportunities and Challenges by the CRC Press, Taylor & Francis Group, USA, Tushar Agarwal, Sudhakara Reddy Yenumala, Neeraj Atray and Anil Sinha.

2.2 शोध पत्रों की प्रस्तुतिया / Presented Research papers

2.2.1 सम्मेलनों /संगोष्ठियों आदि में प्रस्तुत शोध पत्र /Papers Presented in Conference / Seminars

World Catalysis & Chemical Engineering Network Congress. 23- 25th April 2025, Las Vegas, US.

- The role of hydrodynamic regimes in G-L reaction kinetics studies in an agitated and stirred tank contactor operation: An experimental validation by adopting a case study approach. Sudip Ganguly.

SEFCO-2025, 23 to 26th April 2025. CSIR-IIP Dehradun

- Improved cost correlations for compressors to increase capital cost estimation accuracy of compression intensive processes. Somya Singh Pundir and Sunil Kumar.

- The constitutive analysis of PLA-modified bitumen to enhance bituminous properties of the base bitumen. Mansi Awasthi, Vedant Joshi, Amritansh Godiyal, T. Senthil Kumar, Kamal Kumar and Aruna Kukrety.
- Comparative life cycle assessment of UCO conversion to biodiesel using conventional and room temperature processes. Mansi Mani Singh, Keshav Dabral, Tuhin Surve Khan and Sunil Pathak.
- Aligning India's Climate Goals: insights from global emission trends and mitigation Strategies. Vasu Chaudhary, Tuhin Suvra Khan, and Sunil Kumar Pathak.
- Benzene rich aromatics from used cooking oil over supported zeolite. Poorna Tyagi and Bipul Sarkar.
- Alternate production of alpha olefins from thermocatalytic pyrolysis of waste plastic. Anjali Dimri, Anshuman Kunwar and Bipul Sarkar.
- Rice husk derived Ni-doped carbon as electrocatalyst for hydrogen evolution reaction. Arvind and Bipul Sarkar.
- Catalytic oxidation diesel soot and CO over Zr doped CeO₂-Al₂O₃. Rakesh Upadhyaya, MK Shukla, Bhavya B Krishna, Thallada Bhaskar, Samarjeet Gautam and Hrideshwar Kumar Yadav.
- Performance comparison of biochar and bi-metallic ZIF-loaded MMM's for CO₂ separation. Amit Jha, Narender Singh, Omvesh, Bhupendra Bairwa, Suman Dalakoti and R. Surya Murali.
- Facile synthesis of mixed matrix membranes embedded with MOF-Incorporated mesoporous silica composite fillers for gas separation, Suman Dalakoti, Amit Jha, Narendra Singh, Aarti Arya, R. Surya Murali, and Soumen Dasgupta.
- Recovery of H₂ from industrial gases using polyetherimide based membrane-An overview. Bhupendra Bairwa, Narendra singh, Amit Jha, R. Surya Murali.
- Experimental investigation of Zr/CeO₂-Al₂O₃ catalyst towards reduction of CO emission in Diesel Engine. MK Shukla, Punit, T Bhaskar and Wittison Kamei.
- Metal exchange zeolite for coal bed methane upgradation. Anjali Sharma and Aarti Arya.
- Environmental impact assessment of a single-step hydro-processed drop-in sustainable aviation fuel produced from used cooking oil. Keshav Prasad Dabral, Mansi Mani Singh, Tuhin Suvra Khan, Saleem A. Farooqui, Anil K. Sinha and Sunil Kumar Pathak.
- Computational fluid dynamic study for prediction of film thickness in vertical falling films: effect of kapitza number and inlet velocity. Avinash S. Mhetre, Sunil Kumar, Amit Kumar Dhiman.

- Bioprospecting of novel thermophilic amylase-producing microorganism. Pratima Ashok Patel, Diptarka Dasgupta and Anjan Ray.
- Catalytic process for the production of alkylated aromatics using carbon dioxide, Gaurav Gaur, Megha Rawat, A. Selvamani, N. Vishwanadham and Anup Tathod.
- Valorization of waste crude bio-glycerol through sustainable hydrocarbon fuel production, Kamal Singh Koranga, Mahesh Kumar, Anup P. Tathod, N. Vishwanadham and A. Selvamani.
- Catalytic synthesis of sulfur-based polymer via inverse vulcanization method. Sadhna Semalty, Vibha Kumar and Umesh Kumar.
- Eco-friendly sanitary napkins from invasive biomass. Kirtika Kohli and Babita Behera.
- Tailored Ni-based catalyst for CO₂ mitigation. Satyajit Panda, Varun Raturi and Ankur Bordoloi.
- Oxidative desulfurization of fuels using deep eutectic solvents, Karan, Nisha and Rajkumar Singh.
- Effect of various Co-complexing agents on the double metal cyanide catalyst for the synthesis of polyether carbonate polyol, Neeraj Kala, Oluwatunininu Abosede Mutiu, Vedant Joshi and Umesh Kumar.
- Application of response surface methodology in the development of eco-friendly biolubricants from Brassica carinata oil and its characterization, Ekta Naik, Anil Kumar Sinha, Neeraj Atray.
- Optimization at the pilot scale of enhanced biodiesel production from high FFA podocarpus falcatusoil through simultaneous transesterification and esterification with zirconia-supported ZSM-5, Serges Bruno Lemoupi Ngomade, Cyrille Ghislain Fotsop, George Ndifor-Angwafor Nche, Solomon Gabche Anagho and Neeraj Atray.
- Performance evaluation of utilization of waste tyre crumb rubber (CR) to improve rheological properties of modified bitumen, 'Awantika, Amritansh Godiyal, Juhi Priydarshi, Shalini Singh, Deepti Gulati, Dwarika Prasad Maithani, Kamal Kumar, Manoj Srivastava.
- Optimizing gas chromatography parameters for thermally unstable dicyclopentadiene mixtures analysis, Azeem Khan, Mahak Dhiman and Anil Kumar Sinha.
- Unravelling the temperature-driven phase transformation of NixPy and their impact on hydrogenation catalysis, Ayushi Tyagi, Mahak Dhiman and Anil Kumar Sinha.
- Integrated microbe-based biorefinery for dual valorization of biomass and UCO into xylitol and lipase, Preetanshika Tracy, Snehal More and Diptarka Dasgupta.

- Used cooking oil for bio-surfactant production and its application in enhanced gas Recovery from natural gas hydrate reserves, Kalpana Tyagi, Shweta Negi, Avinash V. Palodkar, Sunil Kumar Suman, Asheesh Kumar.
- Chemical Recycling of waste plastic to jet fuel range hydrocarbon, Archana Saklani, Pratibha Negi, Prashant Bhardwaj, Pankaj Kumar Dubey, Avinash V. Palodkar, Ajay Kumar, Sanat Kumar.
- Comprehensive analysis and control of product distribution obtained from PP pyrolysis using reflux batch reactor, Prashant Bhardwaj, Pankaj Kumar Dubey, Archana Saklani, Pratibha Negi, Avinash V. Palodkar, Sanat Kumar, Ajay Kumar.
- Transition metal functionalized activated carbon materials derived from waste plastics and evaluating its potential application in electrocatalysis, Pankaj Kumar Dubey, Pratibha Negi, Archana Saklani, Prashant Bhardwaj, Bipul Sarkar, Avinash V. Palodkar, Ajay Kumar, Sanat Kumar.
- A comprehensive study on hydroprocessing of bio-oil and Py-oil, Gaurav Dwivedi, Monojit Nandi, Ankit Pandey, Samir Kr. Maity, Mukesh Kr. Poddar.
- Advancements in biodegradable lubricants: sustainable solutions for aerospace and precision applications, Ponnekanti Nagendramma, Atul Pratap Singh and Prashant Kumar.
- Nitrogen-rich mesoporous carbon from SiO₂-templated polyaniline: A high performance anode material for sodium-ion batteries, Kirti Chhabra, Gazal Gupta, Deepak Kumar, Om P. Khatri.
- Study on acrylate based novel co-polymeric additives as pour point depressants in UCO-Biodiesel, Juhi Priyadarshi, Mahendra Singh Negi, Shoiab Akhtar, Sundaram Sharma, Vishwas Saini, Rajkumar Singh and Neeraj Atray.
- Polyaniline-enwrapped benzotriazole-enriched poly(urea-formaldehyde) microcapsules-based self-healing coating for corrosion mitigation, Ravi Saini, Ramesh N. Goswami, and Om P. Khatri. SEFCO-2025, 23 to 26th April 2025. CSIR-IIP Dehradun
- Selective hydrogenation of nitroarenes to arylamines using methanol as a hydrogen donor, Vaishnavi Sharma, Manvender Yadav, Achala Rana, Raju Kumar, Ganesh Naik.
- In-situ catalytic pyrolysis of metha, palmarosa, lemongrass and tagetes minuta: Role of Y-zeolite, mordenite and ZSM-5 on bio-oil composition. Saurabh Thapa, Tarun Kumar Valiveti, Bhavya B Krishna and Thallada Bhaskar.
- Multilayer Plastic (MLP) waste: A comprehensive review of recycling challenges and sustainable solutions, Nishtha Gupta, Swati Tripathi, Prasenjit Ghosh, and Kirtika Kohli,
- Integrated photocatalytic CO₂ reduction to methane coupled with oxidation of alcohols over Cu-NH₂-BDC MOF under visible light irradiation. Shashank Nautiyal and Suman Lata Jain.

- Fabrication of ZIF/rGO membrane on tubular ceramic support for catalytic membrane applications, Mohit Sharma, Pradeep Kumar, Mahesh Kumar Gagrai, R. Surya Murali, Ankur Bordoloi and Subham Paul.

100 Years Fischer-Tropsch Process. 5-7th May 2025, Mülheim an der Ruhr Germany

- Boosting the ethanol selectivity for CO₂ hydrogenation via Fe-Mo-Co Synergy. Ankur Bordoloi.

KSAE/SAE-2025. Power Train Energy and Lubricants Conference and Exhibition, 22 to 25th June 2025, Busan South Korea,

- Effect of charge mixing time on combustion and emission characteristics of diesel HCCI-DI combustion engine. Pranab Das, Srivinas Padala, Wittison Kamei, PMV Subbarao, JP Subrahmanyam.

10th Asian Pacific Congress on Catalysis (APCAT-10), 4th to 7th August 2025, Suntech Convention Centre, Singapore

- Effective catalyst selection for hydrogenation of carbon dioxide into short chain olefin, Ankur Bordoloi (Invited Speaker)

Global Conference for Decarbonization of Energy and Materials (GCDEM-2025), 15th August 2025, Singapore

- Dual-purpose additives for the prevention of corrosion and gas hydrate deposition: Application in deep sea energy production, Asheesh Kumar (**Invited Talk**)

11th International Conference on Biotechnology and Bioengineering, 21st to 23rd August 2025, Paris, France

- Sustainable production of sugar fatty acid esters through an integrated enzymatic bioprocess, Preetanshika Tracy, Diptarka Dasgupta and Snehal More.

National Conference on Surfactants, Emulsions & Biocolloids (NATCOSEB-XXII, 27th to 29th August 2025, Srinagar

- 2D Transition Metal Dichalcogenides: Role of Interfacial Heterogeneity for Enhancement of Lubrication Properties, Dr OP Khatri (**Invited Talk**)

16th European Congress on Catalysis (EUROPACAT-2025). 31st August to 5th September 2025, Trondheim Norway

- Low carbon benzene rich aromatics from used cooking oil over supported zeolite. Poorna Tyagi and Bipul Sarkar.

International Conference on Sustainable Technologies for Energy, Environment and Health, 17th to 19th September 2025, Vellore Institute of Technology, Vellore

- Improved Catalytic Process for Upgrading Bio-Ethanol to Butanol: A Drop-in Gasoline Substitute, Selvamani Arumugam, Anup Prakash Tathod, Kamal Singh Koranga and Gaurav Gaur

IOGCA-2025, 18-19 Sept. 2025; Hotel Radisson Blu, Dwarka, New Delhi

- Gas hydrate and corrosion mitigation management for deepwater gas fields, Sadhbhawana Dubey, Varsha Choudhary, Prakashaiah BG, Sanat Kumar and Asheesh Kumar.
- Gas hydrate studies on polysaccharide water-based drilling fluid, Aniket Singh, Anirudh Bardhan, Amit Saxena, Shivanjali Sharma, Sanat Kumar and Asheesh Kumar. IOGCA-2025, 18-19 Sept. 2025; Hotel Radisson Blu, Dwarka, New Delhi.

Two-day National Science Conference, Platinum Jubilee Celebration 18th and 19th September 2025, NIO, Goa

- **CO अवशोषण 2** हेतु विलायकों की जांच का व्यावहारिक अध्ययन, Pradeep Kumar, Ankush Bindwal and Subham Paul.
- एलहिस्टिडाइन मिथाइल एस्टर का एसाइल क्लोराइड के साथ एमिडेशन- द्वारा बहुक्रियाशील योजक का विकास, Piyush Gupta and Rajkumar Singh
- सीएसआईआरका विकास **10** आईआईपी में बायोजेट और जेपी-, Rohit Kumar, Saleem Farooqui, Rakesh Kumar and Anil Sinha

IGSTC Bilateral Workshop, 22-25 September 2025, Hamburg University Germany, (Invited Talk)

- Development of mixed matrix membrane with MOF and its potential application for gas separation, Racha Surya Murali. Sustainable Handling of Innovative Membrane Technologies for Environmental Protection

5th International Conference on Recent Advances in Bioenergy Research, Sardar Swaran Singh Institute of Bioenergy, 6th to 9th October 2025, Kapurthlala,

- Valorization of Castor deoiled cake via pyrolysis, Deepali Singh, Tarun Kumar Valiveti, Thallada Bhaskar.

CORCON-2025 Jaipur, India, 6th and 7th October 2025, Jaipur

- Biomass-derived nitrogen-rich graphite carbon nanocomposite-based epoxy coatings to mitigate corrosion of mild steel, Ravi Saini, Ramesh N Goswami, Sweta Mehta, Dr OP Khatri.

International Symposium on Designer Polymers and Materials (DPM-2025), 23-25th October 2025, IISER-Pune

- Synthesis and application of amphiphilic polyester surfactants for improved flow and corrosion resistance in crude oil transport, Mansi Awasthi, Aruna Kukrety, T. Senthil Kumar and Umesh Kumar.
- Visible light induced photo ATRP of acrylate and higher alpha olefins, Mansi Awasthi, Aruna Kukrety, T. Senthil Kumar.
- Pinecone-derived biocarbon-poly(lactic acid) composites for sustainable 3D printing, Nishtha Arora, Sachin Dua and T. Senthil Kumar.
- Synergistic enhancement of epoxy coating corrosion resistance using functionalized biochar and thiosemicarbazone in 3.5% NaCl, Sachin Dua, Nishtha Arora and T. Senthil Kumar.
- Synthesis of elemental sulfur based polymer catalysed by zinc acetate, Sadhna Semalty, Vibha Kumar and Umesh Kumar.

28th Energy Technology Meet, 28th to 30th October 2025, Hyderabad

- Engineering high-performance mixed matrix membranes for CO₂ capture: The synergistic role of porous fillers, R Surya Murali, Amit Jha and Suman Dalakoti. Green Energy Horizons: Advancing Sustainable Refining and Petrochemicals
- Conversion of Low Polymer Wax (LPW) into Specialty Waxes and Lubricating Oil Base Stocks (LOBs) for Multipurpose Grease Formulations: Process Development and Techno-Economic Feasibility, Manisha Sahai, Ajay Kumar, G.D.Thakre, Sanat Kumar. Green Energy Horizons: Advancing Sustainable Refining and Petrochemicals

India Analytical Congress 2025, MDU, Rohtak, 20-22nd November 2025, Rohtak

- Study of Glycerol Monostearate as an emulsifier for phase stability in Diesel-Ethanol blend, Shoaib Malik and Rajkumar Singh.

International conference on Nanomaterials & Green Technology for Viksit Bharat Mission 2047, Uttaranchal University's School of Applied and Life Sciences (SALS), 28 and 29th November 2025, Dehradun

- Upgrading bioethanol to high-energy-density sustainable fuel over a novel bimetallic nanocomposite catalyst, Kamal Singh Koranga, Gaurav Gaur, Anup Prakash Tathod, Selvamani Arumugam.
- Sustainable process for the conversion of CO₂ into alkyl aromatics, Gaurav Gaur, Kamal Singh Koranga, A. Selvamani and Anup Tathod.

International Conference on Advances in Biotechnology, Bioprocessing and Structural Biology (ICASBSB-2025), 11th to 14th December 2025, IIT Roorkee

- One-pot synthesis of vanillin from guaiacol using zeolites: Conversion of bio-oil into value-added chemicals, Valiveti Tarun Kumar, Bhavya B. Krishna, Thallada Bhaskar.

International Conference on AI and Materials for Sustainability. Water-Energy-Climate, 15th to 17th December 2025, IIT Delhi- Abu Dhabi

- Ni-Ru Catalysts for Biogas Reforming: Mitigating Carbon and Sulfur Induced Deactivation via MoO₃ Promotion, Satyajit Panda and Ankur Bordoloi.

International Conference on Sustainable Energy and Environmental Challenges, 15-18 December 2025, IIT Jodhpur

- Biomass-derived fluorescent carbon material for Palladium sensing, Meenakshi Rawat, Amritesh Kumar, Thallada Bhaskar.

2nd International Conference on Advanced Materials. Energy & Environmental Sustainability, 18th and 19th December 2025, UPES, Dehradun

- A new approach for carbon dioxide sequestration and utilization for methane recovery from natural hydrate-bearing sediments, Shweta Negi, Atul Pratap Singh, Sunil Kumar Suman, Avinash V. Palodkar and Asheesh Kumar.
- Chemical modification of used cooking oil and brassica carinata oil for the synthesis of biolubricants via epoxidation reaction: A sustainable pathway for bio-based alternative, Ekta Naik, Anil Kumar Sinha and Neeraj Atray.

CHEMCON-2025, 27th to 30th December 2025, Annamalai University, Chennai,

- Enhancing Candle Durability through rheological and compositional analysis of paraffin waxes, Manisha Sahai, Sandeep Saran, Manoj Thapliyal, Manoj Srivastava, Sanat Kumar.
- Biomass-derived activated carbon for the CO₂ separation from Industrial Gas Streams, Rekha Chauhan and Aarti.
- Alleviation of acidity in high TAN crude oil using nanocomposite additive, Rashmi and Jagdish Kumar.
- Process for separating aromatics from light cycle oil (LCO), a low-value petroleum feedstock, Pooja Yadav, Kirtika Kohli, Vikram Singh, Prasenjit Ghosh.

- Recent advances in membrane materials for hydrogen separation from industrial gaseous streams, Bhupendra Bairwa, R. Surya Murali.
- Synthesis and characterization of efficient and robust ZIF-8 Tubular ceramic membrane for H₂ separation, Mohit Sharma, Dr. Mahesh Kumar Gagarai, Dr. Subham Paul & R. Surya Murali.
- Development of zeolite derived carbon for CH₄/N₂ gas separation, Anjali Sharma, Sapna, Umesh and Aarti.
- Exploring molybdenum dichalcogenide-based materials as efficient electrocatalyst (s) for hydrogen evolution reaction, Arvind, Mahak Dhiman and Bipul Sarkar.
- Alternate production of alpha olefins from thermocatalytic pyrolysis of waste plastic, Anjali Dimri, and Bipul Sarkar.
- Aromatics production from tree borne oil over zeolite via chemical vapor deposition approach, Poorna Tyagi, Bhoomika Diwaker and Bipul Sarkar.

5th International Conference on Separation Technology, 27-28th December 2025, Malaysia

- Process for separation of petrochemicals (BTX) from Naptha feedstock, Vikram Singh, Kirtika Kohli, Prasenjit Ghosh, Pooja Yadav and Manoj Srivastava.

तकनीकी हिंदी संगोष्ठी, 5th-6th Jan 2026, IIT Indore

- सतत जैव-जेट ईंधन का विकास :प्रयोगशाला से उद्योग तक, Rohit Kumar, Saleem Farooqui, Rakesh Kumar and Anil Sinha.
- ब्रिकेटिंग :मिश्रित अपशिष्ट से ऊर्जा रूपांतरण, SN Yadav, SK Maity, Pankaj Arya, Sneha Bahugunga and Mangesh Bhatt.
- जैव-अणुओं पर आधारित आयनिक पदार्थ स्नेहक योजक के रूप में, Pravin Khatri, Shashwat Gupta and Suman Lata Jain

Asian Conference on Electrochemical Power Sources, 11th-14th January 2026, ISc, Bengaluru

- SiO₂- templated polyaniline-derived nitrogen-rich hollow carbon nanospheres as a high-performance anode for sodium-ion batteries, Kirti Chhabra, Gazal Gupta, Dcepak Kumar, Om P. Khatri.

Symposium on International automotive technology (SIAT 2026), 28th-30th January, 2026, PIECC, Pune

- Investigation of hydrogen storage in Ag-Pd alloy in fuel cells: A molecular dynamics simulation approach, Mouparna Manna, Tuhin Suvra Khan and Sunil Pathak.
- Strengthening India's climate commitments: A MITICA -based approach to emissions projections, Vasu Chaudhary, Tuhin Surve Khan and Sunil K. Pathak.
- Modelling and simulation of a solid-state hydrogen storage canister for mobility applications, Sanjeev Kumar, Bashista Kumar Mahanta, Sunil Kumar Pathak, Shailesh Kumar Singh.

- Heat treatment of light weight Al-Co-Cr-Fe-Ni high entropy alloy, Saurabh Vashistha, Pankaj Rawat, Sunil Kumar Pathak, Shailesh Singh.

India Energy Week 2026, Goa, 27-30 Jan. 2026

- Flow assurance problems and their mitigation strategies for subsea oil & gas pipelines, Asheesh Kumar and Sanat Kumar.

International Conference on Science and Technology, Integration for Circular Economy, 29th-30th January, 2026, BITS Hyderabad Campus

- Utilization of UCO into bio-based value-added products, Aman Kumar Bhonsle, Anil Kumar Sinha and Neeraj Atray.

Applied Membrane Technology and Translational Research, AMTTR-2 2026, 12-14 February 2026, IIT Bombay

- Next generation membrane materials for hydrogen recovery from industrial gaseous streams: a review, Bhupendra Bairwa and R Surya Murali.

5th National Environmental Conference (NEC) Interdisciplinary Approaches to Pollution Mitigation : Research, Policies & Practices in Environmental Sustainability, Research Park, 13 and 14th March 2026, IIT Bombay

- Dual-function microbial biocatalysis: phenol-grown microbial biomass as a resource for detoxification and C12O-based muconic acid biosynthesis, Pooja Chouhan, Pankaj Kanaujia and Sunil Kumar Suman.

Electron Microscopy in Biological and Material Sciences, 2026, March 31, 2026, AIIMS New Delhi

- Nano-structured catalyst system for CO₂ hydrogenation to formic acid, Invited Talk by Dr Ankur Bordoloi.

2.3 मुद्रांकित एकस्व / PATENT SEALED

2.3.1 विदेशों में मुद्रांकित एकस्व / Patents Sealed Abroad

1. Catalytic process for the production of aromatic hydrocarbons from used cooking oil, Bipul Sarkar, Om Vir Singh, Ankit Agrawal, Anjan Ray, Sanat Kumar, Bhanu Prasad Vempatapu, Jagdish Kumar US Patent No:12,264,117, granted on 1st April 2025.
2. Fluid catalytic cracking of p-cresol dimer into phenolic monomers and process thereof, Desavath V Naik, Samir Kumar Maity, Bharat Singh Rana, Pankaj Kumar Kanaujia, Ashish Rana, Deependra Tripathi, US Patent No. 12275695, granted on 15th April 2025.

3. An improved process for photocatalytic hydrocarboxylation of methanol with CO₂ to produce acetic acid, Suman Lata Jain, Sandhya Saini, Praveen Khatri, Indrajit Ghosh and Anjan Ray, JP Patent No: 7669361, granted on 18th April 2025.
4. An improved process for photocatalytic hydrocarboxylation of methanol with CO₂ to produce acetic acid, Suman Lata Jain, Sandhya Saini, Praveen Kumar Khatri, Indrajit Kumar Ghosh, Anjan Ray, US Patent No: 12503420 granted on 23rd December 2025.
5. Process for the detoxification of lignocellulosic hydrolysate and its use in synthesizing xylitol, Dasgupta, Diptarka, Asmita Ashutosh Prabhune, Snehal Vijay More, Debashish Ghosh, Bhaskar Thallada, Anjan Ray, and Arushdeep Sidana, US Patent No. 12,516,356, granted on 6th January 2026.
6. Poly(thiophene-co-benzothiophene-co-dibenzothiophene) copolymers and process for preparation thereof Anjan Ray, Thangaraj Senthilkumar, Vedant Joshi, Amod Kumar, Umesh Kumar, Sudip Kumar Ganguly, US Patent No. 12534566, granted on 27th January 2026.

2.3.2 भारत में मुद्रांकित एकस्व /Patents Sealed in India

1. A Process for crude petroleum oil processing in the crude distillation unit, Sunil Kumar, Avinash Mhetre, Ojasvi Sharma, Manoj Srivastava, Anjan Ray, Indian Patent No. 575944 granted on 16th December, 2025

2.4 आवेदित एकस्व /PATENTS FILED

2.4.1 विदेशों में आवेदित एकस्व /Patents Filed Abroad

1. Gelling agents-based formulations and methods for managing the hydrate deposition in oil and gas pipelines, Asheesh Kumar, Sadhbhawana Dubey, Sanat Kumar, PCT Filing PCT/IN2025/050914, dated 20th June 2025
2. High entropy based Cr-Cu-Mn-Ni alloy system and process for preparation thereof, Shailesh Kumar Singh, Bashista Kumar Mahanta, Sanjeev Kumar, Pankaj Rawat, Harender Singh Bisht, Sunil Kumar Pathak, US Patent Application No. 19/422857, dated 17th December 2025
3. Synthesis of polyether polyols based low dosage gas hydrate inhibitors using double metal cyanide catalyst, Umesh Kumar, Asheesh Kumar, Akash Verma, Sadhbhawana Dubey, Sanat Kumar, Sudip Kumar Ganguly, SA, Application No. SA 1120259592, dated 18th December, 2025
4. Synthesis of polyether polyols based low dosage gas hydrate inhibitors using double metal cyanide catalyst, Umesh Kumar, Asheesh Kumar, Akash Verma, Sadhbhawana Dubey, Sanat Kumar, Sudip Kumar Ganguly, MX Application Number MX/a/2025/015791 dated 19th December 2025
5. Synthesis of polyether polyols based low dosage gas hydrate inhibitors using double metal cyanide catalyst, Umesh Kumar, Asheesh Kumar, Akash Verma, Sadhbhawana Dubey, Sanat Kumar, Sudip Kumar Ganguly, CA, Application Number 3296660, dated 22nd December 2025

6. Synthesis of polyether polyols based low dosage gas hydrate inhibitors using double metal cyanide catalyst, Umesh Kumar, Asheesh Kumar, Akash Verma, Sadhbhawana Dubey, Sanat Kumar, Sudip Kumar Ganguly, US, mApplication No. 19/497055, dated 24th December 2025
7. Synthesis of polyether polyols based low dosage gas hydrate inhibitors using double metal cyanide catalyst, Umesh Kumar, Asheesh Kumar, Akash Verma, Sadhbhawana Dubey, Sanat Kumar, Sudip Kumar Ganguly, BR, Application No. BR 11 2025 029336 2 dated 29th December, 2025

2.4.2 भारत में आवेदित एकस्व /Patents Filed in India

1. An improved process for producing diphenyl carbonate from phenol and carbon dioxide (**Joint Patent of CSIR-IIP and BPCL**), Suman Lata Jain, Supriyo Majumdar, Amod Kumar, Praveen K Khatri, Prachi Chauhan, Sudip Ganguly, Thota Chiranjeevi, Application Number 0274NF2024/202511041516 dated 29th April 2025.
2. ZrO₂ supported bimetallic catalyst for selective conversion of carbon dioxide (CO₂) into formic acid, Ankur Bordoloi, Jyotishman Kaishyop, Satyajit Panda, Md Jahiruddin Gazi, Vivek Kumar Shrivastaw, Mohd Belal Haider, Rajaram Bal, Prem Lama, Avnish Tiwari, Application No. 0117NF2025 / 202511050301, dated 23rd May 2025.
3. Degumming and demetallization of edible and non edible oils, Anil Kumar Sinha, Shaikh Sirajuddin, Saleem A Farooqui, Rohit Kumar and Rakesh Kumar, Application No. 0177NF2025 / 202511068947, dated 18th July, 2025.
4. MgO-Al₂O₃ supported mixed metal heterogeneous catalyst for methanation and process for preparation thereof (**Jointly Filed with GAIL**), Botcha Neelam Naidu, Kasina Divya Phanindra Lakshmee Kumar, Haider Mohd Belal, Nagabhatla Viswanadham, T Nandakumar, Sanjeev Kumar, Application No. 0157NF2025/ 202511068947, dated 18th July, 2025.
5. Dual fuel engine with intelligent load computation (**Upcharge Energy Solutions, New Delhi are the co-assignee's**), Wittison Kamei, Rajendra Badola, Sath Pal Singh, Rahul Kumar, Application No. 0215NF2025 / 202511086175 dated 10th September, 2025.
6. A static liquid refrigerant based cooling system and method for generating a cold stream thereof, Sunil Kumar, Manoj Srivastava and Harender Singh Bisht, Application No. 0295NF2025 / 202511123802, dated 8/12/2025 (Provisional Filing).

2.5 उपाधियाँ/अध्येतावृत्तियाँ /Degrees / Fellowships

2.5.1 प्रदत्त डी.लिट / डी.फिल .उपाधियाँ /D.Litt. / D.Phil. Degrees Awarded

- Mr Narendra Singh was awarded PhD degree for his thesis entitled “Adsorbent Development and Evaluation for CO₂/CH₄/N₂ Separations” under the supervision of Dr.

Aarti and Dr. Soumen Dasgupta by the Academy of Scientific & Innovative Research (AcSIR), 1st April, 2025.

- Md. Jahiruddin Gazi was awarded PhD degree for his thesis entitled “H₂ Production from Methane Activation: Studies in Catalyst Design, Development and Deactivation” under the supervision of Dr. Ankur Bordoloi and Dr. Sunil Kumar by the Academy of Scientific & Innovative Research (AcSIR), 31st May 2025.
- Mr. Ashutosh Rawat was awarded PhD degree for his thesis entitled “Slurry Phase Hydrocracking of Crude Oil for the Production of Petro-FCC Feed” under the supervision of Dr. Prem Lama by the Academy of Scientific & Innovative Research (AcSIR), 11th June, 2025.
- Mr. Ayan Banerjee was awarded PhD degree for his thesis entitled “Effective Utilization of Spent Microbial Biomass through thermochemical and Biochemical Process for Energy and Resource Recovery : Multi-aspect Environmental Application for Circularity and Sustainability in Briorefineries” under the supervision of Dr. Debashish Ghosh and Dr. Thallada Bhaskar by the Academy of Scientific & Innovative Research (AcSIR), 18th July, 2025.
- Mr. Piyush Gupta was awarded PhD degree for his thesis entitled “Derivatization of Biomaterials and their Application as Additives in Lubricants” under the supervision of Dr. Rajkumar Singh and Dr. Susheel Kumar Porwal by the Academy of Scientific & Innovative Research (AcSIR), 22nd July, 2025.
- Ms. Shaifali Bhardwaj was awarded PhD degree for her thesis entitled “Hydrolysis of Cellulosic Feedstock using Immobilized Enzymes” under the supervision of Dr. Anil Kumar Sinha and Dr. Debashish Ghosh by the Academy of Scientific & Innovative Research (AcSIR), 1st August, 2025.
- Mr. Vivek Shrivastaw was awarded PhD degree for his thesis entitled “Studies on the Influence of Promoters in Cu/ZnO/ZrO₂ Catalyst System for CO₂ Hydrogenation to Methanol” under the supervision of Dr. Subham Paul and Dr. Ankur Bordoloi by the Academy of Scientific & Innovative Research (AcSIR), 30th September, 2025.
- Mr. Rahul Gautam was awarded PhD degree for his thesis entitled “Improvement of the Environmental and Economic Viability of the Oleaginous Fermentation Process with Water Footprint and Life Cycle Impact Analysis” under the Supervision of Dr. Debashish Ghosh and Dr. Sandeep Mudliar by the Academy of Scientific & Innovative Research (AcSIR), 10th November, 2025.
- Ms. Suman Dalakoti was awarded PhD degree for her thesis entitled “Synthesis and Formulation of Porous Sorbents for Adsorptive and Membrane Separation of Gas Mixtures of Industrial Relevance” under the supervision of Dr. Soumen Dasgupta and

Dr.Racha Surya Murali by the Academy of Scientific & Innovative Research (AcSIR), 10th November, 2025.

- Mr. Bhanu Joshi was awarded PhD degree for his thesis entitled “Catalytic Depolymerization of Waste Plastic to Chemicals over Base Modified Metal Oxides, under the supervision of Dr. Bipul Sarkar by the Academy of Scientific & Innovative Research (AcSIR), 5th February, 2026
- Azeem Khan was awarded PhD degree for his thesis entitled “Catalytic Route to High Energy Density Fuel”, under the supervision of Dr. Anil Kumar Sinha and Dr.Mohit Anand by the Academy of Scientific & Innovative Research (AcSIR), 17th March, 2026.
- Mr. Vedant Joshi was awarded PhD degree for his thesis entitled “Synthesis and Performance Evaluation of Glycerol-Derived Polyesters” under the supervision of Dr.T.Senthil Kumar and Dr.Rajaram Bal by the Academy of Scientific & Innovative Research (AcSIR), 23rd March, 2026.

2.6 सम्मान, पुरस्कार एवं अभिनंदन / Honours, Awards & Recognitions

2.6.1 सांस्थानिक/सामूहिक पुरस्कार /Institutional/Group Awards

नगर राजभाषा कार्यान्वयन समिति)का-2), देहरादून की छमाही बैठक में प्रतिभागिता तथा विकल्प को प्रथम पुरस्कार

संस्थान की गृहपत्रिका 'विकल्प' को नाराकास)का ,(2देहरादून के सदस्य कार्यालय की श्रेष्ठ पत्रिकाओं में पहला स्थान प्राप्त हुआ।दिनांक 07 नवंबर 2025 को आयोजित नगर राजभाषा कार्यान्वयन समिति)का-2), देहरादून द्वारा वर्ष की दूसरी छमाही बैठक में 'विकल्प' को प्रथम पुरस्कार स्वरूप 'गृह पत्रिका शील्ड' प्रदान की गई।



SKOCH Award 2025

The Pirul Briquetting Unit at Bhingrada, located in the Champawat District of Uttarakhand, has been honored with the prestigious SKOCH Award 2025. Executed with the technical collaboration of UCOST and the Indian Institute of Petroleum, this project has proven to be a significant step toward addressing the grave issue of forest fires caused by Pirul (Pine needles); it has not only led to a reduction in forest fire incidents but has also bolstered environmental conservation efforts. Furthermore, the unit produces briquettes as a source of clean and renewable energy, thereby fostering local-level employment, income generation, and self-reliance within rural areas. This innovative model which seamlessly integrates environment, energy, and livelihoods has garnered national-level acclaim and is being viewed as an exemplary model for other mountainous and forested regions. The aforementioned honor was conferred on January 10, 2026, at the 104th SKOCH Summit held at the India Habitat Centre in New Delhi.

- Liensing MoU with Shivach Organic Produce, Meerut on Improved Jaggery Making Plant, 17th April, 2025
- MoA with Centre for High Technology, Noida, Gail India Ltd Noida and CSIR-IIP Dehradun on Light Weight Novel Multicomponent High Entropy Alloy for Hydrogen Storage Application, 16th May, 2025
- MoA with Bharat Petroleum Corporation Limited, Noida on Research and experiments for the feasibility of BPCL R&D cross flow reactor technology in the CSIR-IIP SAF process, 23rd May, 2025
- NDA with India Oil Total Private Ltd, Mumbai on Bio-Oil for Research Purpose for Developing Bio Polymer Modified Bitumen (PMB), 4th June, 2025.
- Memorandum of Understanding with Society of Digital Entrepreneurs, Delhi on Development and Deployment of Agro-Waste and Technology Support for Bio-Diesel Production from Used Cooking Oil, 1st July, 2025
- Memorandum of Understanding with Sardar Swaran Singh National Institute of Bio Energy, Kapurthala on Academic Collaboration, 16th July, 2025.
- Non Disclosure Agreement with Witmans Industries Pvt. Ltd., Mumbai on Development of Synthetic Polyol Ester Material, 30th July, 2025
- Memorandum of Understanding with Indian Institute of Technology, Delhi on Academic Collaboration, 19th August 2025.
- MoU with Hindalco Industries Limited, Mumbai on Turbine and Compressor Oils, 14th August, 2025
- NDA with Mitcon Consultancy & Engineering Services Limited, Pune on Improved Jaggery Making Plant, 17th October, 2025
- Licensing of Technology with Biomimicry Technologies Pvt Ltd. Delhi on Improved Jaggery Making Plant, 6th November, 2025
- NDA with Indian Institute of Science, Bengaluru on Confidential Information and Collaboration, 10th October, 2025
- Licensing of Technology with Malik Brick Field, Meerut on Advanced Air Circulation System for Brick Kilns, 4th December, 2025
- Project Agreement with US Grains and Bio Products Council on LCA for Corn Ethanol to Jet Fuel, 5th January, 2026
- Non Disclosure Agreement with Yaai Green Energy Pvt. Ltd , New Delhi on Design and Development of a Indigenous Electrolyser Tailored for Indian Environmental and Operational Conditions, 18th February, 2026.

- Non Disclosure Agreement with Bharat Petroleum Corporation Limited Mumbai on Hydrogen-Free Desulfurization Process for Petroleum Crude Oil, Refinery Streams and other Non-conventional Streams, 19th February, 2026
- Licensing Agreement with Elgi Ultra Pvt Ltd. Coimbatore on Improved Domestic Cooking Burner for PNG, 23rd February, 2026
- Non Disclosure Agreement with Honeywell Technology Solutions Lab Pvt Ltd, Bangalore on Commercial Program for Exchange of Technical and Commercial Information, 20th March, 2026



CHAPTER 3



3.1 तेल उद्योग एवं तत्संबंधी क्षेत्रों के कार्मिकों के प्रशिक्षण /Training of Personnel from the Oil and Allied Sector Industries

As a part of its mandate, CSIR-IIP imparts training to personnel from the oil industry and related fields like the Automobile and Transport sector.

3.1.1 'पेट्रोलियम परिष्करण प्रौद्योगिकी' पर आयोजित कार्यक्रम /Programmes on 'Petroleum Refining Technology'

Training Programme on “Petroleum Refining Technology” for 22 Chemical Engineers of IOCL New Delhi from May 26, 2025 to July 04, 2025.

Six Weeks Training Course on “Petroleum Refining Technology” for 15 Chemical Engineers of IOCL, New Delhi from 18th August, 2025 to 26th September, 2025.

Training Course on “Refinery Technology & Configuration” for 30 Chemical Engineers of NRL, Numaligarh from 27th October, 2025 to 31st October, 2025.

Six Weeks Training Course on “Petroleum Refining Technology” for 25 Chemical Engineers of IOCL, New Delhi from 10th November, 2025 to 19th December, 2025.



CSIR-INDIAN INSTITUTE OF PETROLEUM, DEHRADUN

Training Program on “Petroleum Refining Technology” for Chemical Engineers of IOCL, NEW DELHI
(10/11/2025 to 19/12/2025)



Row 1 : Rajnish Bhatnagar, Alok Kumar Singh, Deepti Gautam, Vidisha Shetty, Piyush Gautam, Preamchand N, Dr S K Ganguly,
Dr Raj K Singh, Sundhram Sharma, Vineet Sood, S N Yadav
Row 2 : Ayan Vashistha, Narpat Singh, Jitendra Mandi, Dinesh Chelluboyina, Dr Manoj Thapliyal, Ms Mansi Singh, Ms Manasa Buarada,
Ms Ch Sri Bramaramba Lakshmi, Md Shadab Aslam
Row 3 : Atindra Kumar Kushwaha, Vijay Jatoth, M Rama Satyanarayana, Mohit Parashar, Mihir Sinha, Abdul Ahmad,
Kaushil Prakashbhai Patel, Pranay Singh, Jaykumar Harshabhai Patel, Dharamveer Singh, Dileep Kumar, Yashpal Mohanpuria

Training Programme on “Petroleum Quality Testing for 03 Engineers of CCA MOICE Govt. of Bhutan from 9th June, 2025 to 13th June, 2025

3.1.2 अन्य कार्यक्रम/Other Programmes

- Training Programme for 30 Engineers of MEA New Delhi on “MEA Tanzania” from 31st March, 2025 to 11th April, 2026
- One Week Advanced Analytical Training in GC, ASTM Methods & ICP-OES for 3 participants of Maruti Suzuki India Limited, Gurgaon from 28th July 2025 to 1st August, 2025.
- Training Programme on “Real World Driving Emissions for 10 Officers of Ministry of Road Transport and Highway (MoRTH), New Delhi from 6th October, 2025 to 10th October, 2025.
- Training Programme on “Vehicular Emission and Control” for 21 Officers of Ministry of Road Transport and Highway (MoRTH), New Delhi from 10th November, 2025 to 14th November, 2025.

- Training Programme on “Advanced Automotive Technology & Indian Road Traffic Pattern” for 24 Officers of Ministry of Road Transport and Highway (MoRTH), New Delhi from 05 January, 2026 to 9th January, 2026
- Training Programme on “Present and Future Automotive Fuels Quality and Emission Norms” for 26 Officers of Ministry of Road Transport and Highway (MoRTH), New Delhi from 9th February 2026 to 13th February, 2026.
- One Week Training Programme on “Electric Mobility & Advanced Automotive Technology” for 33 Officers of Ministry of Road Transport and Highway (MoRTH), New Delhi from 23rd February 2026 to 27th February, 2026
- Project Trainee – 53 Students from different Private Institutes/ Universities from 1st September 2025 to 31st March, 2026



3.2 विदेशा में प्रतिनियुक्तियाँ / Deputations Abroad

- Dr Tuhin Suvra Khan went to attend 22nd Workshop on Greenhouse Gas Inventories in Asia (WGIA22), Phnom Penh, Cambodia during July 15-18, 2025.
- Dr. Racha Surya Murali attended Workshop on IGSTC-SHINE Workshop (held under Bilateral Program, Helmholtz-Zentrum Hereon, Hamburg Germany during 21-27 September 2025.
- Dr. Sunil Kumar Pathak, Chief Scientist, CSIR-IIP Participated in Technical Expert Review Meeting – to conduct Comprehensive Review of Georgia's First Biennial Transparency Report (BTR1) in accordance with Modalities, Procedures and Guidelines (MPGs) under decision 18/CMA, Tbilisi, Georgia during 1 to 5 December 2025



CHAPTER 4



4.1 नई परियोजनाओं का शुभारंभ / Projects Initiated

4.1.1 प्रायोजित परियोजनाएँ / Sponsored Projects

- Pre-Feasibility Study for Revamping of Wax De-oiling Unit at CPCL, Manali
- Estimation of Greenhouse Gas (GHG) Emissions in Active Pharmaceutical Ingredient (API) Production using Life Cycle Assessment Study
- Performance Evaluation of the Three Pour Point Depressants Test on Crude Oil
- Scale-up Studies for the Oxidative Coupling of Methane to Ethylene (Phase-II)
- Lightweight Novel Multicomponent High Entropy Alloy for Hydrogen Storage Application
- Emissions-Free Ethylene Glycol and Ethanol Production through an Electrochemical Carbon Utilization Technology
- Load Carrying Capacity of Hydraulic Fluid-HFDU-68
- To Study the Deposits & Distress Characteristics of the Components of Two-Wheeler Engines
- To Study the Deposits & Distresses Characteristics of Two Passenger Car Diesel Engines
- Performance Tests of ISO 46 and ISO 68 Fire Resistant Hydraulic Fluids
- Analysis of Diesel Blend Fuel(B6-B20) Samples received from Office of the Commissioner of Customs(NS-1)
- Analysis and Interpretation of Bio-Diesel Sample for M/s Bhriyumuni Bio Energy Pvt. Ltd.
- Gas Hydrate-based CO₂ Capture and Storage along with Blue H₂ Production from PSA Tail Gas of Steam Methane Reforming Plant in Petroleum Refineries
- Analysis of Net Calorific Value/Gross Calorific Value (NCV/GCV) and Carbon Content of Fuels (Gasoline, Diesel, LDO, PLG, CNG, Ethanol, and Bio-diesel)
- Analysis and Interpretation of Bio-Diesel Sample as per IS 15607:2022
- Determination of Dimethyl Disulfide(DMDS), Ethyl Methyl Disulfide and Di Ethyl Disulfide in Di Sulfide Oil(DSO) Sample
- Investigation of Root Cause for Carbon Deposition on Intake and Exhaust Valves of Aircraft Engine
- Analysis and Interpretation of Bio-Diesel Sample from M/s Pippalad Industries LLP
- Analysis and Interpretation of Bio-Diesel Sample from M/s Orense Industries Pvt Ltd.
- Evaluation of Fuel Oil Additive for Thermal Performance

- Tri-biological Assessment of Friction Wedge Material
- To Study the Deposits & Distress Characteristics of the Components of Three Two-Wheeler Engines
- To Study the Deposits & Distress Characteristics of the Components of Five Two-Wheeler Engines
- Analysis of Petroleum Wax Samples using High Temperature Gas Chromatography
- Compatibility Study of Engine Oil and Lubrication Grease
- Three Stage Hydro-Processing of Diesel Oil
- Assessment of Scuffing Load Capacity of "TORQ APPEX GEAR LUBE 1250" Using FZG Gear Test Rig
- Life Cycle Analysis of Corn Ethanol-to-Jet Fuel in India : Environmental and Sustainability Analysis
- To Study the Deposits & Distress Characteristics of Components of Seven Two-Wheeler Engines
- Comparative Performance Study of Jaggery Making Plant
- Specific Wear wt. loss of Open Gear Lubricant using FZG Test Rig
- Feasibility Studies of Developing a Desulfurization Process for the Petroleum Feedstock
- To Study the Deposits & Distresses Characteristics of 06 Nos. of Four Wheeler Engine
- To Study the Deposits & Distresses Characteristics of 01 Nos. of Passenger Car Petrol Engine
- Tribological Assessment of Friction Wedge Materials
- Performance Evaluation of FCC Catalyst
- Detailed Assay Analysis of Four (4) Composite Samples of Assam Crude Oil
- To Study the Load Carrying Capacity of Turbine Oils
- Installation of Biomass Briquetting Units in Uttarakhand for Rural Livelihood Generation and Forest Fire Mitigation

1.5.3 संस्थानगत/In-house

- Lubricating Greases With Improved Thermal And Corrosion Resistance For Evs
- Pilot Plant Studies for the Production of Methane by CO₂ Hydrogenation
- Bench-Scale Studies for the Production of Light Olefins up to 10 Kg/day by Catalytic Stream Cracking of Naphtha
- Development of Nitrogen Rich Metal Free Enviro-Economical Multi-Functional Additives for Lubrication Formulations
- Design and Development of Hydrogen Storage Testing Apparatus
- Numerically Study the Co-firing Combustion Dynamics of Hydrogen Enriched Natural Gas (HENG) and High Ash Pulverized Coal
- Data Generation and Preparation of DPR for Waste Plastic to Fuels Plant
- To Investigate the Techno-Commercial Feasibility of Co-briquetting Biomass and Waste Materials
- Procurement and Operation of Biomass Pyrolyser for the Production of Bio-oil and Bio-Char for Diverse Applications
- Investigation of Alternate Fuels for Homogeneous Charge Compression Ignition (HCCI) Mode of Combustion
- Conceptualizing Robotics Application in Oil & Gas Industry : The Case Study on Unloading of Catalyst from Large Tanks
- Design and Development of a Catalytic Converter for Emissions Reduction in Vehicle Fueled with Gaseous Fuels
- Development of Standalone GPS (Global Positioning System) with In-built Data Logging System
- AI Enabled Power Converter for Electricity Generation from Multiple Renewable Energy (RE) Sources
- Development of Modified Poly Lactic Acid (mPLS) based Additives for Bitumen Upgradation to have Sustainable and High Performance Roads
- Process Development of Acetic Acid Recovery from Bio-derived Aqueous Streams

- Life Cycle Assessment of Waste Plastic to Diesel and CO₂ to Methanol Production Processes
- Optimization of the Hydrogen Free De-sulphurization Process Parameters
- Utilization of Waste Plastic Pilot Plant Residue as Filter for Bituminous Road/Binder : Feasibility Studies
- Theoretical Analysis of different Pathways to Cut Down Utilities and Reduce CO₂ Emissions of Refineries

CSIR HQ FUNDED MLP/MMP/HCP/FTT/NWP PROJECTS

- CSIR-Hydrogen Technology Phase-II : Development and Establishing Hydrogen as Next Gen Fuel
- CSIR Integrated Skill Initiative Phase III (2025-2030)

4.2 चालू परियोजनाएँ / On-going Projects

4.2.1 प्रायोजित/Sponsored

- Clathrate Hydrates: Opportunities for Innovative Technologies
- Audit and Certification of Biodiesel Plants Based on Used Cooking Oil (UCO) as Feedstock
- Development of New Variants of the Re-Formulated Thoxcat ES Catalyst with Effective Foam Control Feature for Supply Security in the Middle East Market
- Production of Xylene-Rich Alkylated Aromatics using CO₂ as an Alkylation Reagent
- Catalytic Valorization of Bio-Ethanol through Production of Future Fuel
- Evaluation of Turbine and Compressors Oils
- Analysis of HR-TEM with EDS
- Supply of Bio Diesel to Garhmukteshwar-Meerut Road Project
- Development of Efficient Catalysis for Hydrogenation of CO₂ to Synthetic Natural Gas (E-Methane)
- Production of Propylene and Hydrogen Via Propane Dehydrogenation : Catalyst and Process Development at Bench Scale
- Creation of Nodal Centers for Development and Production of Key Starting Materials, Intermediates and other Raw Materials that are required by the Health Care Sector

- Thermo-Chemical Hydrogen Generation through Partially Open-Loop I-S Process Involving H₂S Incineration : Coupling of Individual Sections for Laboratory Integrated Operation
- Set Up of an One TPD Solid Organic Waste Processing Anaerobic Digester (AD) at the Labour Camp of Jewar Airport Construction Site. Providing Consultancy Service to TATA Projects Limited for the Evaluation, Selection, and Procurement of the AD
- Conversion of a Diesel Genset to a Dual-Fuel Mode and Performance and Emissions Study of the Converted Genst
- Mapping, Monitoring and Management of Lantana Camara Through Utilization for Improving Livelihood of People in Forest Fringe Villages of India
- HR-TEM Analysis With EDS for Sprint Testing Solutions
- Innovate Strategies For CO₂ Valorization Integrated with Organic Synthesis Using Earth Abundant Metals and Cooperative Photoredox Catalysis
- National Greenhouse Gases Inventory for Road Transport Sector- Btr1, Bur4 and Fourth National Communication
- Setting Up of a Demonstration Plant for the Production of D-Methanol 1 Kg/Day
- Design and Development of Biocarbon Supported Mn and Co Based Nanocatalysts for the Transfer Hydrogenation / Deuteration Reactions using CH₃OH/CD₃OD as Hydrogen/Deuterium Source and Synthesis of Pharmaceutical Intermediates
- Oil Soluble Metal Catalyst For Upgradation of Crude/Heavy Crude to Value Added Petro-Products and Precursors
- Characteristic Property Evaluation of Houghtosafe 620 EP
- Integrated Fermentation and Chemical Catalysis for Jet Range Bio-Renewable Fuels and Blends
- Installation of 50 Kg/H Agro-Waste to Briquettes Unita and Generating Livelihood thereby Empowering the Women of Champawat
- Microplastics from Sewage Treatment Plant along Lower Ganga River Basin: Abundance, Associated Co-Contaminants and Post Effects of Disposing of Sludge in Aqueous and Terrestrial Environments (45809)
- From CO₂ To Carboxylic Acids: C(SP²)–H Bond Functionalization using Earth-Abundant-Transition Metals and Cooperative Photoredox Catalysis
- Development of Bio Binders from Agricultural Waste for Utilization in Bituminous Road Construction
- Collaborative Support For Commercialization of Greenchem Energies Private Limited Technology for Production of Biofuels (Biodiesel and Green Diesel)

- Impact of Hydrogen-Enriched Natural Gas (HENG) on The Performance of the Domestic Cooking Burner
 - Studies on the Development of the Additive for Diesel Mehtanol Blend (Phase-I)
 - Impact Studies of LPG Quality Parameters on Pipeline Corrosion : Experimental and CFD Simulation Activities
 - Feasibility Study for Biodiesel Production by CSIR Study of Different Seeds Derived Fatty Oils from Biodiesel Production by CSIR-Room Temperature Biodiesel Process
 - Basic Lab Study to Generate Design Data on Feed Stock (DAO From PDA Unit) for Implementation Of CSIR IIIP-EIL-NRL Wax Deoiling Technology at CPCL Refinery To Produce Micro Crystalline Waxes (MCW)
 - Troubleshooting Study of SDU For Achieving Design Conditions with respect to throughput, Utility / Chemical Consumptions and Product Quality
 - Demonstration Of BPLC's Cross-Flow Reactor Technology in CSIR-IIIP SAF Production Process
 - Investigation of Defect-Rich Zeolite-Based In The Catalytic Cracking of Tree-Borne Oils to Produce Sustainable Aromatics
 - Tailored Design and Development of Nanomaterials for the Single Step Conversion of Supercritical Carbondioxide (SC-CO₂) to Fuel and Value-Added Chemicals
 - Design Development and Demonstration of a Pilot Scale Unit for Dimethyle Ether Production from Syngas
 - Fire Resistant Type Hydraulic Fluid
 - Development and Testing of Bio-Jet Fuel for IAF
 - Thermo-Chemical Hydrogen Generation through Partially Open-Loop S-I Process Involving H₂S Incineration : Part I. Experimental Study of Bunsen Reaction and HI Decomposition
 - Setting-up of 1 TDP Demo Pilot Plant for Conversion of Waste Plastic to Value Added Hydrocarbons (Phase-II)
 - Thermo-Chemical Hydrogen Generation Through Partially Open-Loop S-I Process Involving H₂S
 - Development of Lubricating Oil (HALRC-35M) for Helicopter Transmission Gearboxes
 - Operation of Fuel Testing Laboratory at Noida
- 4.2.2 संस्थानगत/In-house**
- Eco-Campus Initiative of CSIR-IIP to Develop a Sustainable Model Campus

- Kinetic Evaluation and Reactor Design Aspects using Multi-Physics Methodology for Catalytic Stream Naphtha Cracking and Crude Bio-Glycerol Bi-Reforming Processes
- Development of Porous Adsorbents for their use in Gas Separation Application
- SAF Plant Facility Operation to Produce Sustainable Aviation Fuel (SAF) and Green Diesel
- Development of Cost Effective Scale-Up Process for the Production of High Value Amines
- Maintaining ISO-9001-2015 Certification for the Institute and to Obtain Future Certification

CSIR HQ FUNDED IHP (CSPS24/RDSF) PROJECTS

- Process Development for Oxygen- Argon Separation
- Feasibility Study on the Development of Catalyst for the Production of Isoprene
- Feasibility Study for Hydro Treating of Pyrolysis Bio Oil and Waste Plastic Oil/Tyre Oil
- Developing Electro- & Photoelectro-Catalytic Processes using Pnictides for HER And CO₂RR
- Solvent-Assisted and Extractive Pyrolysis of Lignocellulosic Biomass
- Synthesis of Linezolid and Carbamazepine Drug Intermediates to a 25g Scale through Reductive Hydrogenation of Nitro Derivatives

CSIR HQ FUNDED MLP/MMP/HCP/FTT/NWP PROJECTS

- Valorisation of spent Aromatic Biomass through Thermo-chemical Methods
- Development and Certification of New Generation Lubricant Formulations for Aerospace Surfaces and Components / Wp-5
- Phenome India-CSIR Health Cohort Knowledgebase (HTC)
- Carbon, Capture, Utilization & Storage (CCUS)
- Waste to Wealth: Comprehensive Solutions towards Circular Economy and Sustainability
- Jigyasa 2.0 Programme with the Concept of Virtual Lab Integrated (CIVIL)
- Lignin to Chemicals
- Production of H₂ From H₂S Via Thermo Chemical Sulfur Looping Process
- Novel In-Situ Microbial Thermal Stimulation Approach of Methane Recovery from Natural Gas Hydrate-Bearing Sediments and Simultaneous Carbon Dioxide Sequestration: Experimental Investigations and Modeling
- Upgradation of Engine and Vehicle Mass Emission Test Facility

- Propylene Carbonate from Carbon Dioxide
- Development of Catalyst for the Oxidative Coupling of Methane to C₂ (Ethane +Ethylene) Hydrocarbons
- Scale-up and Field Trail for Spectral Converting Diverging Optics Integrated Solar Sharing Agrivoltaics Technology
- Fermentation Scale-up and Technology Development of Lead Industrial Enzymes for Biofuel, Food, Feed, Agriculture and Vaccine Applications
- Advancing Fuel Flexibility of Solid Oxide Fuel Cell through Development of Compatible Multi Component & High

4.3 संपन्न हो चुकीं परियोजनाएँ/Projects Completed

4.3.1 प्रायोजित/Sponsored

- Study the Deposits & Distressed Characteristics of Two Diesel Engines at Idiada Chakan Facility
- Rating of the Components of Two Nos. Transmission Gear Boxes and One Rear Axle Unit
- Performance Evaluation of New Engine Lubricants Formulated for Motorcycles
- Analysis of Ehtylene Gas Samples
- Analysis of Waste Plastic Pyroloysis Samples as Per IS 1460 Specifications
- Certification of Registered Vehicle Scrapping Facility as per GSR653(E)
- Certification of Registered Vehicle Scrapping Facility as per GSR653(E) for M/s Pineview Technology Pvt Ltd, Sonipat
- Certification of Registered Vehicle Scrapping Facility as per GSR653(E) for Garhwal Scrap Pvt Ltd, Roorkee
- Certification of Registered Vehicle Scrapping Facility as per GSR653(E) for Sega Tech Solutions Pvt. Ltd. Roorkee
- Evaluation and Compliance of Registered Vehicle Scrapping Facility as per GSR653(E) for AA1 Scrap Center , Muzaffarnagar
- To Study the Deposit & Distresses Characteristics of Two-Wheeler Engines
- Friction and Wear Behaviour of Friction Wedge Material for Railway
- Analysis of Biodiesel (B100) Samples as per IS 15607:202 Specifications
- Study of Impact of Additives on Research Octane Number and Cetane Number

- Honda Shine Engine Parts Rating
- To Study the Deposit & Distresses Characteristics of Two Diesel Engines
- One Step Conversion of Carbon Dioxide into Diphenyl Carbonate
- Testing of Performance of FCC Catalyst Sample
- Short Evaluation Studies on Crude Oil Sample from Bhaskar Field in Cambay Basin, Khambhat, Gujarat
- Feasibility Studies on Synthetic Aviation Fuel (SAF) Production from Carbon Dioxide
- Two-Stage Hydroprocessing of Diesel Oil
- Machine Learning Enable Design and Synthesis of Nanoscale Layered Pervoskite Materials for High-Performance Fuel Cell And Battery
- Analysis of Automotive diesel samples as per IS 1460 specifications
- Detailed Feasibility Report and Basic Engineering Design Package on Dilsaaf Technology
- Testing Services for MAK FRHF DU 46 and 68
- Indigenously Design and Development of Hybrid Network Composite Solid Electrolyte for Batteries
- Study to Examine Feasibility of Converting Heavy Aromatic Hydrocarbons into Mesophase Pitch - A Precursor for Advanced Carbon Materials

4.3.2 संस्थानगत/In-house

- Design and Evaluation of the Synergistic Effect of Hybrid Cnc-Surfactant-Polymer Additive as Drag Reducing Agents for Pipeline Transportation of various Crude Oil
- Hydrogen Technology (H2t) Mission Program
- Design and Development of High-Entropy Alloys using Artificial Intelligence for Gas Turbine Applications (Wp-4.2)
- Environmental Impact Assessment of Room-Temperature Bio-Diesel and DilsaafTM Sustainable Aviation Fuel Production Processes
- Establishing the Proof of Concept of Hydrogen Free Desulfurization Scheme for Industrial Applications in a Cost Effective Manner
- Investigation of Indian Brick Kilns for the Improvement in Thermal and Combustion Performance
- Investigation of Indian Brick Kilns for the Improvement in Thermal and Combustion Performance Investigation of Indian Brick Kilns for the Improvement in Thermal and Combustion Performance

- Development of Novel Lubricant Additive through Chemical Modification / Derivatization of Biomaterial
- Utilization of Coal Gangue To Synthesize Zeolites and their Application in Adsorption and Catalysis
- Development of a Catalyst for the Production of Lower Olefins by Catalytic Cracking of Naphtha Co-Processed with CO_2
- Development of Catalyst for the Synthesis of Polyether Carbonate Polyols Via Chemical Fixation of CO_2
- Development Of A Catalyst For The Production Of Lower Olefins by Catalytic Cracking of Naphtha Co-Processed with CO_2
- Design of Modular Biogas Dry Reforming Pilot Plant with Optional Downstream Syngas Conversion Processes
- Hydroprocessing of Palm Stearin and Comparison with Jatropha Oil
- Development of Emulsifiers for Indian Heavy Crude Oil (API 10-30) using a Novel Surfactant for Pipeline Transportation
- Development of Low-Cost Metal-Organic Frameworks and their High Capacity Formulation Routes (LCM-HCF) for Gas Separation Applications
- Techno-Economic Evaluation of Chemical Looping Based Separation Process for Closed Boiling Mixture Separation of Mixed Xylene Isomers over UOP's Parex Process
- Development of High Performance Mixed Matrix Membranes (MMMS) for CO_2 Capture from Industrial Flue Gases
- Electric Retrofitment of a Polluting Diesel Auto-Rickshaw into an Electric Auto-Rickshaw in Imphal using an EV KIT (of Indian Parts) and Kit Road Worthiness Trials
- Crude Oil to Chemicals : Olefins Maximization
- Feasibility Study of Production of High Quality Pet Coke/Needle Coke By Co-Processing of Coal-Tar and Petroleum Streams
- Development of Corrosion Inhibitor Formulation for Up and Mid Stream Applications
- Study and Prototyping of a Super Capacitor Management System (SMS) for EV Application

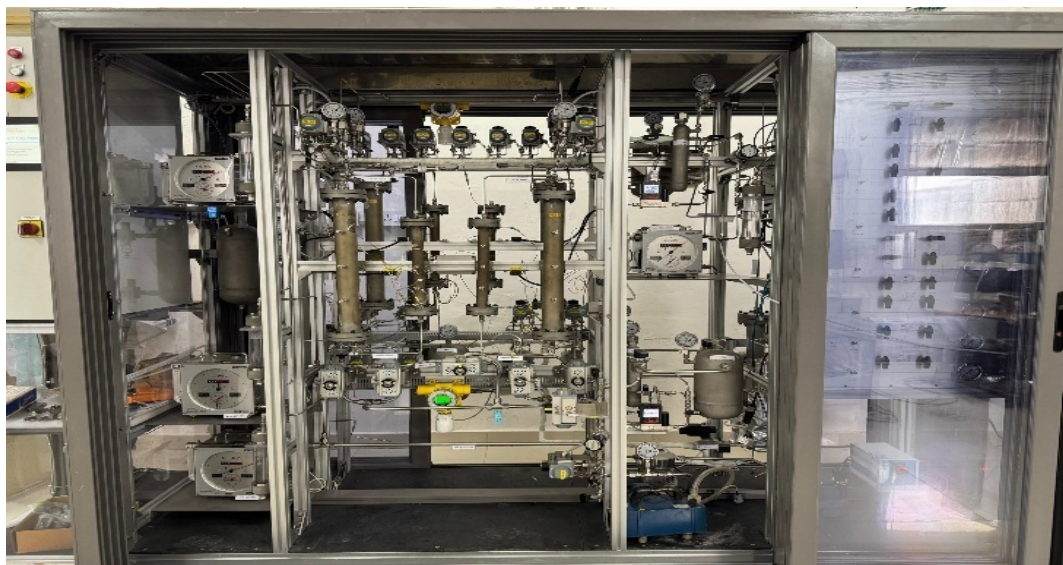


CHAPTER 5



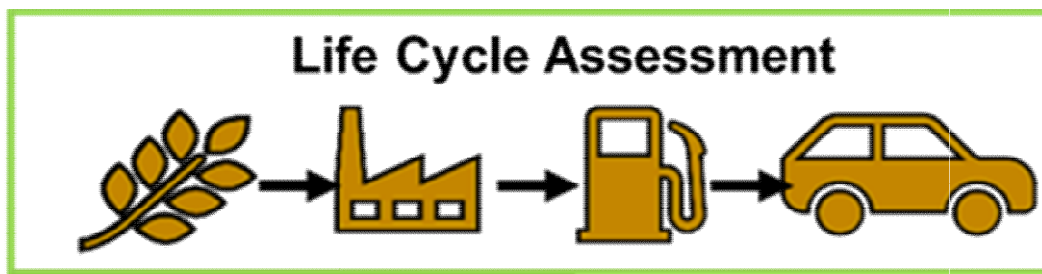
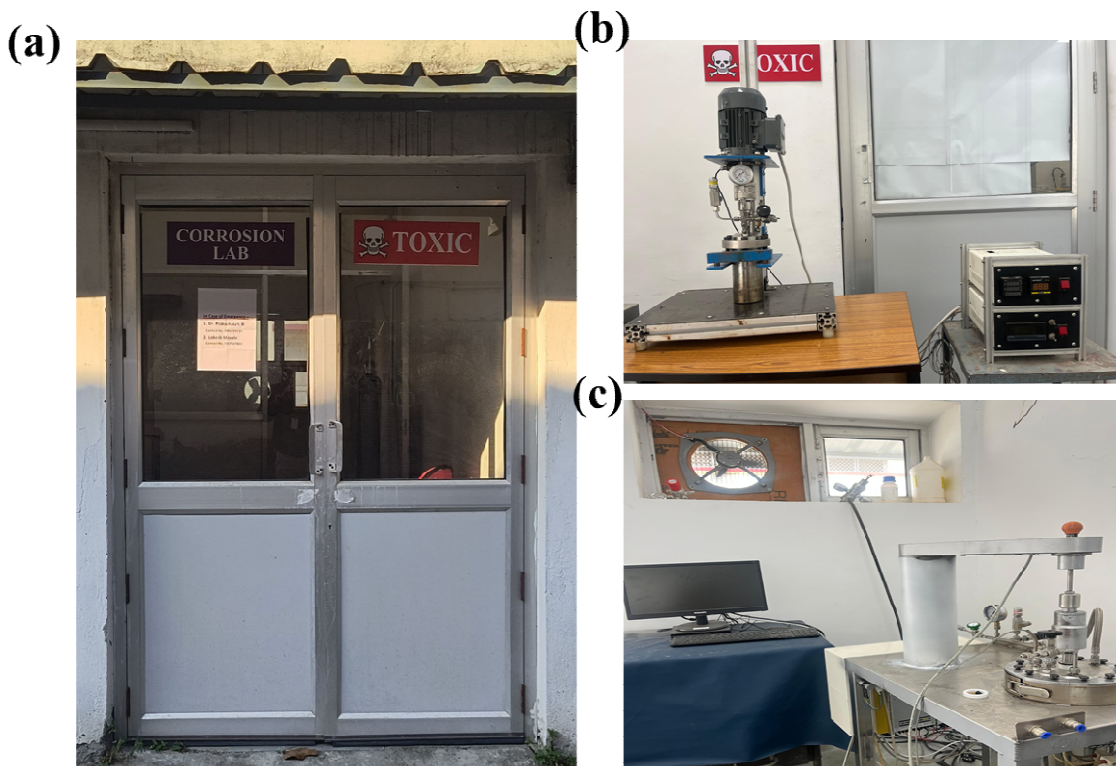
5.1 सृजित की गई नई सुविधाएं/New Facilities Created

Fully Automated Four Bed Pressure Vacuum Swing Adsorber System



Hollow Fiber Membrane Spinning System (5-25 m/min. Production Capacity)





Life Cycle Assessment Facility: Sima Pro Craft Expert and Sphere LCA for Expert Software

Microprocessor Based High Pressure Skid Mounted Fixed Bed Flow Reactor with Online Analyzer (Agilent 8860 GC System)



Online Analyzer SCADA System and GC System



ASTM D130: Cu Corrosion Test Apparatus

Equipment: Copper corrosion apparatus

Make and Model: HEMCO

Installation: August 2025

Copper corrosion test is an important test for gasoline, aviation fuel, kerosene, diesel and lubricating oil to evaluate the corrosivity due to active corrosive species like hydrogen sulfide, mercaptans etc. in a petroleum product. A specimen copper strip is polished, cleaned and placed in a test tube with sample and heated on specified temperature (50 or 100 °C) for specified time and then the strip is removed, washed and dried and finally the color of the strip is compared with a ASTM Copper Strip Corrosion Standard to obtain the rating.



Equipment: X-Ray Powder XRD

Make and Model:

Panalytical & Empyrean

Installation: September 2025

Application: All powder crystalline samples for phase analysis and qualitative analysis



CHAPTER 6



6.1 स्थापना दिवस /Foundation Day

6.1.1 सीएसआईआर-भापेसं स्थापना दिवस, 14 अप्रैल, 2025 / CSIR-IIP Foundation Day 14 April, 2025

The CSIR-IIP celebrated its 66th Foundation Day and Ambedkar Jayanti today. Dr R P Singh, Director, Indian Institute of Remote Sensing (IIRS) graced the occasion as the Chief Guest.

The celebration marked the institute's rich history of pioneering research, innovative technologies, and industry collaborations. Dr H S Bisht, Director CSIR-IIP, in his welcome speech highlighted pioneering work and achievements of the institute. He added that almost all major refineries of the country have one or more technologies from CSIR-IIP. He also mentioned that CSIR-IIP has made a focussed roadmap completely aligned with CSIR@100 and Viksit Bharat 2047 mission.



The Chief Guest of the Function, Dr R P Singh, Director IIRS conveyed his best wishes on the 66th Foundation Day of the Institute and birth anniversary of Bharat Ratna Dr. B.R. Ambedkar. He made a very engaging and interactive presentation on “Search of Life beyond Earth”. In his talk, Dr Singh gave a crisp overview on space research done by India especially exploration of extra-terrestrial life. The students and teachers from Sapience School attended the program and actively participated in the discussions.

6.1.2 वैऔअप स्थापना दिवस समारोह, 29 सितम्बर 2025 / CSIR Foundation Day Celebrations 29th September 2025

The CSIR-Indian Institute of Petroleum (CSIR-IIP) proudly celebrated the 84th Foundation Day of the Council of Scientific and Industrial Research (CSIR) with a vibrant ceremony that highlighted the CSIR institutes pioneering contributions to research, technology, and sustainability. The celebration commenced with the traditional lighting of the lamp, symbolizing knowledge and new beginnings. In his inaugural address, **Dr. H. S. Bisht, Director, CSIR-IIP**, delivered an insightful presentation about CSIR titled “*The Story of India’s Innovation Engine.*”

He highlighted the major achievements of CSIR and the benefits provided by CSIR to society and the nation as a whole in the last 83 years of its existence. He particularly stressed CSIR’s efforts in the development of baby food, combating diseases like AIDS, Malaria, Super Computers, Contraceptive Pills, Road building technologies, clean water and clean energy. He also

highlighted cutting edge technologies developed by CSIR-IIP for refineries, sustainable fuels, efficient cooking stove, gur bhattis, pine needle briquetting, medical oxygen plants which have benefitted industry as well as society. He emphasized the CSIR's commitment towards developing indigenous technologies to achieve the nation's ambitious vision of *Viksit Bharat 2047*.



Gracing the occasion as **Chief Guest, Prof. Surekha Dangwal, Vice Chancellor, Doon University**, praised CSIR for the achievements particularly the Footwear Mission and Purple Revolution in enhancing the country's image globally. She said that the road to Vikshit Bharat goes through institutions like CSIR and universities. It is the need of the hour to enhance modern technologies like AI and taking the tradition along with as the nation moves ahead. The commitment of the Foundation Day should be to achieve Vikshit Bharat by 2047.

Adding to the discourse, **Prof. K. D. Purohit, President, Vigyan Bharti (Dev Bhoomi Vigyan Samiti)**, shed light on initiatives such as *Vidyarthi Vigyan Manthan (VVM)* and *Vijnana Bharti (VIBHA)*, inspiring young minds to engage in science and innovation.

The occasion also coincided with the **Hindi Maah Samapan Samaroh. Shri Someshwar Pandeya, Senior Hindi Officer, CSIR-IIP**, highlighted the activities organized during Hindi Maah, while **Dr. Jiten Thakur** encouraged greater use of Hindi in day-to-day communication. On this occasion the Hindi E-Magazine “Vikalp” was also released.

A special segment of the ceremony honored employees with 25 years of dedicated service to CSIR, as well as those who retired between September 30, 2024, and August 31, 2025, acknowledging their invaluable contributions to the institute's growth and legacy.

6.1.3 Open Day at CSIR-IIP on the Occasion of CSIR Foundation Day Celebration 29th September 2025

The Council of Scientific & Industrial Research (CSIR) celebrated its 84th Foundation Day on 26th September, 2025. It is India's largest publicly funded R&D organization with nationwide network of R&D laboratories working in disciplines ranging from radio and space physics, oceanography, geophysics, chemicals, drugs, genomics, biotechnology and nano-technology to mining, aeronautics, instrumentation, environmental engineering and information technology.

CSIR-IIP, a constituent laboratory of CSIR, observed an Open Day on 29th September 2025 as a part of the Foundation Day celebrations. Under Jigyasa Program 150 school students from The Oasis, GGIC Harrawala, Rajhansh Public School and Winhil Global School Dehradun with their faculties visited various laboratories of CSIR-IIP. The students visited the Bio-technology &

Biochemistry Lab, Adsorption & Membrane Separation Lab, CFR Engines, Emission Testing Lab, Thermo Catalytic Process Lab, Advanced Crude Oil Research Centre, IR, and GC-MS lab.



6.2 राष्ट्रिय एवं अंतर्राष्ट्रीय दिवसों का आयोजन / National and International Days Celebrated

6.2.1 डॉ. अंबेडकर जयंती 14 अप्रैल 2025/ Dr. Ambedkar Jayanti, April 14, 2025

The programme was initiated with a tribute to Bharat Ratna Dr B. R. Ambedkar, on his 135th Birth Anniversary followed by an enlightening speech by Dr. Umesh Kumar, Principal Scientist on “Works, Impact and Relevance of Works of Dr BR Ambedkar.



6.2.2 राष्ट्रीय प्रौद्योगिकी दिवस, 14 मई, 2025 / National Technology Day Celebration 14th May, 2025

On the 11th day of May each year, India celebrates its National Technology Day. The day celebrates the first successful nuclear test carried out at Pokhran. The day is celebrated to signify the technical acclaim and growth of India. It also inspires young minds across Schools and

Colleges and creates awareness of the technological supremacy of the country. This year National 'Technology Day' was celebrated on the 14th of May 2025. Dr. M O Garg, Former Director CSIR-IIP and former DG CSIR graced the occasion as Chief Guest of the function.



6.2.3 राष्ट्रीय बौद्धिक संपदा महोत्सव 29 मई 2025/ Rashtriya Boudhik Sampada Mahotsav 29th May 2025

CSIR-IIP, Dehradun celebrated **Rashtriya Boudhik Sampada Mahotsav (RBSM) 2025** on 29th May 2025 to promote intellectual property (IP) awareness in India. It is a part of the Azadi Ka Amrit Mahotsav initiative and was first launched in July 2023.

Invited Speaker from CSIR-Innovation Protection Unit, New Delhi, Dr. Kapil Arya gave very insightful talk on “Feel the beat of Intellectual Property Rights”, highlighting the fundamental of patenting followed by interactive session with scientists and research scholars. Dr. N. Vishwanadham, Chairman, PPC shared his experiences on role of patent and publication committee and innovative technologies developed at CSIR-IIP, Dehradun.

An online quiz competition on IP was conducted on 27th May 2025, the winners and participants of this IP quiz were facilitated by giving mementos and certificates during today’s program. The event concluded with the vote of thanks



6.2.4 विश्व पर्यावरण दिवस, 5 जून 2025 / World Environment Day, June 5, 2025

सीएसआईआर(आईआईपी) भारतीय पेट्रोलियम संस्थान-, देहरादून ने दिनांक 05 जून 2025 को “प्लास्टिक प्रदूषण का अंत” विषय पर विश्व पर्यावरण दिवस मनाया। इस कार्यक्रम में एयर वाइस मार्शल श्री के .ए.ए. संजीव, वी .एम.एस.मुख्य अतिथि तथा विंग कमांडर श्री ए सचान.एस.विशिष्ट अतिथि के रूप में उपस्थित रहे।

संस्थान के निदेशक डॉ हरेन्द्र सिंह बिष्ट ने अपने स्वागत भाषण में भारतीय वायुसेना का आईआईपी के संवहनीय विमानन ईंधन (SAF) प्रौद्योगिकी में महत्वपूर्ण सहयोग प्रदान करने के लिए आभार व्यक्त किया। उन्होंने सभी गतिविधियों में कार्बन उत्सर्जन को कम करने के लिए ऊर्जा कुशल प्रौद्योगिकियों को अपनाने की आवश्यकता पर बल दिया।

मुख्य अतिथि एयर वाइस मार्शल श्री केसंजी .ए.ए.व ने सीएसआईआरआईआईपी के कार्यों की सराहना की और - कहा कियह हमारे लिए प्रशंसा का विषय है कि भारतीय वायुसेना संवहनीय विमानन ईंधन (SAF) प्रौद्योगिकी में साझेदार रही है। उन्होंने सीएसआईआरआईआईपी के प्लास्टिक कचरे से ईंधन बनाने के प्रयासों की- भी सराहना की।

इसके बाद जलवायु परिवर्तन तथा डॉटा साइंस प्रभाग के श्री संजीव ने दर्शकों को “पर्यावरण एक्सप्रेस” की जानकारी दी और प्रतिभागियों को इसकी परिचय यात्रा भी करवाई। डॉ सनत कुमार ने “प्लास्टिक प्रदूषण को हराएं” (#Beat Plastic Pollution) विषय पर अपने व्याख्यान में संस्थान की “अपशिष्ट प्लास्टिक से ईंधन तक की” यात्रा की जानकारी दी, जो अत्यंत सूचनाप्रद और ज्ञानवर्धक रही।



6.2.5 अंतर्राष्ट्रीय योग दिवस - 2025 / International Yoga Day-2025, 21 June, 2025

"एक पृथ्वी, एक स्वास्थ्य" के रूप में 11वां अंतर्राष्ट्रीय योग दिवस-2025 महोत्सव सीएसआईआरभारतीय - ने शनिवार (आईआईपी-सीएसआईआर) पेट्रोलियम संस्थान, 21 जून, 2025 को मनाया गया।

सीएसआईआर-भारतीय पेट्रोलियम संस्थान (सीएसआईआर-आईआईपी) ने शनिवार, 21 जून, 2025 को सीएसआईआर-आईआईपी प्रशिक्षण केंद्र में 11वां अंतर्राष्ट्रीय योग दिवस (आईडीवाई) मनाया, इस वर्ष की वैश्विक थीम "एक पृथ्वी, एक स्वास्थ्य" थी, जो शारीरिक, मानसिक और पर्यावरणीय कल्याण को बढ़ावा देने में योग की भूमिका पर प्रकाश डालता है, जो स्थिरता और एकता के लिए वैश्विक आह्वान के अनुरूप है। इस कार्यक्रम में योगाचार्य श्री रमेश शर्मा ने योग सत्र का नेतृत्व किया और "हर दिन के लिए योग" विषय पर व्याख्यान दिया। योग अभ्यास और शिक्षण में लंबे अनुभव के साथ, श्री शर्मा ने प्रतिभागियों को सत्र के माध्यम से शारीरिक, मानसिक और भावनात्मक सद्भाव को बढ़ावा देने में योग की भूमिका को अवगत कराया, जो। उन्होंने कार्यालय जाने वालों के लिए उपयोगी योगिक अभ्यासों पर भी जोर दिया। इंटरैक्टिव सत्र में बीमारी/मधुमेह से संबंधित योगिक अभ्यास भी शामिल थे।



6.2.6 स्वतंत्रता दिवस 15 अगस्त 2025 /Independence Day, August 15, 2025

भारतीय स्वतंत्रता की 79वां वर्षगांठ के अवसर पर भारतीय पेट्रोलियम संस्थान, देहरादून में 15 अगस्त 2025 को स्वतंत्रता दिवस समारोह का आयोजन किया गया। डॉ हरेन्द्र सिंह बिष्ट, निदेशक, सीएसआईआर-भापेस, देहरादून ने ध्वजारोहण किया ।



6.2.7 गणतन्त्र दिवस समारोह 26 जनवरी 2026 /Republic Day Celebrations, January 26, 2026

सीएसआईआर-भारतीय पेट्रोलियम संस्थान, देहरादून में 26 जनवरी, 2026 को 77 वां गणतंत्र दिवस मनाया गया। इस अवसर पर डॉ हरेन्द्र सिंह बिष्ट, निदेशक सीएसआईआर-भापेस ने ध्वजारोहण किया तथा सुरक्षाकर्मियों द्वारा की गयी परेड की सलामी ली। गणतंत्र दिवस के अवसर पर डॉ हरेन्द्र सिंह बिष्ट ने सभी लोगो को संबोधित किया।



6.2.8 राष्ट्रीय विज्ञान दिवस, 28 फरवरी 2026 / National Science Day, 28 February, 2026

National Science Day is celebrated in India every year on 28th February to celebrate discovery of the Raman effect by Sir C.V. Raman. The day also commemorates contributions of scientists towards the development of the nation. The AcSIR **Science Club of CSIR-Indian Institute of Petroleum (CSIR-IIP), Dehradun**, successfully organized **AAGAZ 4.0** on 27 March, 2026, as part of the **National Science Day celebrations**, witnessing enthusiastic participation from the institute's scientific community. The theme for **National Science Day 2026**, "*Women in Science: Catalyzing Viksit Bharat*," highlights the critical role of women in shaping India's scientific, technological, and innovation landscape.

The event commenced with an inaugural session featuring a welcome address by the Student Coordinator, followed by the ceremonial lamp lighting. The Director of CSIR-IIP, **Dr. Harender Singh Bisht**, addressed the gathering, highlighting the importance of scientific innovation and collaborative research in shaping the future. The program was further enriched by the presence of the Chief Guest, **Prof. Manoj Kumar Dhar**, Director, AcSIR, who in his plenary talk titled "*building next generation researchers, innovators, entrepreneurs and nation builders*" emphasised on need for collaboration, embracing multi-disciplinarity and importance of clarity and passion for communication. He informed students and faculty about new avenues opened by AcSIR through iPhD and other programs.

The event witnessed participation from around **200 participants**, who showcased their creativity and scientific acumen through various competitions, including **Rangoli (on Atmanirbhar Bharat theme)**, **Photography (Patterns in nature: Discovering nature's beauty)**, and **Graphical Abstracts (Progress of India towards development of sustainable energy)**. Throughout the day, galleries prepared by research scholars attracted wide appreciation from visitors.

Post-lunch sessions included engaging activities like **Science Quiz and Dumb Charades**, followed by a prize distribution ceremony recognizing outstanding performances. The celebrations concluded with vibrant cultural programs and an evening event, fostering a spirit of unity and creativity among participants.

AAGAZ 4.0 provided an excellent platform for researchers, students, and staff to come together, celebrate science, and promote interdisciplinary engagement. The event was highly appreciated for its organization and active participation, reflecting the dynamic academic environment at CSIR-IIP.



6.3 राज्य-व्यापी मिशन / State-wide Missions

6.3.1 वृक्षारोपण अभियान 5 जून 2025 / Plantation Drive, 5 June 2025

जलवायु परिवर्तन का मुकाबला करने, पर्यावरण को हरा भरा बनाने और वायु गुणवत्ता में सुधार लाने के लिए- वृक्षारोपण अभियान का आयोजन किया गया संस्थान के कर्मचारियों ने डॉ. सुनील कुमार सुमन के पर्यवेक्षण में आयोजित वृक्षारोपण अभियान में उत्साहपूर्वक भाग लिया तथा संस्थान परिसर में कुल पौधे लगाए 115।



6.3.2 हिमालय दिवस, सितंबर 2025 / Himalayan Day Celebration, 8th September 2025

“हिमालय दिवस”, जो विशाल हिमालय के संरक्षण एवं संवर्द्धन को समर्पित है, प्रत्येक वर्ष दिनांक 9 सितम्बर को पूरे राज्य में मनाया जाता है। पर्यावरणविद्, पद्मभूषण डॉ. अनिल जोशी . जी द्वारा प्रारंभ किया गया यह दिवस हमारे दैनिक जीवन में हिमालय की उपस्थिति एवं महत्व का स्मरण कराता है।

सीएसआईआर-भारतीय पेट्रोलियम संस्थान देहरादून में , आज दिनांक को 2025 सितंबर 08 हिमालय दिवस का आयोजन किया गया। इस अवसर की शोभा बढ़ाने हेतु डॉ , प्रमुख, नरेश कुमार . भूकंप विज्ञान प्रभाग वाडिया , हिमालय भूविज्ञान संस्थान मुख्य अतिथि के रूप में उपस्थित रहे। ,



6.4 Dissemination of Knowledge and Skills

6.4.1 Skill Development Programme

Skilled workforce is key to economic growth, higher productivity, poverty reduction and building resilient economy. CSIR-Integrated Skill Initiative for varied segment of the society is very aptly placed program to address the issue. At CSIR-IIP, Training programs were run to cater Students, Research Scholars and corporate executives. Good exposure to various analytical tools with theoretical clarification was key ingredient of our skill development training programs catering modern day work place challenges. Short duration program were introduced for maximum participation of outstation and girl participants. Maximum practical exposure and show-off in many of our training programs will promote efficiency, productivity and competitiveness. There has been good amount of re-skilling and up-skilling of employed corporate professionals through our sponsored training programs during the period. We also contributed towards international training partnership commitments through ITEC programs which will boost future global skilling alliances.

Sl. No.	Skill Development Programs	Dates	No. of participants
1	Bitumen Bituminous Binders properties and testing methods	19/05/2025 to 23/05/2025	05
2	Analysis with elemental microscopic and thermo gravimetric tools	16/06/2025 to 27/06/2025	17
3	Testing of Petroleum Products	28/07/2025 to 08/08/2025	05
4	Industrial Catalyst Preparation and Micro Reactor Studies	15/09/2025 to 26/09/2025	02
5	Glass Blowing	06/10/2025 to 19/12/2025	01
6	Spectroscopic Analytical Techniques IR	03/11/2025 to 07/11/2025	13
8	Spectroscopic Analytical Techniques NMR	08/12/2025 to 10/12/2025	05
9	Molecular Biology	23/02/2026 to 27/02/2026	10
10	Management of Lantana Camara and Demonstration of Biomass Pelletization and other Value-Added Products	19/03/2026	25
	TOTAL		83



6.4.2 Major Jigyasa Activities

During the year 2025-26, more than 1000 students and 100 teachers participated in various activities organised under the Jigyasa programme. Details of important activities are:

- **One Day as a Scientist (ODAS-2025) Week Celebration; 21-25 July 2025 at CSIR-IIP, Dehradun**

A five-day “One Day as a Scientist” was celebrated under the Jigyasa programme from 21–25 July 2025 at CSIR-Indian Institute of Petroleum (CSIR-IIP), Dehradun. Prime Minister Narendra Modi made suggestions in Mann Ki Baat about the initiative's aims to give students hands-on experience of scientific research. This program has been celebrated across all CSIR labs. Around 500 students from Classes 8–10 from different schools (Government & Private) across Uttarakhand have participated, interacted directly with scientists and explored the ongoing research. Coordinators Dr Aarti and Dr Kamal Kumar Maurya have guided and motivated the students to develop scientific curiosity and contribute to society and the environment.

During the event, CSIR-IIP scientists delivered talks on energy, alternative fuels, and the role of chemistry in daily life and innovation. Students also gained exposure to and knowledge of crude oil, refining processes, and advanced analytical techniques through visits to key facilities, including the biodiesel pilot plant, crude oil research centre, and glass blowing laboratory.





- **ऊर्जा संरक्षण दिवस पर दून इंटरनेशनल स्कूल में हुआ पोस्टर मेकिंग कंपटीशन**
देहरादून : 17 दिसंबर 2025 को दून इंटरनेशनल स्कूल सीनियर विंग में भारत सरकार के वैज्ञानिक एवं औद्योगिक अनुसंधान परिषद के "जिज्ञासा" कार्यक्रम के अंतर्गत सीएसआईआर-भारतीय पेट्रोलियम संस्थान एवं सोसाइटी फॉर रिसर्च एंड डेवलपमेंट इन साइंस टेक्नोलॉजी एंड अग्री के संयुक्त तत्वावधान में ऊर्जा संरक्षण पर एक पोस्टर मेकिंग कंपटीशन का आयोजन किया गया। इस आयोजन में विभिन्न स्कूलों के छात्र छात्राओं ने प्रतिभाग किया। आयोजन में विभिन्न स्कूलों के 26 छात्रों को आकर्षण इनाम के साथ मोमेंटो एवं अवॉर्ड सर्टिफिकेट प्रदान किए गए।

कार्यक्रम के मुख्य अतिथि भारतीय पेट्रोलियम संस्थान के निदेशक डॉ हरेन्द्र सिंह बिष्ट ने छात्रों को प्रथम, द्वितीय, तृतीय पुरस्कार वितरण के बाद अपने ओजस्वी उद्बोधन में उपस्थित छात्र- छात्राओं की ऊर्जा के विभिन्न रूपों के बारे में समझाया और जीवन में ऊर्जा संरक्षण के महत्व को रेखांकित किया। कार्यक्रम का धन्यवाद ज्ञापन प्रधानाचार्य डॉ दिनेश बर्थवाल द्वारा प्रेषित किया गया। पोस्टर मेकिंग कंपटीशन के ज्यूरी सदस्य डीएवी कॉलेज के प्रो हरिओम शंकर, एसजीआरआर यूनिवर्सिटी की डॉ नेहा सक्सेना एवं डीआईएस की सुश्री अनीता देवी ने विजेताओं के नाम घोषित किए। पोस्टर मेकिंग कंपटीशन में दो वर्गों में छात्रों ने भाग लिया, पहले वर्ग में कक्षा 6 से 8 के छात्र दूसरे वर्ग में कक्षा 9 से 12 तक के छात्रों ने प्रतिभाग किया। पुरस्कृत छात्रों की कृति को दून इंटरनेशनल स्कूल में आगामी होने वाली पीटीएम के दिन प्रदर्शित किया जाएगा।

कार्यक्रम का संचालन दून स्कूल समन्वयक सुश्री काजल क्षेत्री द्वारा किया गया। कार्यक्रम में आयोजन सचिव डॉ कुँवर राज अस्थाना, जिज्ञासा कार्यक्रम की समन्वयक डॉ आरती तथा टीम के सदस्य डॉ ज्योति पोरवाल, डॉ कमल कुमार, अंजलि भटनागर, सपना पैन्थली, संजय कुमार, गोकुल कुमार व पंकज भास्कर उपस्थित थे।



- **Five-day Residential Programme under Jigyasa for the Students of Scindia Kanya Vidyalaya, Gwalior, M. P., 1st -5th Dec. 2025 at CSIR-IIP, Dehradun**

A Five-day Residential Programme under 'Jigyasa' programme was successfully organized for the students of XIth class of Scindia Kanya Vidyalaya, Gwalior from 1st -5th Dec. 2025 at CSIR-Indian Institute of Petroleum, Dehradun. The main objective of this Residential program is to provide an opportunity to observe and participate in the actual scientific work being conducted in the different research laboratories. This was one of a series of such programmes to be organized at various times of the year in the Institute.



The 5-day residential program was inaugurated on 1st Dec 2025. Dr Aarti, Jigyasa Coordinator at CSIR-IIP, Dehradun, introduced the students to the overall programme. Dr Kamal Maurya briefed the students about the Jigyasa program and different activities organised throughout the year under the Jigyasa Program. Dr Umesh Kumar briefed about the overall work and the history of CSIR-IIP.

Under this Residential Programme, students were grouped in pairs and assigned to specific laboratories for experimental activities to enhance their scientific temperament. These laboratories were: The Biochemistry & Biotechnology Laboratory under Dr Sunil K Suman; Catalytic Depolymerisation Lab under Dr Bipul Sarkar; Surface Science and Technology Lab under Dr O.P. Khatri; High-Temperature High-Pressure Lab under Dr Ankur Bordoloi; Polymeric Materials Area under Dr Umesh Kumar, wherein the students participated in routine chores of the laboratory while learning about science. Students had the opportunity to interact with Scientists and Technical Officers of CSIR-Indian Institute of Petroleum. During this program, students also visited various laboratories, including the Adsorption & Membrane Separation lab, the Advanced Crude Oil Research Centre, the Analytical labs, the Biojet Fuel lab, the Biofuel Esterification Lab, the Material Resource Efficiency Division, and the Waste Plastic to Fuels & Chemicals pilot plants.

During the Valedictory function, which was held on the last day, dated 5th Dec. 2025, in the presence of Dr Harender Singh Bisht, Director, CSIR-IIP, Dehradun. Dr Harender Singh Bisht encouraged the girl students, reminded them that they are the pillars of society and can contribute scientifically to the social, scientific, and economic growth of India, and also presented the participation certificates to the students. Students have also given presentations on the research work they performed during the 5-Day Residential Program. In the organisation of this program.

6.5 Exposure Events

6.5.1 Students' Visits

- A team of 22 Undergraduate Students of B.Tech (Petroleum Studies Department) and Faculty Members from Aligarh Muslim University visited the our Institute on 9th April, 2025.
- On the occasion of CSIR-IIP Foundation Day, a laboratory visit was organised for students and faculty of The Sapience School, Dehradun, on 14 April 2025 at CSIR-IIP under the Jigyasa program.
- A team of 45 Students of B.Tech (Energy and Environmental Engineering) from Agricultural Engineering College and Research Institute, Tamil Nadu Agricultural University along with Faculty Members visited our Institute on 30th May, 2025.
- A team of 25 students of MSc. Chemistry from Dhanauri PG College, Haridwar along with Faculty Members visited our Institute on 10th June, 2025
- Laboratory visits were also arranged for students and faculty of Army Public School, Miran Sahib, Jammu & Kashmir, on 12 June 2025 at CSIR-IIP under the Jigyasa program.
- Under the Jigyasa program, a laboratory visits for students and faculty of Gyananda School, Dehradun, was scheduled on 7 July 2025 at CSIR-IIP.
- Visit of Trainee IFS Officers (45 Nos.), Rajasthan Cadre 2024-2025 visited CSIR-IIP for Interaction and Lab Visits on 22 July 2025.
- On the occasion of CSIR Foundation Day, students of The OASIS Academic, Dehradun, visited the laboratories of CSIR-IIP on 26 September 2025 under the Jigyasa program.
- A team of around 50 B. Pharma final-year students from DIT University and Faculty Members visited our Institute on 9th October 2025
- A Group of 50 Students and Faculty from Dev Bhoomi Uttarakhand University, Dehradun visited CSIR-IIP Campus on the 15th of October, 2025
- A team of 25 Undergraduate students (B.Sc., PCM, B.Sc. & CBZ) from Subharti University, Dehradun along with Faculty Members visited our Institute on 7th November, 2025.
- A “Scientist as Teacher” program was organised on 27 November 2025 for students of PM Shri-KV-OLF, Dehradun, under the Jigyasa program at their school.

- CSIR-IIP also organized an IISF-2025 Curtain Raiser event on 28 November 2025 under the Jigyasa program, which included scientific lectures by scientists, interactive sessions, and visits to research laboratories.
- A team of 100 students (B.Sc. & MSc.) from various Universities of Uttarakhand, along with Faculty Members, visited our Institute on 16th January 2026 under Chief Minister's Student Educational Bhartat Darshan Scheme (Educational Tour) 2024-2025 visited CSIR-IIP Campus on the 16th of January 2026
- A team of around 25 students, M.Sc. (Chemistry), along with Faculty Members from Radhey Hari Govt. P.G. College, Kashipur, Udham Singh Nagar, Uttarakhand, visited CSIR-IIP Campus on the 17th February, 2026
- A group of 25 Students and Faculty from the Department of Library & Information Science, Mizoram University, visited our Institute on 20th February 2026.
- Under the Jigyasa program, a "Scientist as Teacher" program was conducted on 23 February 2026 for students of PM Shri-KV-IIP, Dehradun, at their school.
- A team of 45 Students, including Ph.D. scholars, Postgraduate and Undergraduate students Student and Faculty from Maya Devi University (Educational Visit) visited CSIR-IIP Campus on the 24th of February, 2026
- A laboratory visit was organised for students of St. George's College, Mussoorie, on 27 February 2026 to celebrate National Science Day under the Jigyasa program.



6.5.2 Showcasing Our Capabilities (Outreach Activities)

- CSIR-IIP participated in “Bharat Development & Scheme” exhibition during 22-24 August, 2025 at Prem Nagar Ashram, Haridwar, Uttarakhand to showcase the exhibits/Demo Units/Models etc.
- CSIR-IIP participated in the "International Exhibition on Chemicals, Petrochemicals and Plant Machinery" (CPX) during 12-14 November 2025 at MMCEC, Gandhi Nagar, Gujarat
- CSIR-IIP showcased the exhibits/Demo Units/Models etc 6th DISTF at UCOST Jhajra on from 12-14 November 2025.



6.6 अनुसंधान-प्रबंधन गतिविधियाँ / Research Management Events

6.6.1 सीएसआईआर-भापेसं अनुसंधान परिषद् की बैठक / CSIR-IIP Research Council (RC) Meeting

- 55th Research Council Meeting on 13th May, 2025.
- 56th Research Council Meeting on 12th & 13th February, 2026.

The Head of Divisions and the Institute's Technical and Administrative personnel attended the RC Meeting.



6.9 सम्मेलन/संगोष्ठियाँ/परिसंवाद/Conferences / Seminars/Symposia

6.9.1 International Conference, "Shaping the Energy Future: Challenges and Opportunities- SEFCO-2025" on April 23-25, 2025

CSIR-Indian Institute of Petroleum, Dehradun is organising an International Conference "Shaping the Energy Future: Challenges and Opportunities" (SEFCO-2025) from April 23 to 25, 2025. SEFCO conference is annually organized by students and young scientists at CSIR-IIP, Dehradun which is a platform to facilitate discussions on innovative solutions, explore collaborative opportunities in energy & chemical sector.

1st edition of "SEFCO" Conference was organized in 2017. The present 7th edition is an international conference with a theme of **Catalysing a Sustainable Future with Affordable Energy and Chemicals."**

The inauguration ceremony of SEFCO held on 23 April 2025 was graced by Chief Guest Prof. K.K. Pant, Director, IIT Roorkee and Guest of Honour Sh Alok Sharma, Director (R&D), Indian Oil Corporation Ltd. Dr. Manoj Srivastava, Secretary, SEFCO 2025 in his opening remarks gave an overview of genesis and relevance of SEFCO and its journey since inception. Dr Harender Singh Bisht, Director, CSIR-IIP and Chief Patron of the conference, after paying homage to his holiness

Pope Francis, welcomed distinguished guests and delegates and highlighted work done at CSIR-IIP and shared his vision on the way forward.

This 3-day conference will feature talks from various national and international experts, young scientists and research students from universities, research institutes and industries. Notable International speakers include Prof. Paul A. Webley from Monash University, Australia; Dr. Richard Blom from SINTEF, Norway; Prof. Samira Siahrostami, Simon Fraser University, Canada; Prof. Keiichi Tomishige, Tohoku University, Japan, and Prof. Eric van Steen, SARChI Reaction Engineering, University of Cape Town, South Africa.

More than 300 delegates from various national and international organizations are attending the conference. An exhibition showcasing CSIR-IIP's technological achievements is part of this conference. SEFCO-2025 is supported by ONGC, EIL, BPCL, CRISTOL, IOCL, GAIL, AIRBUS, NRL, CPCL & R L Solutions.



6.7.2 भारत के अनुसंधान और विकास पारिस्थितिकी तंत्र में सुधार पर दूसरी राष्ट्रीय परामर्श बैठक नीति आयोग, 03-04 जून, 2025 / NITI Aayog advances R&D Reforms in Second Consultative Meeting on Ease of Doing R&D, 3-4 June, 2025

The Second National Consultative Meeting on reforming India's Research and Development (R&D) ecosystem commenced today at the CSIR – Indian Institute of Petroleum (CSIR-IIP), Dehradun, Uttarakhand. Organized under the Chairpersonship of Dr. V.K. Saraswat, Hon'ble Member, NITI Aayog.



6.7.3 “लैंटाना कैमारा बायोमास पैलेटाइजेशन का प्रदर्शन” विषयक एक प्रशिक्षण कार्यक्रम का आयोजन किया, 10 जुलाई, 2025 / Training Program Titled "Demonstration of Lantana Camara Biomass Pelletization" “ July 10th, 2025

The training imparted as a part of the “Mapping, Monitoring, and Management of Lantana Camara Biomass Through its Utilization for Improving the Livelihood of People in Forest Fringe Villages of India” project funded by Indian Council of Forestry Research and Education under Ministry of Environment, Forest and Climate Change.



6.7.4 CSIR-IIP organizes Curtain Raiser for India International Science Festival (IISF 2025) on 28th November, 2025

The Curtain Raiser for the 11th India International Science Festival (IISF) 2025 was held on 28th November, 2025 at Dr Lovraj Kumar Auditorium, CSIR-Indian Institute of Petroleum. In his Address, Dr. H S Bisht, Director, CSIR-IIP highlighted the vision of IISF 2025 and the need for observing this day. Dr V K Gahalaut, Director, WIHG and Chief Guest of the event, underscored the significance of the IISF events and the role of science in national development. Prof K D Purohit briefed various initiatives and activities of VIBHA planned for the state of Uttarakhand and encouraged students to actively participate in the events. On this occasion, a special session was organised for students from Kendriya Vidyalaya on emerging scientific areas. Under Jigyasa program, students visited various laboratories and interacted with scientists. Hemant Kulkarni, Chief Scientist, coordinated the event.



6.7.5 CSIR-IIP is Hosted a Focused Meeting on "Western Himalayas" for NDMA, 13th March, 2026

CSIR-IIP is hosted a focused meeting on "Western Himalayas" for NDMA. The meeting was held on March 13, 2026, Training Centre, CSIR-IIP. Dr. D.K. Aswal, Hon'ble Member, NDMA, chaired the meeting, and representatives from institutions/organisations in and around Dehradun participated.



6.7.6 Training Program Titled "Demonstration of Lantana Camara Biomass Pelletization" Hosted at CSIR-IIP on 19th March, 2026



6.8 कर्मचारी जागरूकता अभियान /Employee Awareness Drives

6.8.1 स्वच्छता पखवाड़ा 2025

Swachata Pakhwada was celebrated during 01.05.2025 to 15.05.2025. A variety of events were organized during the fortnight.

6.8.2 सतर्कता जागरूकता सप्ताह, 27 अक्टूबर – 2 नवंबर, 2025 / Vigilance Awareness Week, 27 October – 2 November, 2025

In compliance to CVO, CSIR vide letters No. 15-6(88)/2025-O&M/Vig. dated 13.08.2025 and 15.09.2025 enclosing therewith CVC Circular No. 04/08/2025, Ref. No. 025/VGL/047 dated 01.08.2025 and CVC Circular No. 06/09/2025, Ref. No. 025/VGL/047 dated 10.09.2025, wherein instruction have been issued regarding Preventive Vigilance Activities during three months campaign from (18th August 2025 to 17th November 2025) as a precursor to Vigilance Awareness Week, 2025 and for activities during Vigilance Awareness Week, 2025 from 27.10.2025 to 02.11.2025, this year the theme was “सतर्कता : हमारी साझा ज़िम्मेदारी” “Vigilance: Our Shared Responsibility”. The precursor activities were started from 28.08.2025 by displaying the banners and posters boards on the topics integrity and eradication of corruption etc. in different important locations of the Institute.

The week began with the Pledge taking ceremony at 11.00 am on 27.10.2025. The pledge was administered by the Director, CSIR-IIP. During the pledge ceremony viz. regular employees/ Scientists/ Officers/Research Scholars, Project Assistants and Casual Workers (Security Staff, Wild Growth Cutting Staff and Sweeping/Cleaning Staff etc.) of this Institute (approx. 170 in numbers) were present. Staff members were also encouraged to take e-pledge through the CVC website. Jingles on Vigilance Awareness Week provided by CSIR HQ was played during Vigilance Awareness Pledge ceremony on 27.10.2025 in Auditorium of the Institute. A lecture was also organized on topic “Audit & Vigilance aspects in Public Procurement”, followed by Question/Answer Session” delivered by Sh Kanwalpreet, Dy. Director, Indian Railway, New Delhi on 27.10.2025.

In this context 2 more lectures were organized during the three months duration/VAW 2025. The purpose of the lectures were Capacity Building and to train the officials to impart necessary competency and develop skill for smooth and effective functioning of the organization. The Second lecture on “CCS Conduct Rules and Vigilance” was followed by Question/Answer Session” delivered by Sh Rathin Sengupta, Head, Personal & General Administration and Head, Accounts & IFA, IIRS, Kalidas Road, Dehradun on 31.10.2025.

And the Third lecture on “CCS Conduct Rules & Disciplinary Procedure (Prevention to Prosecution)” was followed by Question/Answer Session” delivered by Sh Y K Sharma, Ex-Sr.D.S., CSIR, New Delhi on 07.11.2025. India’s National Song Vande Matram was also played and sung by all the employees of the Institute on the occasion of 150th Anniversary of the National Song on the same day.

Do’s and Dont’s for Central Government Employee as per CCS (Conduct) Rules 1964 for information to the employees of the Institute was circulated during the campaign period.

Considering the importance of the ‘Vigilance Aareness Week’ banners were displayed on prime frontal locations of the Institute.





6.8.3 Swachh Bharat Abhiyaan at CSIR-IIP, 2025

156th Birth Anniversary of Mahatma Gandhi is being celebrated on 2nd October, 2025. The Swachh Bharat Abhiyaan is a significant step towards achieving this goal, and we are committed to contributing to this national mission. During the event, employees, students, and volunteers actively participated in cleaning the roads, parks, and nearby areas, with a special focus on proper disposal of plastic waste. The campaign also highlighted the importance of waste segregation and recycling.

6.8.4 सद्भावना दिवस 20 अगस्त, 2025/Sadbhawna Diwas, 20 August, 2025

सद्भावना दिवस पर संस्थान में एक शपथ-ग्रहण समारोह का आयोजन 20 अगस्त, 2025 को किया गया, जिसमें कर्मचारियों व अधिकारियों ने आपसी सद्भावना के प्रति अपनी प्रतिबद्धता को दोहराया।

6.8.5 Rashtriya Ekta Diwas Celebrated, 31 October, 2025

As per GOI instructions, Rashtriya Ekta pledge was taken by the employees of the Institute on 31 October, 2025, on the occasion of the birthday of Sardar Vallabhbhai Patel.

6.8.6 The Constitution Day, 26 November, 2025

The Constitution of India was adopted by Constituent Assembly on November 26, 1949 and came into effect later on January 26, 1950. As per the instruction of the Govt. of India, Constitution Day was celebrated in the Institute on 26 November, 2025.



CHAPTER 7



सीएसआईआर-भापेसं के अनुसंधान परिषद के सदस्य / Research Council Members of CSIR-IIP

अध्यक्ष / Chairman

Mr. Arun Kumar Singh
Chairman and CEO,
Oil and Natural Gas Corporation Ltd.
Plot No. 5A- 5B Nelson Mandela Road,
Vasant Kunj, New Delhi - 110070

बाह्य सदस्य / External Members

Dr. G.S. Kapur
Advisor (R&D), GAIL India Ltd
Former Executive Director-I/c (Chemical Technology), and
Head-Indian Oil Technology Development & Deployment
Centre, R&D Division, Indian Oil Corporation Ltd
Consultant, Energy Transition & Petrochemicals
Sector 17, Faridabad – 121002

Dr. Neeraj Mathur
Former Executive Director(R&D),
Oil India Limited
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Ahinsa Khand,
Indirapuram, Ghaziabad 201 014.

Ms. Sukla Mistry
Director (Refineries), Indian Oil, New Delhi
Indian Oil Corporation Ltd. Scope Complex, Core, 2
7 Lodhi Institutional Area, Lodhi Road
New Delhi -110 049

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Mumbai - 400 076, India

एजेंसी प्रतिनिधि / Agency Representative

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सहोदरी प्रयोगशाला/Sister Laboratory

Dr. Ashish Lele
Director
CSIR-National Chemical Laboratory
Dr. Homi Bhabha Road,
Pune - 411 008

डीजी-नॉमिनी / DG's Nominee

Shri Anoj Kumar Chadar
Senior Principal Scientist
Technology Management Directorate (TMD)
Vigyan Suchan Bhawan (CSIR-NIScPR Building)
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निदेशक / Director

Dr. Harender Singh Bisht
Director
CSIR-Indian Institute of Petroleum
P.O. IIP, Mohkampur
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सचिव / Secretary

Dr. Sanat Kumar
Head, RPPM
CSIR-Indian Institute of Petroleum
P. O. Mohkampur,
Dehradun – 248 005 (Uttaranchal)

सीएसआईआर-भापेसं प्रबंधन परिषद (01 जनवरी, 2026 - 31 दिसम्बर, 2027)

**The CSIR-IIP Management Council
(January 1, 2026 – December 31, 2027)**

अध्यक्ष / Chairman

डॉ. हरेन्द्र सिंह बिष्ट/ Dr. Harender Singh Bisht

निदेशक / Director

आंतरिक सदस्य / Internal Members

डॉ. राजाराम बल/ Dr Rajaram Bal

मुख्य वैज्ञानिक / Chief Scientist

डॉ. दीप्ति अग्रवाल /Dr Deepti Aggarwal

वरिष्ठ प्रधान वैज्ञानिक / Senior Principal Scientist

डॉ. गणेश नायक/Dr Ganesh Naik

प्रधान वैज्ञानिक/ Principal Scientist

डॉ. महक धीमान/Dr Mehak Dhiman

वैज्ञानिक / Scientist

श्री जितेंद्र कुमार/ Sh Jitender Kumar

वरिष्ठ तकनीकी अधिकारी (1) /Senior Technical Officer (1)

डॉ. सनत कुमार, प्रमुख, आरपीपीएम / Dr. Sanat Kumar, Head RPPM

मुख्य वैज्ञानिक / Chief Scientist

श्री जे. के.चौरसिया / Sh J K Chaurasia

वित्त एवं लेखा नियंत्रक/ Controller of Finance & Accounts

श्री आशीष बहुगुणा / Sh. Ashish Bahuguna

प्रशासन नियंत्रक /Controller of Administration

संयोजक सदस्य /Member Convener

बाहरी सदस्य / External Member

प्रो० प्रदीप कुमार रमन चारला /Prof. Pradeep Kumar Ramancharla

निदेशक/ Director

सीएसआईआर / केंद्रीय भवन अनुसंधान संस्थान -CSIR-Central Building Research Institute

रूड़की /Roorkee



CHAPTER 8



राजभाषा संबंधित गतिविधियाँ 2026- 2025

1. नगर राजभाषा कार्यान्वयन समिति .का)2), देहरादून की छमाही बैठक

ओएनजीसी द्वारा दिनांक 06 जून ,2025 को आयोजित नगर राजभाषा कार्यान्वयन समिति .का)2), देहरादून द्वारा वर्ष की दूसरी छमाही बैठक में 'संस्थान' को राजभाषा कार्यान्वयन के लिए प्रोत्साहन पुरस्कार दिया गया। इस बैठक में डॉ हरेन्द्र सिंह बिष्ट हिंदी अधिकारी उपस्थित थे। इसके .वरि ,निदेशक तथा श्री सोमेश्वर पाण्डेय , अतिरिक्त सीएसआईआर भारतीय पेट्रोलियम -म संस्थान, देहरादून द्वारा नगर राजभाषा कार्यान्वयन समिति .का) 2), देहरादून के तत्वावधान में मार्च में आयोजित एक कहानी लेखन प्रतियोगिता के विजेताओं को भी इस 2025 छमाही बैठक में पुरस्कार प्रदान किए गए।

2. हिन्दी कार्यशाला

सीएसआईआर -भारतीय पेट्रोलियम संस्थान, देहरादून द्वारा नव नियुक्त कर्मचारियों के लिए दिनांक **28 मई, 2025** को 'सी.वी .रमन व्याख्यान कक्ष' में एक हिन्दी कार्यशाला का आयोजन किया गया। इस कार्यशाला में तकनीकी संवर्ग के अंतर्गत नियुक्त तकनीकी अधिकारियों एवं तकनीशियनों सहित कुल **40** कर्मचारियों ने प्रतिभाग किया। यह कार्यशाला दो सत्र में आयोजित की गई। प्रथम सत्र राजभाषा नीति एवं कार्यान्वयन पर केंद्रित रही तो वहीं दूसरे सत्र में प्रयोगशाला सुरक्षा एवं सम्बद्ध मानक संचालन प्रक्रिया पर हिन्दी में चर्चा की गई।



कार्यशाला की अध्यक्षता संस्थान के निदेशक डॉ. हरेन्द्र सिंह बिष्ट द्वारा की गई। इस अवसर पर प्रशासनिक अधिकारी श्री परवेश चंद एवं प्रधान वैज्ञानिक डॉ . पंकज कनौजिया भी विशेष रूप से उपस्थित रहे। कार्यशाला का संचालन वरिष्ठ हिन्दी अधिकारी श्री सोमेश्वर पाण्डेय द्वारा किया गया, जिन्होंने राजभाषा हिन्दी के संवैधानिक प्रावधानों, राजकीय नियमों तथा उनके प्रभावी क्रियान्वयन पर विस्तारपूर्वक व्याख्यान प्रस्तुत किया।

कार्यशाला का शुभारंभ निदेशक महोदय के प्रेरणादायी संबोधन से हुआ, जिसमें उन्होंने सभी नव नियुक्त कर्मचारियों को संस्थान में नियुक्ति के लिए बधाई एवं शुभकामनाएं दीं। उन्होंने संस्थान के कार्यों में हिन्दी भाषा के प्रयोग की आवश्यकता और उसकी उपयोगिता पर बल देते हुए कर्मचारियों को अपने-अपने कार्यक्षेत्र में अधिकाधिक हिन्दी के प्रयोग के लिए प्रेरित किया।



इसके पश्चात प्रशासनिक अधिकारी श्री परवेश चंद ने कर्मचारियों को संस्थान में उनकी भूमिका, कर्तव्यों, कार्य संस्कृति, तथा आचरण एवं अनुशासन संबंधी दिशा-निर्देशों से अवगत कराया। उन्होंने विशेष रूप से यह उल्लेख किया कि राजभाषा हिन्दी के कार्यान्वयन की जिम्मेदारी सामूहिक है, अतः सभी को अपने दैनिक कार्यों में हिन्दी को प्राथमिकता देनी चाहिए।

इसके उपरांत वरिष्ठ हिन्दी अधिकारी श्री सोमेश्वर पाण्डेय द्वारा राजभाषा नीति, हिन्दी में कार्य के लिए प्रोत्साहन योजनाएं, हिन्दी प्रतियोगिताएं, तथा संस्थान की त्रैमासिक पत्रिका 'विकल्प' के प्रकाशन संबंधी पहलुओं पर पावरपॉइंट प्रस्तुतीकरण के माध्यम से विस्तारपूर्वक जानकारी दी गई। तदुपरांत, कार्यशाला के दूसरे सत्र में डॉ पंकज कनौजिया द्वारा प्रयोगशाला सुरक्षा से संबंधित प्रस्तुतीकरण दिया गया तथा साथ ही तत्संबंधी मानक संचालन प्रक्रिया एवं सुरक्षा मैनुअल आदि की जानकारी प्रदान की गई। संस्थान में अवस्थित सुरक्षा तंत्र व सुविधाओं के बारे में भी बताया गया। इसके बाद अभ्यास एवं चर्चा सत्र रखा गया था, जिसमें प्रतिभागियों की शंकाओं तथा समस्याओं के समाधान सुझाए गए।

3. हिन्दी कार्यशाला

सीएसआईआर-भारतीय पेट्रोलियम संस्थान, देहरादून द्वारा नव नियुक्त कर्मचारियों के लिए दिनांक 10 सितंबर, 2025 को एक हिन्दी कार्यशाला का आयोजन किया गया। इस कार्यशाला में नवनियुक्त तकनीकी तथा प्रशासनिक कर्मचारियों के साथ-साथ कुछ पिछली कार्यशाला के प्रशिक्षार्थियों ने भी भाग लिया। इन कार्मिकों में



तकनीशियन, कनिष्ठ सचिवालयीन सहायक, तथा सहायक अनुभाग अधिकारी शामिल थे। यह कार्यशाला दो सत्र में आयोजित की गई। प्रथम सत्र में वरिष्ठ हिन्दी अधिकारी श्री सोमेश्वर पाण्डेय द्वारा राजभाषा नीति एवं कार्यान्वयन पर एक विस्तृत व्याख्यान दिया गया। अपराह्न सत्र में प्रतिभागियों के डेस्क पर जाकर हिन्दी के प्रयोग संबंधी कठिनाइयों का समाधान किया गया।

यह कार्यशाला सभी नवनियुक्त कर्मचारियों को राजभाषा विषयक नीतियों से परिचित करने के उद्देश्य से आयोजित की गई थी। श्री सोमेश्वर पाण्डेय ने अपने व्याख्यान के दौरान पाँवरपॉइंट प्रस्तुतीकरण के माध्यम से सभी को राजभाषा हिन्दी के संवैधानिक प्रावधानों, नियमों, उनके प्रभावी क्रियान्वयन के साथ साथ प्रोत्साहन पुरस्कारों, अनुवाद से संबंधित टूल्स, वेबसाइट तथा ऐप्स, हिन्दी से संबंधित प्रशिक्षण, एवं युनिकोड टंकण पर विस्तारपूर्वक व्याख्यान प्रस्तुत किया। अपने व्याख्यान द्वारा उन्होंने सभी को हिन्दी में अधिकाधिक कार्य करने हेतु प्रेरित किया।

उन्होंने सभी कार्मिकों को हिन्दी माह के उपलक्ष में 11 आयोजित की जा रही विविध हिन्दी प्रतियोगिताओं में भाग लेने हेतु प्रोत्साहित किया। अपराह्न सत्र में मुख्यतः यूनिकोडसक्रियन, फोनेटिक कीबोर्ड स्थापन, ई-ऑफिस में हिन्दी में टिप्पणी करने तथा ईमेल को हिन्दी में भेजने में अनुवाद और कंठस्थ 2.0 के प्रयोग का अभ्यास किया तथा प्रतिभागियों की शंकाओं तथा समस्याओं के डेस्क पर ही समाधान सुझाए गए।

4. हिन्दी माह 2025

सीएसआईआर -भारतीय पेट्रोलियम संस्थान में दिनांक 01 सितंबर से 30 सितंबर 2025 तक हिंदी माह मनाया गया। इसके अंतर्गत संस्थान के समस्त अधिकारियों/कर्मचारियों तथा शोध छात्रों के लिए विभिन्न प्रतियोगिताओं तथा कार्यक्रमों का आयोजन किया गया। इस वर्ष इन प्रतियोगिताओं/कार्यक्रमों में से कुछ ऑनलाइन एवं ऑफलाइन दोनों माध्यमों में एवं कुछ प्रतियोगिताओं का आयोजन ऑफलाइन माध्यम में किया गया। हिंदी माह 2025 का शुभारंभ निदेशक महोदय के शुभकामना संदेश तथा ऑनलाइन प्रश्नोत्तरी प्रतियोगिता के साथ हुआ।

इस वर्ष ऑनलाइन प्रश्नोत्तरी प्रतियोगिता के प्रारूप में परिवर्तन किया गया। इस वर्ष इसे संस्थान के ऑनलाइन टेस्ट पोर्टल पर आयोजित किया गया। इसमें कुल 30 प्रश्न थे जिसके लिए प्रतिभागियों को 15 मिनट की समय सीमा दी गई थी। मुख्यतः इसमें पूछे जाने वाले प्रश्न हिंदी भाषा, हिंदी साहित्य, राजभाषा नियम और राजभाषा कार्यान्वयन आदि से संबंधित थे। इस प्रतियोगिता में संस्थान के अधिकतर कर्मचारियों ने भाग लिया। यह प्रतियोगिता संस्थान की हिंदी की सर्वाधिक लोकप्रिय प्रतियोगिता है।

संस्थान हिंदी की उत्तरोत्तर प्रगति और प्रयोग तथा प्रभावी राजभाषा में कार्यान्वयन के लिए प्रतिबद्ध है और इसी दिशा में संस्थान में 14 सितंबर 2025 को हिंदी दिवस के उपलक्ष में निदेशक, आईआईपी द्वारा सभी वैज्ञानिकों, अधिकारियों तथा कर्मचारियों को हिंदी में अधिक से अधिक कार्य करने की अपील की गई और उन्होंने इसका एक उदाहरण भी स्थापित किया तथा अपना हिंदी दिवस शुभकामना संदेश हिंदी में दिया जिसे संस्थान के व्हाट्सएप ग्रुप तथा ईमेल द्वारा सभी को प्रेषित किया गया। इस संदेश के द्वारा उन्होंने सभी से हिंदी के अधिकाधिक प्रयोग एवं प्रचार प्रसार करने की अपील की। दिनांक 03 सितंबर 2025 को संस्थान के सभी कर्मचारियों के लिए एक श्रुत टंकण प्रतियोगिता का आयोजन किया गया। इस प्रतियोगिता के अंतर्गत कर्मचारियों को दी गई टंकण सामग्री को मोबाईल पर श्रुत टंकण कर व्हाट्सएप समूह पर भेजना था। इसके उपरांत दिनांक 11 सितंबर 2025, को संस्थान के स्थायी कर्मचारियों



हेतु निबंध प्रतियोगिता का आयोजन किया गया। इसके अतिरिक्त 18 सितंबर 2025 को संस्थान के कर्मचारियों के भाषा कौशल एवं सर्जनात्मक अभिरुचि में वृद्धि के उद्देश्य से एक चित्र वर्णन प्रतियोगिता का भी आयोजन किया गया।

इस प्रतियोगिता को इस वर्ष सभी स्थायी कर्मचारियों के लिए आयोजित किया गया। दिनांक 23

सितंबर 2025 ,को संस्थान के वैज्ञानिक/तकनीकी कर्मचारियों के लिए 'वैज्ञानिक/तकनीकी पावरपॉइंट प्रस्तुतीकरण प्रतियोगिता का भी आयोजन किया गया। इस प्रतियोगिता में 'हेफा मार्ग द्वारा सतत जैव विमानन ईंधन उत्पादन में प्रमुख चुनौतियां एवं समाधान', 'विद्युत का सफर: उत्पादन से खपत', 'स्नेहक', 'पेट्रोलियम उत्पादों का शुद्धिकरण :तेल-पानी परिदृश्य', 'CO₂ अवशोषण के लिए विलायक की स्क्रीनिंग पर एक व्यवहार्यता अध्ययन,' आदि विषयों पर प्रतिभागियों द्वारा प्रस्तुतीकरण किया गया। इस प्रतियोगिता का आयोजन 'सी वी रमन व्याख्यान कक्ष' में किया गया।

5. नगर राजभाषा कार्यान्वयन समिति (का.2) के तत्वावधान में संस्थान में आयोजित प्रतियोगिता :

इन प्रतियोगिताओं के अतिरिक्त इस वर्ष नगर राजभाषा कार्यान्वयन समिति (का.2), देहरादून के तत्वावधान में संस्थान द्वारा दिनांक 02 सितंबर 2025 को 'कविता लेखन प्रतियोगिता' का भी आयोजन किया गया। इस प्रतियोगिता हेतु उन्हें कुछ शब्द दिए गए थे जिन्हें यथारूप प्रयोग करते हुए प्रतिभागियों को काव्य रचना करनी थी। इस प्रतियोगिता में नराकास के सदस्य कार्यालयों के 43 कर्मचारियों ने प्रतिभागिता की। इस प्रतियोगिता हेतु प्रविष्टियाँ ऑनलाइन माध्यम से आमंत्रित की गई थीं।

6. हिन्दी माह 2025 का समापन

दिनांक स्थापना दिवस तथा हिंदी-को संस्थान में सीएसआईआर 2025 सितंबर 29माह समापन समारोह का आयोजन किया गया। इस अवसर पर डॉ० सुरेखा डूंगवाल, कुलपति ,के डी पुरोहित .प्रो ,दून विश्वविद्यालय , कार डॉ जितेन ठाकुर जी भी सम्मिलित हुए। उन्होंने विज्ञान भारती तथा देहरादून के प्रख्यात साहित्य ,अध्यक्ष कर्मचारियों को अप/उपस्थित सभी वैज्ञानिकों के दैनिक जीवन में हिंदी के अधिकाधिक प्रयोग हेतु प्रेरित किया। समारोह के अंत में संस्थान के निदेशक महोदय एवं अतिथिगण द्वारा हिंदी माह के अंतर्गत आयोजित 2025 उनके द्वारा इन प्रतियोगिताओं के निर्णाय ,के विजेताओं को पुरस्कृत किया गया। इसके साथ ही प्रतियोगिताओं को भी सम्मानित किया गया। इस अवसर पर संस्थान की हिंदी पत्रिका के नवीन अंक का विमोचन भी 'विकल्प' चंद द्वारा प्रस्तुत धन्यवाद ज्ञापन के किया गया। कार्यक्रम का समापन संस्थान के प्रशासनिक अधिकारी श्री परवेश साथ हुआ।

7. नगर राजभाषा कार्यान्वयन समिति (का-2), देहरादून की छमाही बैठक में प्रतिभागिता तथा विकल्प को प्रथम पुरस्कार

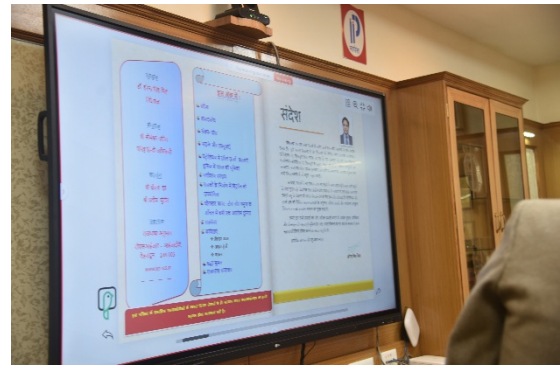
संस्थान की गृहपत्रिका 'विकल्प' को नराकास देहरादून के सदस्य कार्यालय , (2 का) यों की श्रेष्ठ पत्रिकाओं में पहला स्थान प्राप्त हुआ। ओएनजीसी द्वारा दिनांक 07 नवंबर 2025 को आयोजित नगर राजभाषा कार्यान्वयन समिति (का-2), देहरादून द्वारा वर्ष की दूसरी छमाही बैठक में 'विकल्प' को प्रथम पुरस्कार स्वरूप 'गृह पत्रिका शील्ड' प्रदान की गई। इस बैठक में निदेशक के प्रतिनिधि के रूप में उपस्थित मुख्य वैज्ञानिक डॉ मनोज श्रीवास्तव ने यह पुरस्कार प्राप्त किया। विकल्प के संपादक और वरिहिंदी अधिकारी श्री सोमेश्वर पांडेय .भी इस अवसर पर उपस्थित थे। । नराकास के तत्वावधान में छमाही के दौरान विभिन्न सदस्य कार्यालयों द्वारा आयोजित विविध

हिंदीप्रतियोगिताओं में उत्कृष्ट प्रदर्शन करने वाले सदस्य कार्यालयों के कर्मचारियों को भी सम्मानित किया गया। संस्थान केडॉ राजकुमार सिंह, वरिष्ठप्रधान वैज्ञानिक को कविता लेखन प्रतियोगिता में प्रथम पुरस्कार ., डॉ संध्या जैन, वरिता में प्रोत्साहन पुरस्कार तथा डॉ रोहित कुमारतकनीकी अधिकारी को आशुभाषण प्रतियोगि ., वरितकनीकी अधिकारी को निबंध प्रति .योगिता में प्रोत्साहन पुरस्कार प्राप्त हुआ। इसके अतिरिक्तसमिति के तत्वावधान में संस्थान द्वारा आयोजित कविता लेखन प्रतियोगिता के विजेताओं को भी इस अवसर पर पुरस्कृत किया गया।संस्थान के सहयोग से संपादित और प्रकाशित नगर राजभाषा कार्यान्वयन समिति -का)2), देहरादून की हिन्दी पत्रिका का भी इस अवसर पर विमोचन किया गया तथा इस पत्रिका के सम्पादन कार्य के 'देवश्लोक' लिए श्री सोमेश्वर पाण्डेय को भी स्मृति चिन्ह देकर सम्मानित किया गया।।



8. विकल्प (2 अंक,26-2025)का विमोचन

संस्थान की हिंदी पत्रिका 'विकल्प' के नवीनअंक का विमोचन संस्थान की अनुसंधान परिषद की बैठक में संस्थान के पूर्व निदेशक तथा सीएसआईआर के पूर्व महानिदेशक डॉ. मधुकर ओंकारनाथ गर्ग के करकमलों द्वारा किया गया। इस अवसर पर संस्थान के निदेशक डॉ. हरेन्द्र सिंह बिष्ट एवं परिषद के गणमान्य सदस्य भी उपस्थित थे।



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CHAPTER 9



9.1 31 मार्च 2026 को संस्थान के कर्मचारीगण की स्थिति / Staff as on March 31, 2026

9.1.1 वैज्ञानिक गण समूह-IV / SCIENTISTS GROUP-IV

क्रम सं Sl.No.	कर्मचारी का नाम Name of the Employee	पदनाम Designation
1	डॉ हरेन्द्र सिंह बिष्ट Dr. Harender Singh Bisht	निदेशक Director
2	श्री एस के गांगुली Dr. S.K. Ganguly	मुख्य वैज्ञानिक Chief Scientist
3	डॉ. अनिल कुमार सिन्हा Dr. Anil Kumar Sinha	मुख्य वैज्ञानिक Chief Scientist
4	श्री हेमंत मधुकर कुलकर्णी Shri Hemant Madhukar Kulkarni	मुख्य वैज्ञानिक Chief Scientist
5	डॉ. सनत कुमार Dr. Sanat Kumar	मुख्य वैज्ञानिक Chief Scientist
6	डॉ. समीर कुमार मैती Dr. Samir Kumar Maity	मुख्य वैज्ञानिक Chief Scientist
7	डॉ. सुनील कुमार पाठक Dr. Sunil Kumar Pathak	मुख्य वैज्ञानिक Chief Scientist
8	श्री राजेश कुमार Shri Rajesh Kumar	मुख्य वैज्ञानिक Chief Scientist
9	डॉ. राजराम बल Dr. Rajaram Bal	मुख्य वैज्ञानिक Chief Scientist
10	डॉ. जी डी ठाकरे Dr. G.D. Thakre	मुख्य वैज्ञानिक Chief Scientist
11	डॉ. ओ.पी. खात्री Dr. O.P. Khatri	मुख्य वैज्ञानिक Chief Scientist
12	डॉ. सुमन लता जैन Dr. Suman Lata Jain	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
13	डॉ. देवेंद्र सिंह Dr. Devender Singh	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
14	डॉ. नीरज आत्रे Dr. Neeraj Atrey	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
15	श्री सूर्यदेव कुमार Shri Suryadev Kumar	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
16	डॉ. सौमेन दासगुप्ता Dr. Soumen Dasgupta	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
17	डॉ. सुनिल कुमार Dr. Sunil Kumar	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
18	डॉ. एल रोबीन्द्रो Dr. L. Robindro	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
19	डॉ. अजय कुमार Dr. Ajay Kumar	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
20	डॉ. . विटीसन कामई Dr. Witison Kamei	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
21	डॉ. अतुल रंजन Dr. Atul Ranjan	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
22	डॉ. डी वी नायक Dr. D.V. Naik	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
23	डॉ. अंकुर बोर्डोलोई Dr. Ankur Bordoloi	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist

24	श्री स्वप्निल दिवेकर Dr. Swapnil Diveker	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
25	डॉ. बबीता बेहरा Dr. Babita Behara	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
26	डॉ. राजकुमार सिंह Dr. Raj Kumar Singh	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
27	श्री सलीम अख्तर फ़ारूकी Shri Saleem Akhtar Farooqi	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
28	डॉ. मृत्युंजय शुक्ला Dr. Mritunjay Shukla	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
29	श्री पंकज कुमार आर्य Shri Pankaj Kumar Arya	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
30	डॉ. देबाशीष घोष Dr. Debashis Ghosh	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
31	डॉ. प्रसेजित घोष Dr. Prasenjit Ghosh	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
32	डॉ. पंकज कुमार कन्नौजिया Dr. Pankaj Kumar Kanaujia	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
33	डॉ. आरती Dr. Aarti	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
34	डॉ. सुनील कुमार सुमन Dr. Sunil Kumar Suman	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
35	डॉ. दीप्ति अग्रवाल Dr. Deepti Agrawal	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist
36	डॉ. दीपतारका दासगुप्ता Dr. Diptarka Dasgupta	वरिष्ठ प्रधान वैज्ञानिक Sr. Principal Scientist
37	डॉ. इंद्रजीत कुमार घोष Dr. Indrajit Kr. Ghosh	प्रधान वैज्ञानिक Principal Scientist
38	डॉ. शुभम पाल Dr. Subham Paul	प्रधान वैज्ञानिक Principal Scientist
39	डॉ. उमेश कुमार Dr. Umesh Kumar	प्रधान वैज्ञानिक Principal Scientist
40	डॉ. गौरव गुप्ता Dr. Gaurav Gupta	प्रधान वैज्ञानिक Principal Scientist
41	श्री बी नीलम नायडू Shri B Neelam Naidu	प्रधान वैज्ञानिक Principal Scientist
42	डॉ. श्रीणीवास पडाला Dr. Srinivas Padala	प्रधान वैज्ञानिक Principal Scientist
43	डॉ. रचा सूर्य मुराली Dr.Racha Surya Murali	प्रधान वैज्ञानिक Principal Scientist
44	डॉ. गणेश नारायण नाईक Dr. Ganesh Narayan Naik	प्रधान वैज्ञानिक Principal Scientist
45	डॉ. शैलेश कुमार सिंह Dr. Shailesh Kumar Singh	प्रधान वैज्ञानिक Principal Scientist
46	डॉ. बीपुल सरकार Dr. Bipul Sarkar	प्रधान वैज्ञानिक Principal Scientist
47	डॉ. प्रणब दास Dr. Pranab Das	प्रधान वैज्ञानिक Principal Scientist
48	डॉ. अविनाश पालोडकर Dr. Avinash Palodkar	प्रधान वैज्ञानिक Principal Scientist
49	डॉ. अंकुश बिंदवाल Dr. Ankush Bindwal	प्रधान वैज्ञानिक Principal Scientist

50	डॉ. इन्दु शेखर Dr. Indu Shekher	प्रधान वैज्ञानिक Principal Scientist
51	डॉ. सुधाकर रेड्डी Dr. Sudhakara Reddy	प्रधान वैज्ञानिक Principal Scientist
52	श्री अविनाश म्हेत्रे Shri Avinash Mehtre	वरिष्ठ वैज्ञानिक Senior Scientist
53	डॉ. ए. सेल्वमणि Dr. A. Selvamani	वरिष्ठ वैज्ञानिक Senior Scientist
54	डॉ. ओजस्वी Dr. Ojasvi	वरिष्ठ वैज्ञानिक Senior Scientist
55	डॉ. अनूप ताथोड Dr. Anup Thathod	वरिष्ठ वैज्ञानिक Senior Scientist
56	डॉ. टी. सेंथिलकुमार Dr. T. Senthilkumar	वरिष्ठ वैज्ञानिक Senior Scientist
57	डॉ. प्रेम लामा Dr. Prem Lama	वरिष्ठ वैज्ञानिक Senior Scientist
58	डॉ. वी. चंद्रशेखर पाल्ला Dr. V. Chandra Sekhar Palla	वरिष्ठ वैज्ञानिक Senior Scientist
59	डॉ. नानोजी इसलावथ Dr. Nanoji Islawath	वरिष्ठ वैज्ञानिक Senior Scientist
60	डॉ. कीर्तिका कोहली Dr. Kirtika Kohli	वरिष्ठ वैज्ञानिक Senior Scientist
61	डॉ. तुहिन खान Dr. Tuhin Khan	वरिष्ठ वैज्ञानिक Senior Scientist
62	डॉ. भरत सिंह राना Dr. Bharat Singh Rana	वैज्ञानिक Scientist
63	डॉ. प्रकाशईयाह बी. जी. Dr. Prakashaiah B.G.	वैज्ञानिक Scientist
64	डॉ. बिलाल हैदर Dr. Mohd. Belal Haider	वैज्ञानिक Scientist
65	डॉ. ए. हरीश Dr. A. Harish	वैज्ञानिक Scientist
66	श्री सत्यम कुमार प्रजापति Shri Satyam Kumar Prajapati	वैज्ञानिक Scientist
67	श्री मुकेश कुमार पौदार Shri Mukesh Kumar Poddar	वैज्ञानिक Scientist
68	डॉ. महक धीमान Dr Mahak Dhiman	वैज्ञानिक Scientist

9.1.2 तकनीकी कर्मचारीगण समूह – III /TECHNICAL STAFF GROUP-III

क्रम सं Sl.No.	कर्मचारी का नाम Name of the Employee	पदनाम Designation
1	डॉ. घनश्याम ठक्कर Dr. Ghanshyam Thakkar	प्रधान तकनीकी अधिकारी Principal Technical Officer
2	श्री सी.डी. शर्मा Shri C.D. Sharma	प्रधान तकनीकी अधिकारी Principal Technical Officer
3	श्री संदीप सरन Shri Sandeep Saran	प्रधान तकनीकी अधिकारी Principal Technical Officer
4	श्री सेठपाल सिंह Shri Sethpal Singh	प्रधान तकनीकी अधिकारी Principal Technical Officer
5	श्री सुनिल कुमार Shri Sunil Kumar	प्रधान तकनीकी अधिकारी Principal Technical Officer
6	श्री सतीश कुमार Shri Satish Kumar	प्रधान तकनीकी अधिकारी Principal Technical Officer
7	श्री जगदीश कुमार Shri Jagdish Kumar	प्रधान तकनीकी अधिकारी Principal Technical Officer
8	श्री राकेश कुमार Shri Rakesh Kumar	प्रधान तकनीकी अधिकारी Principal Technical Officer
9	डॉ. सूचिस्मिता बेंजवाल Dr. Shuchismita Benjwal, LRMO	प्रधान तकनीकी अधिकारी Principal Technical Officer
10	श्री मनोज कुमार Shri Manoj Kumar	प्रधान तकनीकी अधिकारी Principal Technical Officer
11	श्री राजिन्दर बडोला Shri Rajinder Badola	वरिष्ठ तकनीकी अधिकारी (3) Senior Technical Officer (3)
12	श्री एस.एन. यादव Shri S. N. Yadav	वरिष्ठ तकनीकी अधिकारी (3) Senior Technical Officer (3)
13	श्री सरवानन्द तिवारी Shri Sarvanand Tiwari	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
14	डॉ. कमल कुमार Dr. Kamal Kumar	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
15	श्री प्रेमचंद नेरुसू Shri Premchand Nerusu	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
16	श्री चन्द्र शेखर रेड्डी Shri Chandra Sekhar Reddi	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
17	श्रीमति पूजा यादव Smt. Pooja Yadav	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
18	श्री अमित शर्मा Shri Amit Sharma	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
19	श्री ओ.पी. शर्मा Shri O. P. Sharma	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
20	डॉ. निशा Dr. Nisha	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
21	श्रीमति रेखा चौहान Smt. Rekha Chauhan	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
22	श्री सुंदराम शर्मा Shri Sundram Sharma	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
23	डॉ. ज्योति पोरवाल Dr. Jyoti Porwal	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
24	डॉ. प्रवीण कुमार खत्री Dr. Praveen Kumar Khatri	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)

25	डॉ. मनीषा सहाय Dr. Manisha Sahai	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
26	डॉ. रोहित कुमार Dr. Rohit Kumar	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
27	डॉ. प्रदीप कुमार Dr. Pradeep Kumar	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
28	श्री विशवास सैनी Shri Vishwas Saini	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
29	श्रीमति मनिन्दर कौर Smt. Manender Kaur	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)
30	श्रीमति संध्या जैन Smt. Sandhya Jain	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
31	श्री यशवीर सिंह मीणा Shri Yashveer Singh Meena	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
32	श्रीमति कमला यादव Smt. Kamla Yadav	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
33	श्री मनोज कुमार Shri Manoj Kumar	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
34	श्री एल. एन. शिवकुमार कोंथाला Shri L.N. Shivkumar Konthala	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
35	श्री पियूष गुप्ता Shri Piyush Gupta	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
36	श्रीमति रश्मी Smt. Rashmi	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
37	डॉ. रघुवीर सिंह Dr. Raghuvir Singh	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
38	डॉ. दीपेंद्र त्रिपाठी Dr. Deependra Tripathi	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
39	डॉ. वी. भानु प्रसाद Dr. V Bhanu Prasad	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
40	श्री गोरधन जैन Shri Gordhan Jain	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
41	डॉ. कसीना डी.पी. लक्ष्मी कुमार Dr. Kasina D.P. Lakshmee Kumar	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
42	श्री जितेंद्र कुमार Shri Jitendra Kumar	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
43	श्री अमित कुमार Shri Amit Kumar	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
44	श्री विपिन चन्द्र जोशी Shri Vipin Chandra Joshi	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)
45	श्री वैभव Shri Vaibhav	तकनीकी अधिकारी Technical Officer
46	श्री विनीत सूद Shri Vineet Sood	वरिष्ठ तकनीकी अधिकारी Technical Officer
47	श्री मुदावत रवि Shri Mudavat Ravi	तकनीकी सहायक Technical Assistant
48	श्री रोहित Shri Rohit	तकनीकी सहायक Technical Assistant
49	श्री हेमन्त कुमार साहू Shri Hemant Kumar Sahoo	तकनीकी सहायक Technical Assistant
50	श्री राहुल कुमार Shri Rahul Kumar	तकनीकी सहायक Technical Assistant

51	मिस नैन्सी शर्मा Ms Nancy Sharma	तकनीकी सहायक Technical Assistant
52	श्री सचिन तोमर Shri Sachin Tomar	तकनीकी सहायक Technical Assistant
53	श्री ओम कृष्णा कश्यप Shri Aum Krishna Kashyap	तकनीकी सहायक Technical Assistant
54	श्रीमति आशिता रतुड़ी Smt. Ashita Raturi	तकनीकी सहायक Technical Assistant
55	मिस अल्पना Ms Alpana	तकनीकी सहायक Technical Assistant
56	श्री संतोष कुमार पासवान Shri Santosh Kumar Paswan	तकनीकी सहायक Technical Assistant
57	श्री पंकज कुमार Shri Pankaj Kumar	तकनीकी सहायक Technical Assistant
58	श्री अवनीश तिवारी Shri Avnish Tiwari	तकनीकी सहायक Technical Assistant
59	श्री अप्पीनायकर टी Shri Appinayakkar T	तकनीकी सहायक Technical Assistant
60	श्री प्रदीप कुमार जोशी Shri Pradeep Kumar Joshi	तकनीकी सहायक Technical Assistant
61	श्री दिलीप महतो Shri Dilip Mahato	तकनीकी सहायक Technical Assistant
62	श्री गवीत रमेश धवालु Shri Gavit Ramesh Dhavalu	तकनीकी सहायक Technical Assistant
63	डॉ. विजेंद्र सिंह Dr. Vijendra Singh	तकनीकी सहायक Technical Assistant
64	श्री शासवत गुप्ता Shri Shaswat Gupta	तकनीकी सहायक Technical Assistant
65	मिस निवेदिता राठोर Ms Nivedita Rathor	तकनीकी सहायक Technical Assistant
66	श्री अनिल कुमार सिंह Shri Anil Kumar Singh	तकनीकी सहायक Technical Assistant
67	श्री मोनोजित नंदी Shri Monojit Nandi	तकनीकी सहायक Technical Assistant
68	श्री पुनित Shri Punit	तकनीकी सहायक Technical Assistant
69	श्री अफसर अहमद Shri Afsar Ahmad	तकनीकी सहायक Technical Assistant
70	श्री अभिजीत मोहन्ती Shri Abhijeet Mohanty	तकनीकी सहायक Technical Assistant
71	श्री राहुल Shri Rahul	तकनीकी सहायक Technical Assistant
72	श्री प्रत्युष कुमार Shri Pratyush Kumar	तकनीकी सहायक Technical Assistant
73	श्री संतोष कुमार शॉ Shri Santosh Kumar Shaw	तकनीकी सहायक Technical Assistant

9.1.3 तकनीकी कर्मचारीगण समूह & II /TECHNICIAN STAFF GROUP-II

क्रम सं Sl.No.	कर्मचारी का नाम Name of the Employee	पदनाम Designation
1	श्री टी.सी. शर्मा Shri T.C. Sharma	वरिष्ठ तकनीसियन (2) Sr. Technician (2)
2	श्री एन.एन. बहुगुणा Shri N.N. Bahuguna	वरिष्ठ तकनीसियन (2) Sr. Technician (2)
3	श्री राजीव शर्मा Shri Rajeev Sharma	वरिष्ठ तकनीसियन (2) Sr. Technician (2)
4	श्री रजनीश भटनागर Shri Rajnish Bhatnagar	वरिष्ठ तकनीसियन (2) Sr. Technician (2)
5	श्रीमति अंजलि भटनागर Smt. Anjali Bhatnagar	वरिष्ठ तकनीसियन (2) Sr. Technician (2)
6	श्री अनिल कुमार Shri Anil Kumar	वरिष्ठ तकनीसियन (2) Sr. Technician (2)
7	श्री राजपाल सिंह Shri Rajpal Singh	वरिष्ठ तकनीसियन (2) Sr. Technician (2)
8	श्री एन.के. रावत Shri N.K. Rawat	वरिष्ठ तकनीसियन (2) Sr. Technician (2)
9	श्री संजीव कुमार Shri Sanjeev Kumar	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
10	श्री मयंक मिश्रा Shri Mayank Mishra	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
11	श्री प्रदीप सिंह नेगी Shri Pradeep Singh Negi	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
12	श्री बिनोद कुमार Shri Binod Kumar	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
13	श्री पूरण सिंह अस्वल Shri Puran Singh Aswal	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
14	श्री प्रदीप सिंह पंवार Shri Pradeep Singh Panwar	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
15	श्री रितुराज सिंह नेगी Shri Rituraj Singh Negi	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
16	श्री परवेज़ आलम Shri Parvez Alam	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
17	श्री विवेक कुमार शर्मा Shri Vivek Kumar Sharma	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
18	श्री नसीम अहमद Shri Naseem Ahmed	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
19	श्री अशोक कुमार ठाकुर Shri Ashok Kumar Thakur	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
20	श्री गंभीर सिंह Shri Gambhir Singh	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
21	श्री अशोक कुमार Shri Ashok Kumar	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
22	श्री महेंद्र सिंह नेगी Shri Mahendra Singh Negi	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
23	श्री शिव प्रसाद नौटियाल Shri Shiv Prasad Nautiyal	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
24	श्री मनमोहन सिंह गोसाई Shri Manmohan Singh Gosain	वरिष्ठ तकनीसियन (1) Sr. Technician (1)
26	श्री राजीव पंवार Shri Rajeev Panwar	वरिष्ठ तकनीसियन (1) Sr. Technician (1)

27	डॉ. संदीप कुमार सक्सेना Dr. Sandeep Kumar Saxena	वरिष्ठ तकनीसियन (1) Sr.Technician (1)
28	डॉ. अरुणा कुरेती Dr. Aruna Kukreti	वरिष्ठ तकनीसियन (1) Sr.Technician (1)
29	श्री खेम सिंह Shri Khem Singh	वरिष्ठ तकनीसियन (1) Sr.Technician (1)
30	श्री अब्बल सिंह Shri Abbal Singh	वरिष्ठ तकनीसियन (1) Sr.Technician (1)
31	श्री गिरीश चंद तिवारी Shri Girish Chand Tiwari	वरिष्ठ तकनीसियन (1) Sr.Technician (1)
32	श्री राजेश शर्मा Shri Rajesh Sharma	वरिष्ठ तकनीसियन (1) Sr.Technician (1)
33	श्री नवीन कुमार मौर्य Shri Naveen Kumar Maurya	वरिष्ठ तकनीसियन (1) Sr.Technician (1)
34	श्री पुष्प राज शर्मा Shri Pushp Raj Sharma	वरिष्ठ तकनीसियन (1) Sr.Technician (1)
35	डॉ. पी. नगेन्द्रम्मा Dr. P. Nagendramma	वरिष्ठ तकनीसियन (1) Sr.Technician (1)
36	श्री तस्लीम खान Shri Tasleem Khan	वरिष्ठ तकनीसियन (1) Sr.Technician (1)
37	श्रीमति ऋतु मौर्य Smt. Ritu Maurya	नर्स/ वरिष्ठ तकनीसियन (1) Nursing Sister ANM/Sr. Tech (1)
38	श्री हरी प्रकाश Shri Hari Prakash	फरमासिस्ट / वरिष्ठ तकनीसियन (1) Pharmacist (Non-FCS)/Sr.Tech (1)
39	श्री ओम्बीर सिंह Shri Ombir Singh	तकनीसियन (2) Technician 2
40	श्री जितेंद्र सिंह Shri Jitendra Singh	तकनीसियन (2) Technician 2
41	श्री वी. वी. मगन भाई Shri V.V. Magan Bhai	तकनीसियन (2) Technician 2
42	श्री गुरु जोती जी. Shri Guru Jothi G.	तकनीसियन (2) Technician 2
43	श्री अमरदीप कुमार Shri Amardeep Kumar	तकनीसियन (2) Technician 2
44	श्री सर्वेश कुमार भीमटे Shri Sarvesh Kumar Bhimte	तकनीसियन (1) Technician 1
45	श्री तनुज कुमार Shri Tanuj Kumar	तकनीसियन (1) Technician 1
46	श्री संदीप कुमार चौहान Shri Sandeep Kumar Chauhan	तकनीसियन (1) Technician 1
47	श्री रौशन कुमार Shri Raushan Kumar	तकनीसियन (1) Technician 1
48	श्री रजनीश कुमार मौर्य Shri Rajnish Kumar Maurya	तकनीसियन (1) Technician 1
49	श्री कलरकर प्रदीप दिवाकर Shri Kalarkar Pradip Diwakar	तकनीसियन (1) Technician 1
50	श्री लोकेश मावले Shri Lokesh Mavale	तकनीसियन (1) Technician 1
51	श्री राहुल मीणा Shri Rahul Meena	तकनीसियन (1) Technician 1
52	श्री गेंदला मालवी Shri Gendlal Malvi	तकनीसियन (1) Technician 1
53	श्री कुत्तरमरे अक्षय भारत Shri Kuttarmare Akshay Bharat	तकनीसियन (1)

54	श्री अरविंद कुमार Shri Arvind Kumar	तकनीसियन (1) Technician 1
55	श्री चेतला महतो Shri Chetla Mahato	तकनीसियन (1) Technician 1
56	श्री विकास Shri Vikas	तकनीसियन (1) Technician 1
57	श्री पारस कुमार Shri Paras Kumar	तकनीसियन (1) Technician 1
58	श्री सुनील Shri Sunil	तकनीसियन (1) Technician 1
59	मिस हर्षिता पटेल Shri Harshita Patel	तकनीसियन (1) Technician 1
60	श्री रितेश यादव Shri Ritesh Yadav	तकनीसियन (1) Technician 1
61	श्री अमित कुमार Shri Amit Kumar	तकनीसियन (1) Technician 1
62	श्री उमाशंकर प्रसाद Shri Umashankar Prasad	तकनीसियन (1) Technician 1
63	श्री तुषार राजेंद्र रणवीर Sh Tushar Rajender Ranvir	तकनीसियन (1) Technician 1
64	श्री गणेश प्रसाद लुहार Sh Ganesh Prasad Luhar	तकनीसियन (1) Technician 1
65	श्री प्रेम ठाकुर Sh Prem Thakur	तकनीसियन (1) Technician 1
66	श्री संदीप मेघवाल Sh Sandeep Meghval	तकनीसियन (1) Technician 1
67	श्री प्रशांत कुमार जंगीड Sh Prashant Kuamr Jangid	तकनीसियन (1) Technician 1
68	श्री प्रीतम Sh Pritam	तकनीसियन (1) Technician 1
69	श्रीमति सीसीली क्रिस्टोफर Smt. Sicily Krishtopher	तकनीसियन (1) Technician 1

9.1.4 प्रयोगशाला कर्मचारीगण समूह – I /LABORATORY STAFF GROUP I

क्रम सं Sl.No.	कर्मचारी का नाम Name of the Employee	पदनाम Designation
1	मोहम्मद परवेज़ Mohd Parvej	प्रयोगशाला सहायक Lab Assistant
2	श्री सूरत राम Shri Surat Ram	प्रयोगशाला सहायक Lab Assistant
3	श्री रनबीर सिंह Shri Ranbir Singh	प्रयोगशाला सहायक Lab Assistant
4	श्री संजय कुमार Shri Sanjay Kumar	प्रयोगशाला सहायक Lab Assistant
5	श्री जय प्रकाश Shri Jai Prakash	प्रयोगशाला सहायक Lab Assistant
6	श्रीमति कांता देवी Smt. Kanta Devi	प्रयोगशाला सहायक Lab Assistant
7	श्री नरेंद्र सिंह नेगी Shri Narendra Singh Negi	प्रयोगशाला सहायक Lab Assistant
8	श्री हेरोल्ड ग्लाडविन Shri Herold Gladwin	प्रयोगशाला सहायक Lab Assistant

9	श्री मोहन सिंह Shri Mohan Singh	प्रयोगशाला सहायक Lab Assistant
10	श्री ज्योति प्रसाद Shri Jyoti Prasad	प्रयोगशाला सहायक Lab Assistant
11	श्री संजय कुमार Shri Sanjay Kumar	प्रयोगशाला सहायक Lab Assistant
12	श्री शिवराम सिंह Shri Shivram Singh	प्रयोगशाला सहायक Lab Assistant
13	श्री राकेश कुमार Shri Rakesh Kumar	प्रयोगशाला सहायक Lab Assistant
14	श्री प्रदीप सिंह पुनड़ीर Shri Pradeep Singh Pundir	प्रयोगशाला सहायक Lab Assistant
15	श्री राम किशोर मौर्य Shri Ram Kishore Maurya	प्रयोगशाला सहायक Lab Assistant
16	श्री मुकेश कुमार Shri Mukesh Kumar	प्रयोगशाला सहायक Lab Assistant
17	श्री सुरजीत सिंह थापा Shri Surjeet Singh Thapa	प्रयोगशाला सहायक Lab Assistant
18	श्री सतीश कुमार कटारिया Shri Satish Kumar Katariya	प्रयोगशाला सहायक Lab Assistant
19	श्री नरेश कुमार Shri Naresh Kumar	प्रयोगशाला सहायक Lab Assistant
20	श्री नवीन भट्ट Shri Naveen Bhatt	प्रयोगशाला सहायक Lab Assistant
21	श्री सुनील कुमार Shri Sunil Kumar	प्रयोगशाला सहायक Lab Assistant
22	श्री अजय पाल Shri Ajay Pal	प्रयोगशाला सहायक Lab Assistant
23	श्री देव सिंह अधिकारी Shri Dev Singh Adhikari	प्रयोगशाला सहायक Lab Assistant
24	श्री गोकुल प्रसाद Shri Gokul Prasad	प्रयोगशाला सहायक Lab Assistant
25	श्री रमेश चन्द्र Shri Ramesh Chandra	प्रयोगशाला सहायक Lab Assistant
26	श्री इरशाद खान Shri Irshad Khan	प्रयोगशाला सहायक Lab Assistant
27	श्री पंकज भास्कर Shri Pankaj Bhasker	प्रयोगशाला सहायक Lab Assistant
28	श्री दिनेश चन्द्र Shri Dinesh Chandra	प्रयोगशाला सहायक Lab Assistant
29	सुश्री यशोदा Ms Yashoda	प्रयोगशाला सहायक Lab Assistant
30	श्री राजेंद्र प्रसाद Shri Rajendra Prasad	प्रयोगशाला सहायक Lab Assistant
31	श्री बीजेन्द्र सिंह बिष्ट Shri Bijendra Singh Bisht	प्रयोगशाला सहायक Lab Assistant
32	श्री मुरलीधर चांदना Shri Murlidhar Chandna	प्रयोगशाला सहायक Lab Assistant
33	श्री राजबीर सिंह नेगी Shri Rajbir Singh Negi	प्रयोगशाला सहायक Lab Assistant
34	श्री सुदामा सिंह बिष्ट Shri Sudama Singh Bisht	प्रयोगशाला सहायक Lab Assistant

35	श्री हेमंत कुमार तिवारी Shri Hemant Kumar Tiwari	प्रयोगशाला सहायक Lab Assistant
36	श्री टिका राम भट्ट Shri Tikka Ram Bhatt	प्रयोगशाला सहायक Lab Assistant
37	श्री विवेक सिंह Shri Vivek Singh	प्रयोगशाला सहायक Lab Assistant
38	श्रीमति भारती पयाल Smt. Bharti Payal	प्रयोगशाला सहायक Lab Assistant
39	श्री अरविंद कुमार खंडूरी Shri Arvind Kumar Khanduri	प्रयोगशाला सहायक Lab Assistant
40	श्री सुरेन्द्र कुमार Shri Surendra Kumar	प्रयोगशाला सहायक Lab Assistant
41	श्री चंदर सिंह Shri Chander Singh	प्रयोगशाला सहायक Lab Assistant
42	श्री राम चन्द्र बालूनी Shri Ram Chandra Baluni	प्रयोगशाला परिचर (2) Lab Attendant (2)

9.1.5 प्रशासनिक कर्मचारीगण / ADMINISTRATIVE STAFF

9.1.5.1 सामान्य संवर्ग अधिकारीगण/COMMON CADRE OFFICERS

क्रम सं Sl.No.	कर्मचारी का नाम Name of the Employee	पदनाम / Designation
1	श्री अंजुम शर्मा Shri Anjum Sharma	वरिष्ठ प्रशासन नियंत्रक Senior Controller of Administration
2	श्री आशीष बहुगुणा Shri Ashish Bahuguna	प्रशासन नियंत्रक Controller of Administration
3	श्री जे.के.चौरससिया Shri J.K. Chaurasia	वित्त एवं लेखा नियंत्रक Controller of Finance & Accounts
4	श्री परवेश चंद Shri Parvesh Chand	प्रशासनिक अधिकारी Administrative Officer
5	श्री दिनेश कुमार Shri Dinesh Kumar	भंडार एवं क्रय अधिकारी (भंडार एवं क्रय) Store & Purchase Officer (S&P)
6	श्री रमेश कुमार जोशी Shri Ramesh Kumar Joshi	अनुभाग अधिकारी (सामान्य) Section Officer (General)
7	श्री विश्वेन्द्र डोगरा Shri Vishvendra Dogra	अनुभाग अधिकारी (सामान्य) Section Officer (General)
8	श्री बी. बी. डिमरी Shri B.B. Dimri	अनुभाग अधिकारी (सामान्य) Section Officer (General)
9	श्री राकेश पंत Shri Rakesh Pant	अनुभाग अधिकारी (सामान्य) Section Officer (General)
10	श्री सतीश चन्द्र Shri Satish Chandra	अनुभाग अधिकारी (वित्त एवं लेखा) Section Officer (F&A)
11	श्री पंकज कुमार मौर्य Shri Pankaj Kumar Maurya	अनुभाग अधिकारी (वित्त एवं लेखा) Section Officer (F&A)
12	श्री महेश कुमार जाटव Shri Mahesh Kumar Jatav	अनुभाग अधिकारी (वित्त एवं लेखा) Section Officer (F&A)
13	श्रीमति मीना कुमारी Smt. Meena Kumari	अनुभाग अधिकारी (भंडार एवं क्रय) Section Officer (S&P)
14	श्री आर.के. भट्टाचार्य Shri R.K. Bhattacharya	अनुभाग अधिकारी (भंडार एवं क्रय) Section Officer (S&P)

9.1.5.2 निजी सचिव संवर्ग के कर्मचारीगण / PRIVATE SECRETARY

क्रम सं Sl.No.	कर्मचारी का नाम Name of the Employee	पदनाम Designation
1	श्री देवेंद्र राय Shri Devendra Rai	प्रधान निजी सचिव Principal Private Secretary
2	श्रीमति सरोज कुशवाहा Smt. Saroj Kushwaha	निजी सचिव Private Secretary
3	सुश्री रीना शर्मा Ms. Reena Sharma	निजी सचिव Private Secretary
4	सुश्री कुसुम भट्ट Ms. Kusum Bhatt	निजी सचिव Private Secretary
5	सुश्री भावना रावत Ms. Bhawna Rawat	निजी सचिव Private Secretary

9.1.5.3 सहायक ग्रेड- I / ASSISTANT GRADE-I

क्रम सं Sl.No.	कर्मचारी का नाम Name of the Employee	पदनाम Designation
1	श्रीमति प्रतिमा राणा Smt. Pratima Rana	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)
2	श्रीमति किरण लता Smt. Kiran Lata	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)
3	श्रीमति आशा जोशी Smt. Asha Joshi	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)
4	श्री हिम्मत सिंह Shri Himmat Singh	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)
5	श्री आदेश सेठ Shri Adesh Seth	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)
6	श्रीमति प्रतिमा बग्गा Smt. Pratima Bagga	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)
7	श्रीमति अनीता देवी Smt. Anita Devi	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)
8	श्री जस्सू कुमार शर्मा Shri Jassu Kumar Sharma	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)
9	श्री संजय पोखरियाल Shri Sanjay Pokhriyal	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)
10	श्री हरजीत सिंह Shri. Harjeet Singh	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)
11	श्री कुलवंत सिंह Shri. Kulwant Singh	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)
12	श्रीमति निशा Smt. Nisha	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)
13	श्री बीजेन्द्र सिंह Shri Bijender Singh	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)
14	श्री अजून ई मुथू Shri Ajun E Muthu	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)
15	श्री मुनिन्दर पाल सिंह आरोडा Shri Muninder Pal Singh Arora	सहायक अनुभाग अधिकारी (भ.व.क्र.) Assistant Section Officer (S&P)
16	श्री विक्रम सिंह रावत Shri Vikram Singh Rawat	सहायक अनुभाग अधिकारी (भ.व.क्र.) Assistant Section Officer (S&P)
17	श्री जितेंद्र सिंह नेगी Shri Jitendra Singh Negi	सहायक अनुभाग अधिकारी (वि.व.ले.) Assistant Section Officer (F&A)

18	श्री आशीश रतुड़ी Shri Ashish Raturi	सहायक अनुभाग अधिकारी (वि.व.ले.) Assistant Section Officer (F&A)
19	श्री अस्मीत शुक्ला Shri Asmit Shukla	सहायक अनुभाग अधिकारी (वि.व.ले.) Assistant Section Officer (F&A)

9.1.5.4 सहायक ग्रेड-II /ASSISTANTS GRADE-II

क्रम सं Sl.No.	कर्मचारी का नाम Name of the Employee	पदनाम Designation
1	श्रीमति हर्विंदर कौर Smt. Harvinder Kaur	वरिष्ठ सचिवालयीन सहायक (सा.) Senior Secretariat Assistant (General)
2	श्री तनवीर अहमद कुरेशी Shri Tanveer Ahmed Kureshi	वरिष्ठ सचिवालयीन सहायक (सा.) Senior Secretariat Assistant (General)
3	सुश्री स्तुति शर्मा Ms. Stuti Sharma	वरिष्ठ सचिवालयीन सहायक (सा.) Senior Secretariat Assistant (General)
4	श्री घनश्याम Shri Ghanshyam	वरिष्ठ सचिवालयीन सहायक (सा.) Senior Secretariat Assistant (General)
5	श्री सुनील रावत Shri Sunil Rawat	वरिष्ठ सचिवालयीन सहायक (भ.व.क्र.) Senior Secretariat Assistant (S&P)
6	श्री बीजेन्द्र दत्त बहुगुणा Shri Bijendra Dutt Bahuguna	वरिष्ठ सचिवालयीन सहायक (भ.व.क्र.) Senior Secretariat Assistant (S&P)
7	श्रीमति साइमा नाज़ Smt. Saima Naaz	वरिष्ठ सचिवालयीन सहायक (भ.व.क्र.) Senior Secretariat Assistant (S&P)

9.1.5.5 सहायक ग्रेड-III /ASSISTANTS GRADE-III

क्रम सं Sl.No.	कर्मचारी का नाम Name of the Employee	पदनाम Designation
1	श्री हिमांशु Sh Himanshu	कनिष्ठ सचिवालयीन सहायक (सा.) Junior Secretariat Assistant (General)
2	श्री मंजीत कुमार पांडे Sh Manjeet Kumar Pandey	कनिष्ठ सचिवालयीन सहायक (सा.) Junior Secretariat Assistant (General)
3	श्री विवेक Sh Vivek	कनिष्ठ सचिवालयीन सहायक (सा.) Junior Secretariat Assistant (General)
4	श्री मोनू Sh Monu	कनिष्ठ सचिवालयीन सहायक (सा.) Junior Secretariat Assistant (General)
5	श्री हितेश आनंद Sh Hitesh Anand	कनिष्ठ सचिवालयीन सहायक (सा.) Junior Secretariat Assistant (General)
6	श्री मनीष तोमर Sh Manish Tomar	कनिष्ठ सचिवालयीन सहायक (वि.व.ले.) Junior Secretariat Assistant (F&A)
7	श्री पूरन मल यादव Sh Pooran Mal Yadav	कनिष्ठ सचिवालयीन सहायक (वि.व.ले.) Junior Secretariat Assistant (F&A)
8	श्री चन्दन चौधरी Sh Chandan Choudhary	कनिष्ठ सचिवालयीन सहायक (वि.व.ले.) Junior Secretariat Assistant (F&A)
9	श्री मनीष Sh Manish	कनिष्ठ सचिवालयीन सहायक (वि.व.ले.) Junior Secretariat Assistant (F&A)
10	श्री शशांक थपलियल Sh Shashank Thapliyal	कनिष्ठ सचिवालयीन सहायक (वि.व.ले.) Junior Secretariat Assistant (F&A)
11	श्री हितेश कुमार Sh Hitesh Kumar	कनिष्ठ सचिवालयीन सहायक (भ.व.क्र.) Junior Secretariat Assistant (S&P)
12	श्री राहुल कुमार यादव Sh Rahul Kumar Yadav	कनिष्ठ सचिवालयीन सहायक (भ.व.क्र.) Junior Secretariat Assistant (S&P)

9.1.5.6 आशुलिपिकीय संवर्ग के कर्मचारीगण /STENOGRAPHIC CADRE STAFF

क्रम सं Sl.No.	कर्मचारी का नाम Name of the Employee	पदनाम Designation
1	श्री राजेंद्र कुमार Shri Rajendra Kumar	वरिष्ठ आशुलिपिक Senior Stenographer
2	श्रीमति शालू विनोदिया Smt. Shaloo Vinodiya	वरिष्ठ आशुलिपिक Senior Stenographer
3	श्री हर्षित लखेरा Sh Harshit Lakhera	कनिष्ठ आशुलिपिक Junior Stenographer
4	श्री निपुण शर्मा Shri Nipun Sharma	कनिष्ठ आशुलिपिक Junior Stenographer
5	श्री शिवम यादव Shri Shivam Yadav	कनिष्ठ आशुलिपिक Junior Stenographer
6	श्री शुभम यादव Shri Shubham Yadav	कनिष्ठ आशुलिपिक Junior Stenographer

9.1.5.7 एकाकी पद / ISOLATED POSTS

क्रम सं Sl.No.	कर्मचारी का नाम Name of the Employee	पदनाम Designation
1	श्री सोमेश्वर पाण्डेय Shri Someshwar Pandeya	वरिष्ठ हिन्दी अधिकारी Senior Hindi Officer
2	श्री रवीन्द्र सुंदरियाल Shri Ravindra Sundriyal	सुरक्षा अधिकारी Security Officer
3	श्री धीरज झा Shri Dheeraj Jha	वरिष्ठ हिन्दी अनुवादक Junior Hindi Translator
4	श्री गोविंद सिंह मेहता Shri Govind Singh Mehta	वरिष्ठ तकनिसियन (2) (वाहन चालक) Sr. Technician (2) (Driver)
5	श्री राजेंद्र प्रसाद Shri Rajendra Prasad	वरिष्ठ तकनिसियन (2) (वाहन चालक) Sr. Technician (2) (Driver)
6	श्री भूपेंद्र सिंह रावत Shri Bhupendra Singh Rawat	वाहन चालक (नॉन टेक) Driver (Non-Tech)
7	श्री पंकज कुमार Shri Pankaj Kumar	वाहन चालक (नॉन टेक) Driver (Non-Tech)
8	श्री अनूप Shri Anup	वाहन चालक (नॉन टेक) Driver (Non-Tech)

9.1.5.8 जलपानगृह कर्मचारीगण /CANTEEN STAFF

क्रम सं Sl.No.	कर्मचारी का नाम Name of the Employee	पदनाम Designation
1	श्री भारत सिंह बिष्ट Shri Bharat Singh Bisht	सहायक हलवाई-सह कुक Assistant Halwai Cum Cook
2	श्री आशा राम Shri Asha Ram	बेयरर (एम.ए.सी.पी.) Bearer (MACP)

9.1.5.9 बहु-कार्य कर्मचारीगण (एमटीएस)/MULTI-TASKING STAFF (MTS)

क्रम सं Sl.No.	कर्मचारी का नाम Name of the Employee	पदनाम Designation
1	श्री दीपक कुमार Shri Deepak Kumar	समूह ग (एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
2	श्री राम पाल Shri Ram Pal	समूह ग (एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)

3	श्री गोपाल सिंह Shri Gopal Singh	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
4	श्री दलीप कुमार Shri Dalip Kumar	समूह ग (एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
5	श्री कमल कुमार शर्मा Shri Kamal Kumar Sharma	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
6	श्री लक्ष्मण सिंह रावत Shri Laxman Singh Rawat	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
7	श्री अमित उपाध्याय Shri Amit Upadhyay	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
8	श्री शिव सिंह रावत Shri Shiv Singh Rawat	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
9	श्री विक्रम सिंह कंडारी Shri Vikram Singh Kandari	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
10	श्री विश्वास कुमार Shri Vishwas Kumar	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
11	श्री राजेश कुमार Shri Rajesh Kumar	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
12	श्री मनोज कुमार Shri Manoj Kumar	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
13	श्री संजय कुमार Shri Sanjay Kumar	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
14	श्री कालु राम Shri Kalu Ram	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
15	श्री राजेंद्र प्रसाद डब्राल Shri Rajendra Prasad Dabral	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
16	श्री मन्नू राम Shri Mannu Ram	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
17	श्री सुरेश कुमार Shri Suresh Kumar	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
18	श्री केदार दत्त पंडे Shri Kedar Dutt Pandey	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
19	श्री हरीश कुमार Shri Harish Kumar	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
20	श्री राजेश II Shri Rajesh II	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
21	श्री तिलक कुमार Shri Tilak Kumar	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
22	श्रीमति सर्वेश्वरी देवी Smt. Sarveshwari Devi	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
23	श्री कमल सिंह Shri Kamal Singh	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
24	श्री मुकेश कुमार Shri Mukesh Kumar	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
25	श्री किशोर कुमार Shri Kishore Kumar	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
26	श्री राजेश कुमार Shri Rajesh Kumar	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
27	श्रीमति सुरेशी रावत Smt. Sureshi Rawat	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)
28	श्री मुकुल कुमार शर्मा Shri Mukul Kumar Sharma	समूह ग(एम.टी.एस./एम.ए.सी.पी.) Group C (MTS/MACP)

29	श्री धर्मेन्द्र सिंह पुंडीर Shri Dharmendra Singh Pundir	समूह ग (एम.टी.एस.) Group C (MTS)
30	श्रीमति उमा देवी Smt. Uma Devi	समूह ग (एम.टी.एस.) Group C (MTS)
31	श्री राम गोपाल Shri Ram Gopal	समूह ग (एम.टी.एस.) Group C (MTS)
32	श्रीमति नीतू Smt. Neetu	समूह ग (एम.टी.एस.) Group C (MTS)
33	श्रीमति सविता देवी Smt. Savita Devi	समूह ग (एम.टी.एस.) Group C (MTS)
34	श्री प्रवीण कुमार Shri Praveen Kumar	समूह ग (एम.टी.एस.) Group C (MTS)
35	श्रीमति निशा राणा Smt. Nisha Rana	समूह ग (एम.टी.एस.) Group C (MTS)
36	श्री सौरभ रावत Shri Saurabh Rawat	समूह ग (एम.टी.एस.) Group C (MTS)
37	श्री पंकज सुंदरियाल Shri Pankaj Sundriyal	समूह ग (एम.टी.एस.) Group C (MTS)
38	श्री लखन पाल Shri Lakhan Pal	समूह ग (एम.टी.एस.) Group C (MTS)

9.2 वर्ष के दौरान हुई पदोन्नतियाँ/PROMOTIONS DURING THE YEAR

(इसमें सभी कार्यरत एवं सेवानिवृत्त दोनों प्रकार के कर्मचारी सम्मिलित हैं / Includes both who are on the rolls at present & those who have retired)

क्रम सं./ S.No.	नाम/Name	पदोन्नति के बाद पदनाम/ Designation upon Promotion	पदोन्नति की तिथि/ Date of Promotion
1	डॉ. राजराम बल Dr. Rajaram Bal	मुख्य वैज्ञानिक Chief Scientist	18.11.2024
2	डॉ. जी डी ठाकरे Dr. G.D. Thakre	मुख्य वैज्ञानिक Chief Scientist	11.08.2025
3	डॉ. ओम प्रकाश खत्री Dr. Om Prakash Khatri	मुख्य वैज्ञानिक Chief Scientist	29.09.2025
4	डॉ. दीप्ति अग्रवाल Dr. Deepti Agrawal	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist	01.11.2025
5	डॉ. सुनील कुमार सुमन Dr. Sunil Kumar Suman	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist	27.10.2025
6	डॉ. अंकुर बोर्डोलोई Dr. Ankur Bordoloi	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist	01.06.2023
7	श्री स्वप्निल दिवेकर Dr. Swapnil Diveker	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist	14.07.2023
8	डॉ. देबाशीष घोष Dr. Debashis Ghosh	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist	26.09.2024
9	डॉ. प्रसेजित घोष Dr. Prasenjit Ghosh	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist	30.09.2024
10	डॉ. दीपतारका दासगुप्ता Dr. Diptarka Dasgupta	वरिष्ठ प्रधान वैज्ञानिक Sr. Principal Scientist	08.11.2025
11	श्री सलीम अख्तर फ़ारूकी Shri Saleem Akhtar Farooqi	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist	13.10.2023

12	डॉ. पंकज कुमार कन्नौजिया Dr. Pankaj Kumar Kanaujia	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist	31.10.2024
13	डॉ. आरती Dr. Aarti	वरिष्ठ प्रधान वैज्ञानिक Sr.Principal Scientist	07.09.2025
14	डॉ. अविनाश पालोडकर Dr. Avinash Palodkar	प्रधान वैज्ञानिक Principal Scientist	10.03.2025
15	डॉ. इन्दु शेखर Dr. Indu Shekher	प्रधान वैज्ञानिक Principal Scientist	02.08.2025
16	डॉ. अंकुश बिंदवाल Dr. Ankush Bindwal	प्रधान वैज्ञानिक Principal Scientist	24.04.2024
17	डॉ. बीपुल सरकार Dr. Bipul Sarkar	प्रधान वैज्ञानिक Principal Scientist	27.12.2024
18	डॉ. प्रणब दास Dr. Pranab Das	प्रधान वैज्ञानिक Principal Scientist	09.01.2025
19	डॉ. सुधाकर रेड्डी Dr.Sudhakara Reddy	प्रधान वैज्ञानिक Principal Scientist	28.12.2025
20	डॉ. वी चंद्रशेखर पाल्ला Dr. V. Chandra Sekhar Palla	वरिष्ठ वैज्ञानिक Senior Scientist	22.06.2024
21	डॉ. तुहिन खान Dr. Tuhin Khan	वरिष्ठ वैज्ञानिक Senior Scientist	29.07.2024
22	डॉ. नानोजी इसलावथ Dr. Nanoji Islawath	वरिष्ठ वैज्ञानिक Senior Scientist	10.08.2024
23	डॉ. कीर्तिका कोहली Dr. Kirtika Kohli	वरिष्ठ वैज्ञानिक Senior Scientist	08.03.2025
24	श्री सेठपाल सिंह Shri Sethpal Singh	प्रधान तकनीकी अधिकारी Principal Technical Officer	27.04.2022
25	श्री सी.डी. शर्मा Shri C.D. Sharma	प्रधान तकनीकी अधिकारी Principal Technical Officer	27.04.2022
26	श्री सुनिल कुमार Shri Sunil Kumar	प्रधान तकनीकी अधिकारी Principal Technical Officer	27.04.2022
27	श्री राकेश कुमार Shri Rakesh Kumar	प्रधान तकनीकी अधिकारी Principal Technical Officer	09.05.2022
28	डॉ. घनश्याम ठक्कर Dr. Ghanshyam Thakkar	प्रधान तकनीकी अधिकारी Principal Technical Officer	04.06.2022
29	श्री मुकेश कुमार शर्मा Shri Mukesh Kumar Sharma	प्रधान तकनीकी अधिकारी Principal Technical Officer	19.06.2022
30	श्री संदीप सरन Shri Sandeep Saran	प्रधान तकनीकी अधिकारी Principal Technical Officer	27.04.2024
31	श्री सतीश कुमार Shri Satish Kumar	प्रधान तकनीकी अधिकारी Principal Technical Officer	02.05.2024
32	श्री जगदीश कुमार Shri Jagdish Kumar	प्रधान तकनीकी अधिकारी Principal Technical Officer	04.05.2024
33	श्री मनोज कुमार Shri Manoj Kumar	प्रधान तकनीकी अधिकारी Principal Technical Officer	23.05.2024
34	श्री राजिन्दर बडोला Shri Rajinder Badola	वरिष्ठ तकनीकी अधिकारी (3) Senior Technical Officer (3)	23.10.2023

35	श्री एस.एन. यादव Shri S. N. Yadav	वरिष्ठ तकनीकी अधिकारी (3) Senior Technical Officer (3)	26.11.2023
36	श्रीमति मनिन्दर कौर Smt. Manender Kaur	वरिष्ठ तकनीकी अधिकारी (3) Senior Technical Officer (3)	23.11.2024
37	श्री सरवानन्द तिवारी Shri Sarvanand Tiwari	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)	10.06.2021
38	श्री अमित शर्मा Shri Amit Sharma	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)	19.05.2022
39	डॉ. निशा Dr. Nisha	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)	01.06.2022
40	श्री ओ.पी. शर्मा Shri O. P. Sharma	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)	01.06.2022
41	श्रीमति रेखा चौहान Smt. Rekha Chauhan	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)	06.07.2022
42	श्री सुंदराम शर्मा Shri Sundram Sharma	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)	07.07.2022
43	डॉ. ज्योति पोरवाल Dr. Jyoti Porwal	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)	02.04.2023
44	डॉ. प्रवीण कुमार खत्री Dr. Praveen Kumar Khatri	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)	21.07.2023
45	डॉ. मनीषा सहाय Dr. Manisha Sahai	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)	19.11.2023
46	डॉ. रोहित कुमार Dr. Rohit Kumar	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)	07.01.2024
47	डॉ. प्रदीप कुमार Dr. Pradeep Kumar	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)	12.01.2024
48	श्री विशवास सैनी Shri Vishwas Saini	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)	10.02.2024
49	श्रीमति पूजा यादव Smt. Pooja Yadav	वरिष्ठ तकनीकी अधिकारी (2) Senior Technical Officer (2)	19.03.2025
50	श्री अमित कुमार Shri Amit Kumar	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)	23.08.2022
51	डॉ. कसीना डी.पी. लक्ष्मी कुमार Dr. Kasina D.P. Lakshmee Kumar	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)	06.08.2022
52	श्री जितेंद्र कुमार Shri Jitendra Kumar	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)	16.08.2022
53	श्री गोविंद सिंह मेहता Shri Govind Singh Mehta	वरिष्ठ तकनीसियन (2) (वाहन चालक) Sr. Technician (2) (Driver)	26.03.2022
54	श्री राजेंद्र प्रसाद Shri Rajendra Prasad	वरिष्ठ तकनीसियन (2) (वाहन चालक) Sr. Technician (2) (Driver)	26.03.2022
55	श्री मुकेश कुमार Shri Mukesh Kumar	वरिष्ठ तकनीसियन (2) (वाहन चालक) Sr. Technician (2) (Driver)	26.03.2022
56	श्रीमति ऋतु मौर्य Smt. Ritu Maurya	नर्स/ वरिष्ठ तकनीसियन (1) Nursing Sister ANM/Sr. Tech (1)	12.09.2022
57	श्री हरी प्रकाश Shri Hari Prakash	फरमासिस्ट / वरिष्ठ तकनीसियन (1) Pharmacist (Non-FCS)/Sr.Tech (1)	27.07.2023

58	श्री विक्रम सिंह रावत Sh. Vikram Singh Rawat	सहायक अनुभाग अधिकारी (भ.व.क्र.) Assistant Section Officer (S&P)	11.12.2025
59	श्री घनश्याम Shri Ghanshyam	वरिष्ठ सचिवालयीन सहायक((सा.) Senior Secretariat Assistant (General)	23.12.2025
60	श्री अजय पाल Shri Ajay Pal	प्रयोगशाला सहायक Lab Assistant	25.10.2021
61	श्री देव सिंह अधिकारी Shri Dev Singh Adhikari	प्रयोगशाला सहायक Lab Assistant	25.10.2021
62	श्री रमेश चन्द्र Shri Ramesh Chandra	प्रयोगशाला सहायक Lab Assistant	10.11.2021
63	श्री पंकज भास्कर Shri Pankaj Bhasker	प्रयोगशाला सहायक Lab Assistant	10.11.2021
64	सुश्री यशोदा Ms Yashoda	प्रयोगशाला सहायक Lab Assistant	10.11.2021
65	श्री राजेंद्र प्रसाद Shri Rajendra Prasad	प्रयोगशाला सहायक Lab Assistant	10.11.2021
66	श्री बीजेन्द्र सिंह बिष्ट Shri Bijendra Singh Bisht	प्रयोगशाला सहायक Lab Assistant	10.11.2021
67	श्री मुरलीधर चांदना Shri Murlidhar Chandna	प्रयोगशाला सहायक Lab Assistant	10.11.2021
68	श्री इरशाद खान Shri Irshad Khan	प्रयोगशाला सहायक Lab Assistant	29.11.2021
69	श्री गोकुल प्रसाद Shri Gokul Prasad	प्रयोगशाला सहायक Lab Assistant	09.12.2021
70	श्री राजबीर सिंह नेगी Shri Rajbir Singh Negi	प्रयोगशाला सहायक Lab Assistant	24.02.2022
71	श्री सुदामा सिंह बिष्ट Shri Sudama Singh Bisht	प्रयोगशाला सहायक Lab Assistant	24.02.2022
72	श्री हेमंत कुमार तिवारी Shri Hemant Kumar Tiwari	प्रयोगशाला सहायक Lab Assistant	24.02.2022
73	श्री टिका राम भट्ट Shri Tikka Ram Bhatt	प्रयोगशाला सहायक Lab Assistant	24.02.2022
74	श्री विवेक सिंह Shri Vivek Singh	प्रयोगशाला सहायक Lab Assistant	24.02.2022
75	श्री दिनेश चन्द्र Shri Dinesh Chandra	प्रयोगशाला सहायक Lab Assistant	06.08.2022
76	श्रीमति भारती पयाल Smt. Bharti Payal	प्रयोगशाला सहायक Lab Assistant	07.10.2022
77	श्री अरविंद कुमार खंडुरी Shri Arvind Kumar Khanduri	प्रयोगशाला सहायक Lab Assistant	12.03.2025
78	श्री सुरेन्द्र कुमार Shri Surendra Kumar	प्रयोगशाला सहायक Lab Assistant	12.03.2025
79	श्री चंदर सिंह Shri Chander Singh	प्रयोगशाला सहायक Lab Assistant	12.03.2025

9.3 नए पदधारी /NEW INCUMBENTS

9.3.1 हमारी सहोदरी प्रयोगशालाओं /संस्थानों से नवागत कर्मचारी / NEW ENTRANTS FROM OUR SISTER LABORATORIES/INSTITUTES

क्रम सं./ S.No.	नाम/ Name	पदनाम/ Designation	तिथि/ Date	कहां से स्थानांतरित/ Transferred from
1	श्री आशीष बहुगुणा Shri Ashish Bahuguna	प्रशासन नियंत्रक Controller of Administration	01.01.2026	सीएसआईआर- एनआईएससीपीआर, नई दिल्ली CSIR- NIScPR, New Delhi
2	श्री विपिन चन्द्र जोशी Shri Vipin Chandra Joshi	वरिष्ठ तकनीकी अधिकारी (1) Senior Technical Officer (1)	27.01.2026	सीएसआईआर - सीएसएमसीआरआई, भावनगर CSIR-CSMCRI, Bhavnagar

9.4 जो हमसे विदा हुए / THOSE WHO HAVE LEFT US

9.4.1 अन्य वैऔअप प्रयोगशालाओं /संस्थानों को स्थानांतरण होने पर / On Transfer to Other CSIR Laboratories/Institutes

क्रम सं./ S.No.	नाम/ Name	पदनाम/ Designation	तिथि/ Date	कहां स्थानांतरित/ Transferred to
	NIL	NIL	NIL	NIL

9.4.2 अधिवर्षिता/स्वैच्छिक सेवा-निवृत्ति/त्याग-पत्र के कारण / ON SUPERANNUATION /VOLUNTARY RETIREMENT/ RESIGNATION

क्रम सं./ S.No.	नाम/Name	पदनाम/Designation	तिथि/Date	टिप्पणी/ Remarks
1	डॉ. अजय कुमार गुप्ता Dr. Ajay Kumar Gupta	प्रधान तकनीकी अधिकारी Principal Technical Officer	30.04.2025	सेवानिवृत्ति Superannuation
2	डॉ. एन. विश्वनाधम Dr. N. Vishwanadham	मुख्य वैज्ञानिक Chief Scientist	31.05.2025	सेवानिवृत्ति Superannuation
3	श्री डी. के. पाण्डेय Shri D. K. Pandey	प्रधान तकनीकी अधिकारी Principal Technical Officer	31.05.2025	सेवानिवृत्ति Superannuation
4	श्री हरीचंद सिंह Shri Harichand Singh	प्रधान तकनीकी अधिकारी Principal Technical Officer	31.05.2025	सेवानिवृत्ति Superannuation
5	श्री प्रेम चंद वर्मा Sh Prem Chand Verma	तकनीसियन (2) Technician (2)	30.09.2025	सेवानिवृत्ति Superannuation
6	श्री राजेंद्र कुमार Shri Rajender Kumar	वरिष्ठ तकनीसियन (1) Senior Technician (1)	31.10.2025	सेवानिवृत्ति Superannuation
7	डॉ. मनोज श्रीवास्तवा Dr. Manoj Srivastava	मुख्य वैज्ञानिक Chief Scientist	30.11.2025	सेवानिवृत्ति Superannuation
8	श्री मुकेश कुमार Shri Mukesh Kumar	वरिष्ठ तकनीसियन (2) (वाहन चालक) Sr. Technician (2) (Driver)	28.02.2026	सेवानिवृत्ति Superannuation
9	श्री पिंटू मोंडल Shri Pintu Mondal	तकनीसियन (1) Technician (1)	11.02.2026	त्यागपत्र Resignation

10	मोहम्मद हुसैन Mohd. Hussian	तकनीसियन (1) Technician (1)	02.03.2026	त्यागपत्र Resignation
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9.5 नई नियुक्तियां / New Appointment

क्रम सं./ S.No.	नाम / Name	पदनाम / Designation	तिथि / Date
1	श्री तुषार राजेंद्र रणवीर Sh Tushar Rajender Ranvir	तकनीसियन (1) Technician 1	01.04.2025
2	श्री तुषार राजेंद्र रणवीर Shri Pintu Mondal	तकनीसियन (1) Technician 1	01.04.2025
3	श्री गणेश प्रसाद लुहार Sh Ganesh Prasad Luhar	तकनीसियन (1) Technician 1	01.04.2025
4	श्री प्रेम ठाकुर Sh Prem Thakur	तकनीसियन (1) Technician 1	01.04.2025
5	श्री संदीप मेघवाल Sh Sandeep Meghval	तकनीसियन (1) Technician 1	02.04.2025
6	श्री प्रशांत कुमार जंगीड Sh Prashant Kuamr Jangid	तकनीसियन (1) Technician 1	30.04.2025
7	श्री प्रीतम Sh Pritam	तकनीसियन (1) Technician 1	05.05.2025
8	मोहम्मद हुसैन Mohd. Hussian	तकनीसियन (1) Technician 1	12.06.2025
9	श्री हितेश आनंद Sh Hitesh Anand	कनिष्ठ सचिवालयीन सहायक (सा.) Junior Secretariat Assistant (General)	15.07.2025
10	श्री मनीष तोमर Sh Manish Tomar	कनिष्ठ सचिवालयीन सहायक (वि.व.ले.) Junior Secretariat Assistant (F&A)	15.07.2025
11	श्री मनीष Sh Manish	कनिष्ठ सचिवालयीन सहायक (वि.व.ले.) Junior Secretariat Assistant (F&A)	15.07.2025
12	श्री मोनू Sh Monu	कनिष्ठ सचिवालयीन सहायक (सा.) Junior Secretariat Assistant (General)	16.07.2025
13	श्री हिमांशु Sh Himanshu	कनिष्ठ सचिवालयीन सहायक (सा.) Junior Secretariat Assistant (General)	16.07.2025
14	श्री पूरन मल यादव Sh Pooran Mal Yadav	कनिष्ठ सचिवालयीन सहायक (वि.व.ले.) Junior Secretariat Assistant (F&A)	16.07.2025
15	श्री मंजीत कुमार पांडे Sh Manjeet Kumar Pandey	कनिष्ठ सचिवालयीन सहायक (सा.) Junior Secretariat Assistant (General)	17.07.2025
16	श्री हितेश कुमार Sh Hitesh Kumar	कनिष्ठ सचिवालयीन सहायक(भ.व.क्र.) Junior Secretariat Assistant (S&P)	17.07.2025
17	श्री राहुल कुमार यादव Sh Rahul Kumar Yadav	कनिष्ठ सचिवालयीन सहायक(भ.व.क्र.) Junior Secretariat Assistant (S&P)	17.07.2025
18	श्री विवेक Sh Vivek	कनिष्ठ सचिवालयीन सहायक (सा.) Junior Secretariat Assistant (General)	17.07.2025
19	श्री शशांक थपलीयल Sh Shashank Thapliyal	कनिष्ठ सचिवालयीन सहायक(वि.व.ले.) Junior Secretariat Assistant (F&A)	18.07.2025

20	श्री निपुण शर्मा Shri Nipun Sharma	कनिष्ठ आशुलिपिक Junior Stenographer	18.07.2025
21	श्री चन्दन चौधरी Sh Chandan Choudhary	कनिष्ठ सचिवालयीन सहायक (वि.व.ले.) Junior Secretariat Assistant (F&A)	30.07.2025
22	श्री अजून ई मुथू Shri Ajun E Muthu	सहायक अनुभाग अधिकारी (सामान्य) Assistant Section Officer (General)	30.07.2025
23	श्री हर्षित लखेरा Sh Harshit Lakhera	कनिष्ठ आशुलिपिक Junior Stenographer	01.08.2025
24	श्रीमति सीसीली क्रिस्टोफर Smt. Sicily Krishtopher	तकनीसियन (1) Technician 1	12.08.2025
25	श्री शिवम यादव Shri Shivam Yadav	कनिष्ठ आशुलिपिक Junior Stenographer	20.08.2025
26	श्री शुभम यादव Shri Shubham Yadav	कनिष्ठ आशुलिपिक Junior Stenographer	20.08.2025
27	श्री कुप्पिली रंजन Sh Kuppili Rajan	कनिष्ठ सचिवालयीन सहायक(भ.व.क्र.) Junior Secretariat Assistant (S&P)	01.09.2025

9.6 श्रद्धांजलि / Condolences

क्रम सं./ S.No.	नाम / Name	पदनाम / Designation	तिथि / Date	टिप्पणी / Remarks
1	श्री परमजीत सिंह Shri Paramjeet Singh	वरिष्ठ तकनीसियन (2) Sr. Technician (2)	19.12.2025	निधन Death

CSIR- Indian Institute of Petroleum, Dehradun
Allocation & Expenditure from 2025-26

(Rs in Lakhs)		
Allocation and Expenditure from 2025-26	Allocation	Expenditure
NAME OF LAB. CSIR-IIP Dehradun	Project & No-Project	Project & No-Project
Financial year	2025-26	2025-26
A. Salary		
1. Salary & Sal. Linked Allowances	5216.100	5216.100
2. Other Allowances	230.463	230.463
Total Salary	5446.563	5446.563
B. General		
3. P07 Chemical/Consum.& Other Res.Exp.	705.692	705.692
4. P-804 Pension & Other retirement benefits	5155.000	5155.000
5. P04 & P06, P701 - Other Revenue	706.850	706.850
Total General	6567.542	6567.542
C. Capital		
6. P-50 Works & Services/Elec. Installations	169.850	169.850
7. P-50 App. & Equip./Computer Equipment/Software	884.539	884.539
8. P-50 Other Capital	39.967	39.967
Total Salary	1094.356	1094.356
Total A+B+C	13108.461	13108.461

सीएसआईआर-भारतीय पेट्रोलियम संस्थान, देहरादून



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