Petroleum Engineering Newsletter from IIT(ISM) Dhanbad

Petropulse

Oct-Dec 2024

FROM THE HOD'S DESK

At the Department of Petroleum Engineering at IIT (ISM) Dhanbad, we are committed to developing professionals who are prepared to lead in the ever-evolving energy sector.

Our department is equipped with state-of-the-art research facilities and laboratories, enabling our students and faculty to engage in cutting-edge research and innovation. These facilities provide a robust platform for exploring new technologies and methodologies, addressing complex industry challenges, and contributing to the sustainable development of the energy sector.

Through rigorous academic training, access to advanced research resources, and active engagement with industry projects, our students gain valuable insights into real-world challenges and develop the critical thinking skills needed to address them.

We emphasize innovation, interdisciplinary learning, and sustainability, ensuring our graduates are not only technically proficient but also adaptable and forward-thinking.

As our students embark on their professional journeys, I am confident they will continue to contribute significantly to the advancement of the energy industry.

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PUBLICATION

• Mishra S., Chauhan G., & Ojha K. (2024). An experimental study on optimizing parameters for sand consolidation with organic-inorganic silicate solutions. Petroleum, 10(3), 483-493.

• Dadi N.R., Maurya N. K., & Gupta, P. (2024). Advancing foam EOR: A comprehensive Examination of key parameters and mechanisms from surfactants to nanoparticles. Journal of Molecular Liquids, 126177.

• Rao GL, Mandal A, Pal N. Choline Chloride-Urea based deep eutectic Solvent: Characterization, interfacial behavior and Synergism in binary (surfactant) systems. Chemical Physics. 2025 Jan 1; 588:112496.

• Ray D, Jangid L, Joshi D, Prakash S, Ojha K, Manor O, Mandal A. Formulation of Polymer-Augmented Surfactant-Based Oil–Water Microemulsions for Application in Enhanced Oil Recovery. ACS omega. 2024 Dec 6.

• Joshi D., Ramesh DN, Prakash S, Saw RK, Maurya NK, Rathi KB, Mitra S, Sinha OP, Bikkina PK, Mandal A. Formulation and Characterisation of Polymer and Nanoparticle-Stabilized Anionic Surfactant Foam for Application in Enhanced Oil Recovery. Surfaces and Interfaces. 2024 Dec 10:105615.

• Kiran R., Rajak V.K., Upadhyay R. and Kumar A., 2024. Comparative techno-economic assessment of superhot rock and conventional geothermal energy feasibility for decarbonizing India. Geothermics, 122, p.103078.

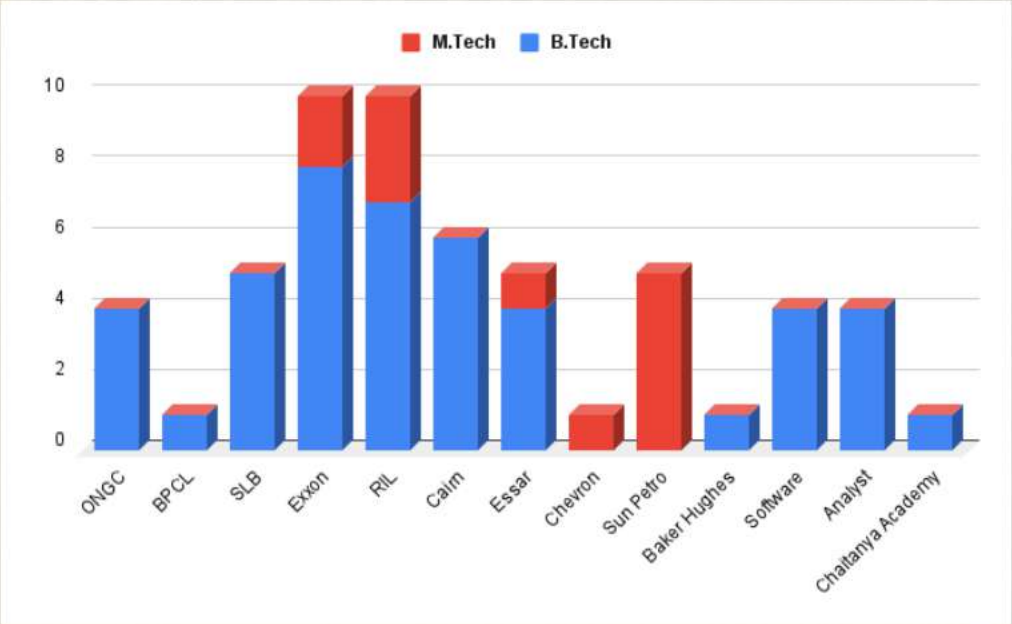
• Kiran R., Upadhyay R., Rajak V.K., Kumar A. and Gupta, S.D., 2024. Underpinnings of reservoir and techno-economic analysis for Himalayan and Son-Narmada-Tapti geothermal sites of India. Renewable Energy, 237, p.121630.

• Ray D., Jangid L., Joshi D., Prakash S., Ojha K., Manor, O., &Mandal A. (2024). Formulation of Polymer-Augmented Surfactant-Based Oil–Water Microemulsions for Application in Enhanced Oil Recovery. ACS omega.

• Mandal, M., Kumar, R. P., & Ojha K. (2024). Impact assessment of polymer, cross-linker, and nanoparticles on gelation kinetics and properties of silica nanocomposite hydrogel for water shut-off treatment in harsh reservoir conditions. Journal of Molecular Liquids, 411, 125746.

• Rasool Y., Agrawal M., Shams R., Ghosh S., Singh D. 2024. Evaluation of Seismic Hazard for northeastern Bihar (India): A Deterministic Approach. Indian Geotechnical Journal.

PLACEMENT STATISTICS



Student Achivement

1st Rank in the SWITCH International Energy Case Study Competition, a testament to their innovative problem-solving abilities and expertise in energy solutions.

2nd Position in the PetroCup South Asia League, a fiercely contested competition that underscored their regional dominance and collaborative spirit.

3rd Place in the PetroCup Finals at the World Student Olympics hosted by Nafta College, solidifying their position among the world's best emerging professionals in petroleum engineering.

Conference paper authored by Milan Mandal, Abhinav Anand and Keka Ojha received the BEST ORAL Presentation Award in ICPHD 2024, 12-14 December 2024, IIT(ISM), Dhanbad, Jharkhand

Conference paper authored by Mohammad Saif and Raj Kiran received the Best Poster Award-1st prize at the International Conference on Petroleum, Hydrogen & Decarbonisation "Sustainability through Energy Transition" (ICPHD-2024)

Faculty Achivement

Sampa Guin and Prof. Tarun Kumar Naiya delivered a talk on "Application of nanoparticle and bio-based co-polymer for flow assurance in Indian waxy crude oil" at the 61st Annual Convention of Chemists (ACC 2024), held at JECRC University, Jaipur, on Dec. 19-21, 2024.

Prof. Tarun Kumar Naiya chaired the poster session in the "Chemical Engineering and Green Chemistry Division" at the 61st ACC 2024, held at JECRC University, Jaipur, on Dec. 19-21, 2024.

Prof. Mohammed Siddique was a keynote speaker at the International Workshop on Optimization Engineering Design with AI (OEDAI-2024) at IIT Madras (Nov 17-20, 2024), organized by IIT Madras and DRDO. He presented on "Smart Energy Optimization using AI for Electric Submersible Pumps," focusing on AI-driven predictive maintenance for pump performance optimization.

Prof. Pawan Gupta was selected as Early Career Advisory Board Energy and Fuel.

Prof. Ajay Mandal

Prof. Ajay Mandal received the Distinguished Alumnus Award from the Chemical Engineering Department, Calcutta University.

Honored with the IOGCA 2024 Excellence Award in Oil & Gas Chemistry during the 7th International Conference (Sept 26–27, 2024).

Awarded Energy & Fuels 2024 Excellence in Review.

Joined the Editorial Board of Elsevier journals: Petroleum Exploration and Development (IF: 7.0) and Petroleum (IF: 4.2).

Serving as Guest Editor for the Journal of Petroleum Exploration and Production Technology (IF: 2.40).

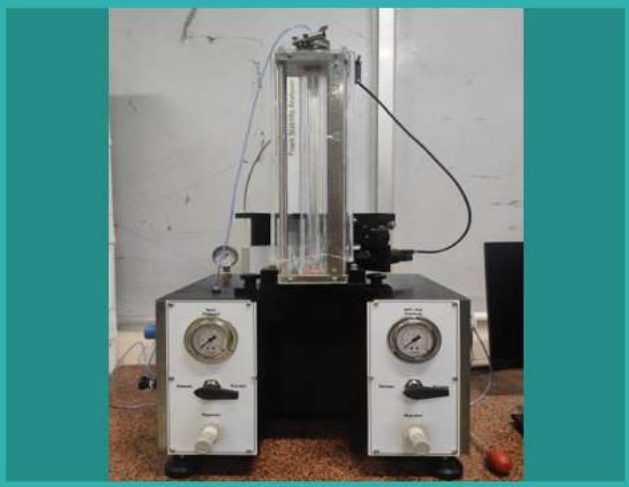
Women Achievements

Prof. Keka Ojha

Awarded best paper in during 7th international Oil and Gas Chemistry, Chemicals and Additives Conference and Exhibition on 26th and 27th September, 2024, New Delhi.

Major instruments

Core Flood Five Spot Pattern



Foam Stability Analyzer

Nanobubble Generator

Patents

S.N	Patent Title	Name of Applicant(s)	Application No.	Application Date/Published	Agency/ Country	Status
1	Application of novel biodegradable pour point depressant (PPD) synthesized from Cocosnucifera in flow assurance of Indian waxy crude oil	Sampa Guin, Tarun	202431083740	08.11.2024	India	Published
2	Surfactant Stabilized Green Nano Emulsion and Method of Preparation thereof for Application in Petroleum Industries.	Ajay Mandal	202531001027	04.01.2025	India	Filed

Sponsored projects from October 2024 to December 2024

Sl.No.	Sponsored Projects	Duration (date)		Sponsoring Authority	Funds Sanctione	Role	Present Status
		From	To				
1	Technical Assessment of Diesel Samples of Heavy-Duty Machines used by Devprabha Construction Pvt. Ltd.	October, 2024	September, 2027	Devprabha Construction Pvt. Ltd., Dhanbad	118	CI:Prof Ajay Mandal, CoCI: Prof. Keka Ojha, Prof. Archana and Prof. Chandan Sahu	Ongoing
2	Estimation of gas content and prospect evaluation of exploratory CBM block: SR-ONHP(CBM)-2022/6	Nov-24	Dec-24	Oilmax Energy	1.52	CI: Prof. Keka Ojha, Co-CI: Sayantan Ghosh	Completed
3	Studies On the Analysis and Optimization of Drilling Fluids	Dec-24	Dec-24	Sunita Hydrocolloids Inc 5711 Brittmoore	US$ 1900.00	CI: Prof. Ajay Mandal	Ongoing

projects from October 2024 to December 2024

Title	Funding Amount (Rs.)	Duration	Role	Funding Agency
Future of Geothermal in India	10,61,000	Not specified	PI – Prof. Raj Kiran	Project InnerSpace, Inc., Boston, USA
Developing portable potentiometric biosensors for in-situ detection of trace metal pollutants (Cd, Pb, Hg and Cu)	INR 41.926 LAKH	2024-2027	Co-PI- Prof. Tarun Kumar Naiya	DBT, India

International Visits In The Department

Dr. Abrahan K. John (Senior Reservoir Engineer, OXY, Houston, Texas, and 1999 Batch ISM alumnus).

Dr. Adwait Chawathe (Director of Subsurface (Chevron ENGINE) , Bengaluru, Karnataka, India)

MoUs signed

Oil India Limited signed an MoU with IIT (ISM), Dhanbad to foster industry-academia collaboration in the energy sector. The proposed collaboration aims to engage various joint research initiatives and develop advanced technology solutions in the energy sector and other areas of mutual interest. The MoU was signed in the presence of Shri Saloma Yomdo, Director (E&D), OIL, and Prof. Sukumar Mishra, Director, IIT (ISM), along with senior officials from OIL and faculty members of IIT

Conference in the department

The petroleum industries and academia must strive for enhanced operational efficiency, process optimization and leverage technological advancements to bestow sustainability. Conference, workshops, seminars and brainstorming sessions are ideal to cultivate and frame new ideas to address these complexities.

The International Conference on Petroleum, Hydrogen & Decarbonization (ICPHD-2024), themed "Sustainability through energy transition," was organized during December 12 to 14, 2024, at IIT (ISM) Dhanbad with the purpose to bring together the leading professionals from academia and industry to discuss the future of energy transition and the role of emerging technologies and imbibe the same to the young/budding professions. The inaugural function on December 12-14 featured a series of key addresses, inspiring discussions, and a formal agenda highlighting global energy challenges and solutions. With participation from around~300 delegates representing both India and overseas, the event witnessed an impressive lineup of 3 plenary lectures, 28 keynote lectures, 8 invited speeches, 89 oral presentations, and 32 poster presentations spread across 28 technical sessions.

Editor's Team

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