

Ajay Mandal, Ph.D., FRSC

Professor, Department of Petroleum Engineering
Indian Institute of Technology (Indian School of Mines), Dhanbad,
India

Professional Member of SPE (3268367)

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Dr. Ajay Mandal, is presently working as Professor in the Department of Petroleum Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad. Dr. Mandal is carrying out his research works on reservoir engineering, enhanced oil recovery and other fields of petroleum engineering, with more than 250 research papers, books and book chapters, more than 14000 citations and a stellar H-Index of over 71. He is an outstanding Academician and Researcher in the field of Petroleum Engineering. His work is focused on synthesis of wide variety of surfactants, polymer and nanoparticles for their application in enhanced oil recovery. He developed innovative formulation of microemulsion, nanoemulsion, nanofluids, Pickering emulsion, stabilized foam for enhanced oil recovery application. Prof. Mandal is also working in the fields of carbon dioxide sequestration and gas hydrate recovery. He published several papers on the thermodynamics of gas hydrate formation and dissociation which contributed significantly to the development of the technology of production from gas hydrate reservoirs. As an active member of the "Enhanced Recovery" committee within the Ministry of Oil and Natural Gas, he evaluates various enhanced oil recovery projects in India, considering technical feasibility, economic viability, and environmental impact. Dr. Mandal has been awarded 23 sponsored R&D projects mostly on enhanced oil recovery and 20 consultancy projects from different Government funding agencies and oil & gas sectors. Dr. Mandal received a number of awards like DAAD (German Academic Exchange Service Fellowship), two SPE south Asia regional awards (2015 SPE South Asia Regional Distinguished Achievement Award for Petroleum Engineering Faculty and 2019 SPE Reservoir Dynamics and Description Regional Award for South Asia and Pacific region), IChE (Indian Institute of Chemical Engineers) National Award for the Year 2017, Fellow of RSC, and many more. He is actively associated with a number of foreign universities for collaborative research across the world. He guided 26 Doctoral students, and many are working. Ranked #1 in Petroleum Engineering and Enhanced Oil Recovery by ScholarGPS (Powering Scholarly Analytics, 2024 & 2025).

Education:

Ph.D.: Chemical Engineering, Indian Institute of Technology, Kharagpur- 2004.

M. ChE.: Chemical Engineering, Jadavpur University, 1998, 1ST Class 1st

B. Tech.: Chemical Engineering, Calcutta University, 1996. 1st Class

B. Sc.: Chemistry (Hons.), Calcutta University, 1993. 1st Class 3rd

Academic Experience:

Jun 2019 - Present	Professor, Department of Petroleum Engineering Petroleum, IIT(ISM), Dhanbad.
Mar 2023-Present	Professor In-charge, Central Library, IIT(ISM), Dhanbad.

May 2019 -April, 2022	Professor & Head, Department of Petroleum Engineering Petroleum, IIT(ISM), Dhanbad.
May 2018 - June 2019	Associate Dean (Sponsored Research) IIT(ISM), Dhanbad.
Feb 2010 - June 2019	Associate Professor, Department of Petroleum Engineering Petroleum, IIT(ISM), Dhanbad.
Feb 2007 - Feb 2010	Assistant Professor, Department of Petroleum Engineering Petroleum, IIT(ISM), Dhanbad.
Dec 2004 - Feb 2007	Lecturer, Department of Petroleum Engineering Petroleum, IIT(ISM), Dhanbad.
Aug 2004- Dec 2004	Lecturer, Department of Chemical Engineering, Heritage Institute of Technology, Kolkata
Oct 2003 – Jul 2004	Principal Scientist, DST Project, Department of Chemical Engineering, IIT, Kharagpur

Non-academic Experience:

May 2017 - May 2018	Professional Intern, Institute of Reservoir Studies, ONGC, Ahmedabad.
Jun 1998 - July 1999	Assistant Engineer, ELQUE Polyester Limited, WB
Jun 2015 – July 2015	Professional Intern, MANSAROVAR ENERGY COLOMBIA LTD,

Membership in Professional Organizations:

- Society of Petroleum Engineers: Member ID: 3268367- Professional Member
- Royal Society of Chemistry:662970-Fellow and Professional Member
- American Chemical Society: Membership Number: 30553624
- Editorial Board Members of Petroleum Journal (Elsevier)
- Guest Editor: Petroleum Exploration and Production Technology
- Editorial Board Member: Petroleum Exploration and Development
- Indian Institute of Chemical Engineers- Life Member LM-57511
- Mining Geological and Metallurgical Institute (MGMI), Life Member-LM 10937
- ER Screening committee, Ministry of Petroleum and Natural Gas- Member
- PAC Committee, SERB, DST-Member, Ministry of Education
- CSIR-FIRST Scheme-PAC member, 2023
- Editorial Board Members of Journal of Petroleum Exploration and Development
- Editorial Board Members of SPE Journals
- Served as Membership Chairperson of Newly formed SPE Kolkata Section,2012
- Served as Member of Jharkhand State Pollution Control Board, to review CTPS- Furnace Oil discharge into Damodar River, 2020.
- Served as member of the Regional Scholarship & Student Retention Committee of SPE Middle East, North Africa and India Region during 2010-11.
- Faculty Sponsor of SPE IIT(ISM) Student Chapter, 2008-2016.

Honors and Awards:

Year	Name of Award/Honor	Name of Organization
1993	1 st class 3 rd rank in B.Sc. (Chemistry Hons.)-Bronz Medal	Calcutta University
1998	1 st class 1 st rank in M.ChE. -Gold Medal	Jadavpur University
2008	Research on DAAD Fellowship	DAAD, New Delhi
2010	SPE outstanding Chapter Award in my convenorship	SPE, USA
2011	SPE faculty Travel Grant for participation in SPE Conference, 2011	SPE, USA
2012	SPE faculty Travel Grant for participation in SPE Conference, 2012	SPE, USA
2014	IIT(ISM) Best research Award	IIT(ISM)-CANARA BANK
2015	2015 SPE South Asia Regional Distinguished Achievement Award for Petroleum Engineering Faculty	SPE, South Asia and Pacific region
2015	IIT(ISM) Best research Award	IIT(ISM)-CANARA BANK
2015	SPE outstanding Chapter Award in my convenorship	SPE, USA
2011-16	SPE Gold Standard Chapter Award in my convenorship in year 2011, 2012, 2013, 2014, 2015.	SPE, USA
2016	Best research Award	IIT(ISM)-CANARA BANK
2016-17	“The Inder Mohan Thapar Foundation (IMTF)” Research Award from IIT(ISM) for the (Jointly with PhD Student)	(IMTF)
2017	IChE (Indian Institute of Chemical Engineers) National Award for the Year 2017: ONGC Award for Excellence in Design and Development of Oil/Gas Related Process Plant and/or Chemicals.	IChE (Indian Institute of Chemical Engineers)
2017-18	“The Inder Mohan Thapar Foundation (IMTF)” Research Award from IIT(ISM) for the (Jointly with PhD Student)	IMTF
2017	Best research Award	IIT(ISM)-CANARA BANK
2018	Best research Award	IIT(ISM)-CANARA BANK

2019	2019 SPE Reservoir Dynamics and Description Regional Award for South Asia and Pacific region	SPE, South Asia and Pacific region
2018-19	“The Inder Mohan Thapar Foundation (IMTF)” Research Award from IIT(ISM) for the (Jointly with PhD Student)	IMTF
2019	Publons Top reviewers in Cross-Field – September 2019 Publons Top reviewers in Chemistry – September 2019	Publons
2020-24 (Continuous)	Ranked within top 1% in the field of energy by an independent study done by Stanford University scientists.	Stanford University
2020	Admitted as Fellow of Royal Society of Chemistry	RSC, London
2022	Highly Ranked Scholar-Lifetime in the speciality of Enhanced Oil recovery.	ScholarGPS
2023	“The Inder Mohan Thapar Foundation (IMTF)” Research Award from IIT(ISM) for the (Jointly with PhD Student), IMTF	IMTF
2023	Ranked#21 in Engineering and Technology within India and ranked # 1539 worldwide as per Research.com Ranking 2023.	Research.com
2024	Ranked#1 Researcher within IIT(ISM) and 134 within India as per World Scientist and University Ranking 2024.	AD Scientific Index
2024	Ranked#1 in Petroleum Engineering and Enhanced Oil Recovery by ScholarGPS (Powering Scholarly Analytics, 2024).	ScholarGPS
2024	2024 - Research.com Chemistry in India Leader Award	
2024	Guest Editor: Petroleum Exploration and Production Technology	
2023	Editorial Board Member: Petroleum Exploration and Development	
Till date	Around 1000 Reviewer Certificate Award (with some outstanding) form more than 50 international journals	ACS, Elsevier, Springer, Willey, RSC, MDPI, etc.
2024	IOGCA 2024 Awards in “Excellence in Chemistry and Chemical Engineering in Oil & Gas Industry and Petrochemical” in 7th International Oil & Gas Chemistry, Chemicals and Additives Conference & Exhibition (IOGCA 2024)” on 26th & 27th September, 2024 at Hotel Radisson Blu, Dwarka, New Delhi	MatCorr Delhi
2023-24	Energy & Fuels 2024 Excellence in Review Awards	Energy & Fuels Journal, ACS

2024

Distinguished Alumnus Award from the Department of Chemical Engineering, Calcutta University, Raja Bazar Science College
Department of Chemical Engineering, Calcutta University

SPE Activities:

- **Faculty Sponsor of SPE IIT(ISM) STUDENT Chapter (2008-2016)**

Dr. Ajay Mandal served the SPE IITISM, Dhanbad Student Chapter from 2008 to 2016.

The Chapter achievement during his period:

Outstanding Student Chapter Award in 2010, 2015

Gold Standard Award in 2011, 2012, 2013, 2014, 2016

- Dr. Ajay Mandal, Dept. of Petroleum Engineering, worked as member of the Regional Scholarship & Student Retention Committee of SPE Middle East, North Africa and India Region
- Worked as a member of South Asia Regional Award evaluation committee in 2016.
- Worked as Convener of “SPE Sub-Regional Paper Meet” held at Indian School of Mines, Dhanbad in 2012 and 2009, 2016.
- Technical Editorial member of SPE Journals.
- He worked as Membership Chairperson of SPE Kolkata Section.
- Dr. Mandal participated SPE conference at Muscat under SPE faculty support program for the Middle East Region in February, 2011.
- He participated SPE conference at Kuwait under SPE faculty support program for the Middle East Region in December, 2012.
- Organization of visit and address of **Dr. Ganesh Chandra Thakur, 2012 SPE President** on 25th Feb, 2012. And **Dr. D Nathan Meehan-SPE President 2016** on 2016 at IITISM Dhanbad, India
- He successfully worked as member of the Regional Scholarship & Student Retention Committee of SPE Middle East, North Africa and India Region during 2010-11.
- Dr. Dinesh Joshi, PhD Student of won the 1st prize in PG category in SPE Regional paper meet in 2023.
- Dr. Mandal actively involved with the SPE as volunteer and organizing different lectures of petroleum Industry experts, which are reflected in the SPE Presidential Award of the Students Chapter in 2024.

Foreign Visit & Collaboration:

- Invited talk and research collaboration King Abdullah University of Science and Technology Thuwal 23955-6900, Kingdom of Saudi Arabia with full sponsorship during 17-21 April 2023.

- Research Visit: National University Singapore (15-18th October, 2018).
- Collaborative Research Program: University Technology of Petronas, Malaysia (30 September-15 October, 2018)
- Collaborative research work in Fuels and Energy Technology Institute of Curtin University of Technology under the Australia-India Joint Research Centre for Coal and Energy Technology from 20 September 2016 to 30 September 2016.
- Internship program in the petroleum fields of MANSAROVAR ENERGY COLOMBIA LTD, Colombia (25th June-24th July, 2015).
- Participated SPE conference at Kuwait under SPE faculty support program for the Middle East Region in December, 2012.
- Presented a paper entitled “Physicochemical Properties of Microemulsions and their uses in Enhanced Oil Recovery”, in International Conference on *Nanoscience* and Nanotechnology, 5-6 July, 2012, Zurich, Switzerland, 2012.
- Participated SPE conference at Muscat under SPE faculty support program for the Middle East Region in February, 2011.
- Visited Japan for presenting a paper on “Role of Oil-Water Emulsion in Enhanced Oil Recovery” in International Conference on Chemistry and Chemical Engineering (ICCCE 2010) at Kyoto, Japan during 1st to 3rd August, 2010.
- Visited Germany as a Fellow of the German Academic Exchange Service (DAAD) on a research project entitled “Gas absorption into oil-water emulsion” for two months from May 15 to July 13, 2008, in Technische Universitat Braunschweig, Braunschweig, Germany.
- Collaborative SPARC Project: Development of Polymer augmented surfactant-based microemulsion systems for enhanced oil recovery; Collaborators: Prof. Lau Hon Chung, Rice University, USA; Prof. Ofer Manor of TECHNION, Israel; 2023-25.

PhDs Guided:

1. **Abhijit Samanta** on “Studies on Characterization of Alkali-Surfactant-Polymer System and its use in Enhanced Oil Recovery”, (2011).
2. **Achinta Bera** on “Studies on Enhanced Oil Recovery by Means of Microemulsions, Interfacial Tension Reduction and Wettability Alteration”, (2014).
3. **Shashikant Kumar** on “Development of Advanced Membrane Filtration for Separation of Oil from Oil-in-Water Emulsion”, (2016).
4. **Keshak Babu** on “Synthesis and Characterization of New Surfactant and Polymeric Surfactant from Castor Oil for Chemical Enhanced Oil Recovery” (2016).
5. **Himangshu Kakati** on “Studies of hydrate formation and dissociation in mixture of gases in presence of promoters and inhibitors” (2017).
6. **Ravindra Kumar** on “Studies on improvement in transportation of heavy crude oil using natural and commercial surfactants” (2017).
7. **Sunil Kumar** on “Studies on Surface and Interfacial Properties of Cationic, Anionic and Nonionic Surfactants for their Application in Enhanced Oil Recovery” (2017).

8. **Vinay Kumar Rajak**, “Optimization of Process Parameters for Separation of Oil from Oil-In-Water Emulsion” (2017).
9. **Shirsendu Banerjee**, “Experimental and Modeling Studies of Flow of Paraffinic Crude Oil through Horizontal Pipes” (2017).
10. **Sudhir Kumar**, “Synthesis and Characterization of Surfactant and Polymeric Surfactant from Jatropa Oil for their Application in Enhanced Oil Recovery”- (2018).
11. **Neetish Kumar Maurya**, “Formulation and Characterization of Nanoparticle based Chemical slugs for their potential application in Enhanced Oil Recovery”-2018.
12. **Manojkumar Gudala**, “Studies on Hydrodynamics of Multiphase Crude Oil Flow in a Pipeline”-2019.
13. **Neha Saxena**, “Synthesis of Surfactants from Natural Resources and Their Characterization for Application in Enhanced Oil Recovery”-2020.
14. **Amit Kumar**, “Synthesis and Characterization of Zwitterionic Surfactant for Application in Enhanced Oil Recovery”-2020.
15. **Nilanjan Pal**, “Gemini Surfactant assisted Enhanced Oil Recovery: Synthesis, Formulation Design and Performance Assessment” -2020.
16. **Md. Tausif Ahmad**, “Oily Wastewater Treatment Using Polymeric Membranes: Synthesis, Characterization, Deliverability and Modeling of Phase Inversion Membranes”- 2020
17. **Narendra Kumar Rawat**, “Formulation and Characterization of Nanoemulsion for Application in Enhanced Oil Recovery”-2021.
18. **Aditi Agarwal**, Separation of Oil from Oil-In-Water Emulsion by Microfiltration Using Ceramic Membranes-2022.
19. **Ekta Chaturvedi**, Comprehensive Studies on Reservoir Aspects of Gas Hydrates and Thermodynamics & Kinetics of Hydrate Formation and Dissociation in the Presence of Different Additives, 2022.
20. **Prathibha Pillai**, Synthesis and Characterization of Ionic Liquids for Application in Enhanced Oil Recovery, 2022.
21. **Mohammad Yunus Khan**: Mathematical and Numerical Investigations of Gas and WAG displacement Processes in Stratified Porous Media, 2022.
22. **Suresh Kumar Yatirajula**, Studies on Structural Properties and Rheology of Polymer Solutions for Enhanced Oil Recovery, 2022.
23. **Moumita Maiti**, Geological Characterization of Gas Hydrate-Bearing Sediments and Development of Drilling Fluids with Efficient Hydrate Inhibition Properties, 2023.
24. **Rohit Kumar Saw**, Investigation of Mechanisms and Performance Evaluation of Oil Recovery by Low Salinity Water Flooding in Carbonate Reservoirs, 2023.
25. **Dinesh Joshi**: Synthesis and Characterization of Nanoparticles and their effects on Surfactant based Enhanced oil Recovery, 2024.

26. **Ranjit Dutta:** Simulation Study of CO₂ Enhanced Oil Recovery and CO₂ Sequestration for a Mature Oilfield of Upper Assam Basin, India, 2025.

PhD Ongoing:

1. **Shubham Prakash:** Evaluation of Enhanced Oil Recovery potential of CO₂ and Hybrid CO₂ flooding: Experimental and Modelling Approach.
2. **Lavisha Jangid:** Synthesis & Characterization of Bio-Based Gemini Surfactant derived from Natural Resources & their Application in Enhanced Oil Recovery.
3. **Soumyadip Dey:** Synthesis of Tailor-made Polymers and their Application in Enhanced Oil Recovery.
4. **Rajib Chakraborty:** Experimental and Modeling Studies on Carbon Capture and Sequestration for Enhanced Oil Recovery in Upper Assam Basin.
5. **Goru Lakshmi Papa Rao:** Effect of Synthesized Nanoparticles on The Performance of Polymer/Surfactant Flooding for Enhanced Oil Recovery.
6. **Surajeet Bhattacharya:** Foam Flooding for Enhanced Oil Recovery
7. **Harshit Agarwal:** Hot Nanofluid for Enhanced Oil Recovery
8. **Venkata Vijay Shankar Anuprakash Muthayala:** Application of AI and ML in Enhanced Oil Recovery

M.Tech. Dissertation supervised: More than 40

B.Tech. Dissertation supervised: More than 150

❖ **Reviewer:** He is the reviewer of more than 40 International Journals like SPE Journals, Journal of Petroleum Science and Engineering, Fuel, Fuel Processing Technology, Chemical Engineering Science, Chemical Engineering Journal, Chemical Engineering Research and Design, Chemical Engineering Data, Chemical Engineering Communication, Energy & Fuel, International Journal of Petroleum Engineering, Petroleum Exploration and Development, ACS Omega, Geosystem Engineering, Journal of Molecular Liquid, SPE Polymers, RSC Advances, Molecules, Polymer Engineering & Science, Surfaces and Interfaces, Journal of Industrial and Engineering Chemistry, The Canadian Journal of Chemical Engineering, Physics of Fluids, Applied Sciences, Petroleum Science, Journal of CO₂ Utilization, Colloids and Surfaces A: Physicochemical and Engineering Aspects, Polymers, Energy & Fuels, Journal of the Taiwan Institute of Chemical Engineers, RSC Sustainability, Australian Journal of Chemistry, etc. with more than 1000 reviews.

❖ **Evaluation International Projects for funding:**

- 🚩 ACS Petroleum Research Fund "Experimental and simulation studies of enhanced oil recovery in porous media using viscoelastic fluorescent polymer microspheres., 2023.
- 🚩 Micro Gas Turbine Modelling and Performance Assessment for Distributed Power Generation in Kuwait, Kuwait Foundation for The Advancement of Sciences (KFAS), 2023, Kuwait University.
- 🚩 Novel mathematical methods with applications in oil production and refining, Kuwait Foundation for The Advancement of Sciences (KFAS), 2023, Kuwait University.

- ✚ Polymer beads for ammonia removal and bacteria control in marine water for sustainable intensive aquaculture; Science & Engineering Research Council (SERC), which is part of the Agency for Science, Technology and Research (A*STAR) in Singapore; March 2022.
- ✚ ACS PRF Project proposal "Interfacial thermodynamics and dynamics of imidazolium-based ionic liquid on calcite surface: Optimizing the adsorption and wettability alteration using large-scale molecular dynamics simulations". 2021.
- ✚ Assessment of Pore Volume Interpretations in Polymer Flooding- Research Sector Kuwait University; 2/08/2021
- ✚ Grant/Funding Program: Czech Science Foundation Grant Reviews 2021, Funder: Czech Science Foundation
- ✚ Machine Learning Based Adsorption Study for CO₂:CH₄ mixtures in ultra-tight Shale Reservoirs; YAYASAN UNIVERSITI TEKNOLOGI PETRONAS, Malaysia, June, 2020.
- ✚ Design of ecological, biodegradable surfactants based on renewable raw materials, 2017; National Science Centre (Narodowe Centrum Nauki), ul. Królewska 57, 30-081 Kraków.
- ✚ Proposal for the National Science Center, Poland, 2018.
- ✚ DPI Polymer Research Platform, Poland Project Evaluation Proposal Title: New Polymeric Surfactants for Enhanced Oil Recovery; 2018
- ✚ DPI Polymer Research Platform, Poland Project Evaluation Proposal Title: Well-defined Polymeric Surfactants by Group Transfer Polymerization for Enhanced Oil Recovery; 2018.

Invited Talk within India (Selected):

- ✚ Invited Talk on “Fundamentals And recent advances in enhanced oil recovery”, Presidency University, Bangalore, September, 2020.
- ✚ Invited talk on “Enhanced Oil Recovery” at Director General of Hydrocarbon (DGH) Office on 14th March, 2019.
- ✚ Invited talk on “Chemical Enhanced Oil recovery” Cairn India Ltd. Office, Gurugram, on 13th March, 2019.
- ✚ Invited talk on “Advanced Technology in Enhanced Oil Recovery”, Jadavpur University, Kolkata, 2015.
- ✚ Invited talk on “Nanoparticle-Enhanced Surfactant-Stabilized Nanoemulsions for Enhanced Oil Recovery” International Conference on Petroleum, Hydrogen& Decarbonization (ICPHD 2023), 03-05 Nov, 2023. IIT Guwahati and IIT Guwahati Society of Petroleum Engineers (SPE) Student Chapter.
- ✚ Invited talk on “Enhanced Oil Recovery- Policy to Implementation” Industry-Academia Meet Centre of Excellence for Energy Studies (CoEES), Guwahati, Oil India Ltd., 13th March 2018.
- ✚ Invited talk on “Enhanced Recovery: A Policy toward a paradigm shift”, Centre of Excellence for Energy Studies (CoEES), Guwahati, Oil India Ltd., 28th September, 2019.
- ✚ Invited talk on “CO₂ EOR & its application in CCUS; SPE Dibrugarh University Students’ Chapter; 17th July, 2024.
- ✚ Invited talk on “Estimation of Oil Recovery and CO₂ Storage Capacity in CO₂ and Hybrid CO₂ EOR: Experimental and Simulation Studies’ Cairn Oil & Gas, Gurugram; 13 August, 2024
- ✚ ACS Energy Talk, July 2025
- ✚ Delivered an invited talk on “CO₂ Sequestration and Utilization for Oil Recovery: A Pathway to Pollution Control” under National Pollution Control Day 2024; Department of Chemical

Engineering; Heritage Institute of Technology Kolkata, 02.12.2024.

PATENT Granted: (201831026697 of 17.07.2018)

Title of Invention: Non-ionic Gemini surfactants derived from sunflower oil and compositions thereof for oil mobility control in enhanced oil recovery application

Patent No.: 433978

Application No.: 201831026697

Inventor(s): Dr. AJAY MANDAL

Shri NILANJAN PAL

Assignee: Indian Institute of Technology (Indian School of Mines) Dhanbad, Dhanbad, Jharkhand, India (IN)

Date of Grant: 07/06/2023

Patent Filed: Surfactant Stabilized Green Nano Emulsion and Method of Preparation thereof for Application in Petroleum Industries; Application Number 202531001027 of 01.01.2025.

Inventor(s): Dr. AJAY MANDAL

Dr. Rohit Saw

Swayam NPTEL Course: An initiative by Ministry of Education (Govt. of India): Enhanced Oil Recovery Techniques

TEXT BOOK Authored: *Mandal, A. and Ojha, K., 2023. Enhanced Oil Recovery: Mechanisms, Technologies and Feasibility Analyses. CRC Press. ISBN 9780367566678; 346 Pages.*

Contribution to Petroleum Industry:

Dr. Mandal's profound impact on the petroleum industry is exemplified through his pioneering research in reservoir engineering and enhanced oil recovery. His groundbreaking work in surface and interface chemistry has not only advanced the scientific understanding but has yielded practical applications that hold immense promise for transforming oil and gas extraction. The innovative formulations he has developed, spanning surfactants, polymers, and nanoparticles for enhanced oil recovery, mark a paradigm shift in the industry's approach to matured reservoirs. Noteworthy formulations include microemulsions, nanoemulsions, nanofluids, Pickering emulsions, and stabilized foams. Dr. Mandal's commitment to sustainability is evident in his research on carbon dioxide sequestration, aligning with global goals. Actively collaborating with foreign universities, Dr. Mandal fosters a dynamic global exchange of knowledge. As a key member of the "Enhanced Recovery" committee within the Ministry of Oil and Natural Gas, he guides the industry toward adopting advanced technologies. Given India's dependence on imported crude oil and natural gas and the maturity of domestic reservoirs, Dr. Mandal's contributions are pivotal in shaping the future of enhanced oil recovery, ensuring a sustainable and efficient trajectory for the petroleum sector.

Major R&D Projects:

(i) Completed:

Sl. N.	Title of Project	Sponsoring Agency	Amount (Rs.)	Duration/Role
1.	Development of a CFD model for predicting axial dispersion and mass transfer characteristics in an ejector induced downflow bubble column	DST, Govt of India, New Delhi	30 Lakhs	2004-05 (Principal Investigator)
2.	Optimization of Alkaline-Surfactant-Polymer (ASP) Flooding for Enhanced Oil Recovery	CSIR, Govt New Delhi	9.06 lakh	2007-2010 (Principal Investigator)
3.	Studies on improved recovery of oil by surfactant induced wettability alteration and interfacial tension (IFT) reduction	UGC, Govt. Of India, New Delhi	7.5 lakh	2009-2012 (Principal Investigator)
4.	Separation of oil from oil-water emulsion by membrane filtration	IIT(ISM), Dhanbad	8.40 lakh	2010-2012 (Principal Investigator)
5.	Characterization of Nanoparticle Stabilized Emulsions and its use in Enhanced Oil Recovery	Oil India Ltd., India	24.34 lakh	2012-2014 (Principal Investigator)
6.	Development and Optimization of Coal Bed Methane Recovery Process by CO ₂ Sequestration	Ministry of Coal, Govt. Of India	26.98 lakh	2007-2009 (Co-Principal Investigator)
7.	Synthesis of surfactant-based hydro-fracturing gel	CSIR, Govt. Of India, New Delhi	8.63 lakh	2007-2010 (Co-Principal Investigator)
8.	Experimental and modelling studies of flow of paraffinic crude oil through a complex flow loop	UGC, Govt. Of India, New Delhi	13.79 lakh	2013-2016 (Co-Principal Investigator)
9.	Experimental and Modeling Studies of Chemically Enhanced Water Alternating Gas (CEWAG) Injection for Enhanced Oil Recovery	CSIR, Govt New Delhi	17.97 lakh	2014-2017 (Principal Investigator)
10.	Synthesis and extraction of surfactants from natural resources and their characterization for application in enhanced oil recovery	Oil India Ltd., India	22.62 lakh	2015-2018 (Principal Investigator)
11.	Studies on Characteristics and Dissociation behaviour of Natural Gas Hydrate in Sediments under Subsurface Mimic Conditions.	DST, Govt of India, New Delhi	44.18 lakh	2015-2018 (Principal Investigator)
12.	Development of Reservoir Engineering Laboratory	FIST, DST	160 lakhs	Co-Coordinator
13.	Development and characterization of efficient drilling fluid systems to explore	Ministry of Earth Science, Govt of India, New Delhi	42.77 lakh	(2017-2020) (Principal Investigator)

	huge natural gas hydrate resource in the offshore of India.			
14	Feasibility of using Nanoparticles for Enhanced Oil Recovery in fields of ONGC	ONGC	39.35 lakh	PI (2018-20220) (Principal Investigator)
15	Synergistic Effects of Nanoparticle and Surfactant in Formation of Nanoemulsion for Application in Enhanced Oil Recovery: Experimental and Molecular Dynamic Simulation Studies	CSIR, Govt New Delhi	22.00 lakh	2020-2023 (Principal Investigator)
16	Microbial Simulation and Augmentation of Gas Content of Coal Seam	Essar Oil and Gas Exploration and Production Limited	Rs. 18.54 lakhs	(2021-2022) (Co-Principal Investigator)
17	Foam Assisted Oil-Water Nanoemulsion for Enhanced Oil Recovery: Experimental and Molecular Dynamic Simulation Studies	OIDB	70.00 lakhs	(2020-2023) (Principal Investigator)
18	Use of natural extracts as pour point depressants for waxy crude oil”	OIDB	54 lakhs	(2020-2023) (Co-Principal Investigator)

(ii) Ongoing:

S. N.	Title	Sponsoring Agency	Amount (Rs.)	Duration
19.	Micro scale investigation of miscibility behaviour of CO ₂ with crude oil for enhanced oil recovery and its geological sequestration potential in Cambay Basin	DST, SERB	45 lakhs	2021-2024 (Principal Investigator)
20	SPARC Project: Development of Polymer augmented surfactant-based microemulsion systems for enhanced oil recovery	MHRD, Government of India	75.00 lakhs	2023-2025 (Principal Investigator)
21	Synthesis of Bio-Based Zwitterionic surfactant for use in Enhanced Oil recovery (EOR) at High Reservoir Temperature Conditions	SERB, DST	27.00 lakhs	2024-2027 (Co-Principal Investigator)
22	Developments Tailor-made Surfactants for application in enhanced oil recovery	Syntron industries Private Limited, Ahmedabad	8.32 lakhs	2024-26 (Principal Investigator)
23	Hot Nanofluid for Enhanced Oil Recovery: Design and Mechanism Development	HOEC	12.30 lakhs	2024-26 (Principal Investigator)

16. Details of Consultancy Projects:

S. N.	Title	Sponsoring Agency	Amount (Rs.)	Duration
1.	Technical opinion on discovery in FAN-A-Well with respect to non-associated natural gas	Hardy Exploration & Production (India) Inc.	3.5 lakhs	(2009-2010) Co-Consultant In-charge
2.	Technical opinion relating to the Contract with M/S Aban Offshore Limited relating to the provision of "Floating Production System"	Hardy Exploration & Production (India) Inc.	3.86 lakhs	(2011) Co-Consultant In-charge
3.	One-week short-term course on Reservoir Engineering for Executives of Oil India Ltd.	Oil India Ltd.	7.0 lakhs	August 27-31, 2012 Consultant In-Charge
4.	One-week short-term course on Gas Hydrates	UPES, Dehradun	3.0 lakhs	2012-13 Co-Consultant In-Charge
5	Three months Competency Development of Reservoirs for ONGC Executives-EDP/4093/2018-2019	ONGC	1.3 Crores	2018-2019, Co-Consultant In-Charge
6	Three months Competency Development of Reservoirs for ONGC Executives-EDP/5031/2019-2020	ONGC	1.3 Crores	2019-2020, Co-Consultant In-Charge
7	Preliminary screening of EOR for SELAN's Bakrol and Lohar oil and gas fields of Cambay basin- Cons/86-	SELAN	6.0 Lakhs	2019; Co-Consultant In-Charge
8	Preliminary screening of EOR for SELAN's Bakrol and Lohar oil and gas fields of Cambay basin-Phase II Cons/100-2019-2020	SELAN	12.0 Lakhs	2019, Co-Consultant In-Charge
9	Design work for oil removal system for equalization tank with 2 options: Still central concentric tube system and gun-barrel tank system along with full details, isometric & feasibility system/2019-2020	Mahima Udyog	4.13 Lakhs	2019-2020, Consultant In-Charge
10	Core flooding studies and interpretation for Microbial Oil Recovery	TERI	3.0 Lakhs	2019-2020, Consultant In-Charge
11	CMB –Gas conditioning & Processing" course for RIL Executives Project No: EDP/6040/2020-21	RIL	6.0 Lakhs	2020-21, Consultant In-Charge
12	"Reservoir Engineering & Fundamentals of Enhanced Oil Recovery" for Executives of Oil India Ltd.: EDP/7085/2023-24	Oil India Ltd.	10.62 lakhs	2023-24, Consultant In-Charge

13	Adsorption Isotherm Analysis & Lab Studies of Coal & Shale Samples for CBM & Shale Gas, 2024	M/s Essar Oil and Gas Exploration and Production Limited, Durgapur	41.77 lakhs	2024, Co-Consultant In-Charge
14	Compatibility Study of Fresh Water with Formation Rock & Fluid of Sun Petro.	M/s Sun Petrochemicals Pvt. Ltd. Mumbai	34.0 lakhs	Consultant In-Charge
15	Evaluation of Diesel Samples of Heavy Machineries	M/s Devprabha Construction Pvt. Ltd.	11.0 lakhs	2024, Co-Consultant In-Charge
16	Performance Of Synthesized Surfactants for Enhanced Oil Recovery and Interpretation of Results with Detailed Mechanisms	Shah-Schulman Centre for Surface Science & Nanotechnology	2.95 lakhs	2024-25 Consultant In-Charge
17	Technical Assessment of Diesel Samples of Heavy-Duty Machines used by Devprabha Construction Pvt. Ltd.	M/s Devprabha Construction Pvt. Ltd.	118.0 lakhs	2024-27, Co-Consultant In-Charge
18	Studies On the Analysis and Optimization of Drilling Fluids	Sunita Hydrocolloids Inc; Houston Texas 77041 USA	US\$ 1900.00	2024-25 Consultant In-Charge
19	Course: 2514001- Advances in enhanced oil recovery in shale and tight reservoirs: Opportunities and Challenges. Foreign Faculty Name: Prof JAMES J. SHENG	Funds for implementation of Global Initiative on Academic Network (GIAN) programme	2.905 Lakhs	2025-25 (Principal Investigator)
20	Establishment Of Mechanisms of Low-Salinity Water Flooding (LSWF) For Improving Oil Recovery from Sandstone Reservoirs a with Moderate Salinity	Oil India Ltd. (under process)	19.80 lakhs	2025-26 Consultant In-Charge

Service in Professional Organizations

- Member of Faculty selection Committee, IIT Kharagpur, 2023
- Member of Faculty selection Committee, RGIPT, Jais, Uttar Pradesh 2020
- Attended many meetings as Member of BOCS, UPES, Dehradun
- Attended many meetings as Member of BOCS, JNTU Kakinada
- Attended many meetings as Member of BOCS, Aditya Engineering College, Kakinada
- PhD Thesis Examiner of Foreign Universities: Anastasia Ivanova, Dynamic modelling and experimental evaluation of nanoparticles application in surfactant enhanced oil recovery, Skolkovo Institute of Science and Technology.
- PhD Thesis Examiner of Foreign Universities: Lezorgia Nekabari Nwdee, Nanoparticles for Enhanced Oil Recovery Processes' Curtin University, Australia, 2017.

- ✚ PhD Thesis Examiner of Foreign Universities: Syed Ali Qasim Zohair, Performance Evaluation of Quaternary Ammonium Salts as Thermodynamic Gas Hydrate and Corrosion Inhibitors, Universiti Teknologi PETRONAS, 2021.
- ✚ PhD Thesis Examiner of Foreign Universities: Najeebullah, Development of Polymeric Nano Composite as a Potential Hybrid Fluid for Enhanced Oil Recovery Process in Sandstone Reservoirs, Universiti Teknologi PETRONAS, 2022.
- ✚ PhD Thesis Examiner of Foreign Universities: Daniel Asante Otchere, Development of a new Model for Determination of Water-Wet Sandstone Wettability Using Experimental Work and Machine Learning, Universiti Teknologi PETRONAS, 2022.
- ✚ PhD Thesis Examiner of Foreign Universities Nallakukkala Sirisha, Performance Evaluation and Kinetic Study of CO₂-Rich Natural Gas Hydrate Formation for Produced Water Treatment, Universiti Teknologi PETRONAS, 2023.
- ✚ PhD Thesis Examiner of Foreign Universities: Khor Siak Foo, Investigation of Interfacial Interaction of Span and Tween Surfactants on Hydrate Crystallization, Universiti Teknologi PETRONAS, 2022.
- ✚ PhD Thesis Examiner of Indian Universities: More than 20 mostly from IITs.
- ✚ Convenor of “SPE Subregional Paper Contest” held at IIT(ISM), Dhanbad, 2009.
- ✚ Convenor of “SPE Subregional Paper Contest” held at IIT(ISM), Dhanbad, 2012.
- ✚ Convenor of “SPE Subregional Paper Contest” held at IIT(ISM), Dhanbad, 2016.
- ✚ Hosted SPE International President's (Dr. Ganesh Chandra Thakur) visit to IIT(ISM), 25th Feb, 2012.
- ✚ Hosted SPE International President's (Nathan Meehan) visit to IIT(ISM) 2016.

Lab developments:

- ✚ Developed State-of-Art Enhanced Oil Recovery Lab
- ✚ Developed State-of-Art Gas Hydrate Lab

I. Total number of papers published (in refereed journals/proceedings):

List of Publications:

Total Google Scholar Citations: 14,100 (Approx)

h-index 71

i10-index 192

Scopus

Citations: ~11,765; documents: 245; h-index: 64

Web of Science:

Citations: 8,020; documents: 186; h-index: 56

Sl. No.	Publications (Total-265)	Publisher	IF
	Year-2025		
1.	Dinesh Joshi and Ajay Mandala, et al., Synthesis and Characterization of Carbon Dots for Enhanced Oil Recovery Applications- Under revision with minor revision in Journal of Molecular Liquids.	Elsevier	5.3

2.	Ranjit Dutta and Ajay Mandal et al., Optimization of CO ₂ Storage in Saline Aquifers: A Field-Scale Mechanistic Study on Injection Strategies, Pressure Management, and Long-Term Containment, Under revision with minor revision in Environmental Earth Sciences	Springer Nature	2.28
3.	Rajib Chakraborty & Mandal et al Optimization of Control Parameters in Alkaline-Surfactant-Polymer (ASP) Flooding for Enhanced Oil Recovery: A Simulation Approach; Under revision with minor revision in Journal of Petroleum Exploration and Production Technology (PEPT)	Springer Nature	2.4
4.	Rohit Kumar Saw, Ajay Mandal; A Comprehensive Investigation on Ion Tuned Low Salinity Water Flooding in Carbonate Reservoirs: Impact of Phosphate Ion (PO ₄ ³⁻)- Under second Review in SPE Journal.	SPE	3.6
5.	Chakraborty G, Ojha K, Mandal A, Patra N. Optimizing Oil Detachment from Silica Surfaces Using Gemini Surfactants and Functionalized Silica Nanoparticles: A Combined Molecular Dynamics and Machine Learning Approach. Physical Chemistry Chemical Physics. 2025.	RSC	3.68
6.	Chakraborty R, Jangid L, Pandey R, Pasivedala RK, Shaw T, Dutta R, Mandal A. Synergistic Effects of Nonionic Surfactant and Organic Alkali for Enhanced Oil Recovery: Optimizing Interfacial Tension Reduction, Emulsion Stability, and Corrosion Control under Optimal Salinity Conditions. Energy & Fuels. 2025 Feb 7.	ACS	5.2
7.	Akash T, Verma V, Ali M, Mandal A, Pal N. Characterization and optimization of anionic surfactant-polyethylene glycol-alumina based nanofluids for enhanced oil recovery application. Journal of Molecular Liquids. 2025 Jan 12:126924.	Elsevier	5.3
8.	Singh PK, Joshi D, Mandal A, Pal N. Silica Nanoparticle-Stabilized Anionic Surfactant Microemulsions: Characterization, Technical Evaluation, and Core-Flooding Studies for Enhanced Oil Recovery. Energy & Fuels. 2025 Jan 16.	ACS	5.2
9.	Goru Lakshmi Papa Rao, Ajay Mandal, Nilanjan Pal, Choline Chloride-Urea based deep eutectic Solvent: Characterization, interfacial behavior and Synergism in binary (surfactant) systems, Chemical Physics, Volume 588, 2025, 112496,	Elsevier	2.0
	Year-2024		
10.	Rajib Chakraborty, Ranjit Dutta, Gaurav Kundu, Saloma Yomdo, Trailukya Borgohain, Prakash Bajpai, Saket Kumar, Ajay Mandal, Optimization of Control Parameters in Alkaline Surfactant Polymer (ASP) Flooding for Enhanced Oil Recovery: A Simulation Approach; Journal of Petroleum Exploration and Production Technology, 2024	Springer	2.4
11.	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.	ACS	3.7
12.	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.	Elsevier	5.7

13.	Priyanshu Kumar Singh, Dinesh Joshi, Ajay Mandal, Nilanjan Pal; Formulation and Optimization of Silica nanoparticle-stabilized Anionic surfactant microemulsions for application in Enhanced Oil Recovery” Energy & Fuels, 2025.	Nature.com	3.8
14.	Ranjit Dutta, Gaurav Kundu, Seyed Mousa Mousavi Mirkalaei, Rajib Chakraborty, Saloma Yomdo, Ajay Mandal Evaluation of Potential of CO ₂ Enhanced Oil Recovery (EOR) and Assessment of Capacity for Geological Storage in a Mature Oil Reservoir within Upper Assam Basin, India, Energy & Fuels.	ACS	5.3
15.	Shubham Prakash, Dinesh Joshi, Keka Ojha, Ajay Mandal, Enhanced Oil Recovery using Polymer Alternating CO ₂ Gas Injection: Mechanisms, Efficiency, and Environmental Benefits, Energy & Fuels, 2024	ACS	5.3
16.	Pillai, Prathibha, Rohit Kumar Saw, and Ajay Mandal. "Formulation and characterization of ionic liquid-based nanoemulsion for enhanced oil recovery applications." Journal of Molecular Liquids (2024): 124189.	Elsevier	6.0
17.	Rahaman, Sk Meheebub, Dinesh Joshi, Arnab Patra, Trishna Mandal, Nargis Khatun, Subhendu Dhibar, Rumpa Saha, Ajay Mandal, Dileep Kumar, and Bidyut Saha. "A pH switchable Pickering emulsion stabilised by controlled non-conventional lanthanum sulfide nanoparticles, in situ hydrophobized with a cationic surfactant." New Journal of Chemistry 48, no. 9 (2024): 4063-4076.	RSC	3.3
18.	Kaushik, A., Joshi, D., Saw, R.K., Rathi, K.B., Mitra, S. and Mandal, A., 2024. Formation and characterization of nanoparticle assisted surfactant stabilized oil-in-water nanoemulsions for application in enhanced oil recovery. Fuel, 359, p.130500.	Elsevier	7.2
Year 2023			
19.	Kumar, Narendra, Amit Verma, Tausif Ahmad, Rajesh Kumar Sahu, Ajay Mandal, Muhammad Mubashir, Muhammad Ali, and Nilanjan Pal. "Carbon capture and sequestration technology for environmental remediation: A CO ₂ utilization approach through EOR." Geoenergy Science and Engineering (2023): 212619.	Elsevier	4.4
20.	D. Joshi, N. K. Maurya, A. Mandal, Evaluation of Synergetic Rheological Behaviour of Polymer and Silica Nanofluids for Enhanced Oil Recovery, SPE Annual Technical Conference and Exhibition, October 16–18, 2023; Paper Number: SPE-217486-STU	SPE	-
21.	Saw, R.K., Rane, P.M., Joshi, D., Prakash, S., Jangid, L. and Mandal, A., 2023. Enhanced oil recovery using a novel non-ionic surfactant synthesized from olive oil: Performance and synergistic effects. Journal of Molecular Liquids, 392, p.123452.	Elsevier	6.0
22.	Joshi, D., Maurya, N.K. and Mandal, A., 2023. Experimental studies on effectiveness of graphene oxide nanosheets dispersion in water/aqueous PHPA for enhanced oil recovery. Journal of Molecular Liquids, 387, p.122728.	Elsevier	6.0
23.	Saw, R.K., Sinojiya, D., Pillai, P., Prakash, S. and Mandal, A., 2023. Experimental Investigation of the Synergistic Effect of Two Nonionic Surfactants on Interfacial Properties and Their Application in Enhanced Oil Recovery. Acs Omega, 8(13), pp.12445-12455.	ACS	4.13

24.	Maiti, M., Bhaumik, A.K. and Mandal, A., 2023. Experimental and kinetic modelling studies on the gas hydrate inhibition effect of PVP K-90 in drilling fluids. <i>Gas Science and Engineering</i> , 115, p.205015.	Elsevier	5.285
25.	Saw, R.K. and Mandal, A., 2023. Experimental investigation on fluid/fluid and rock/fluid interactions in enhanced oil recovery by low salinity water flooding for carbonate reservoirs. <i>Fuel</i> , 352, p.129156.	Elsevier	7.2
26.	Saw, Rohit Kumar, Anshuman Singh, Neetish Kumar Maurya, and Ajay Mandal. "A mechanistic study of low salinity water-based nanoparticle-polymer complex fluid for improved oil recovery in sandstone reservoirs." <i>Colloids and Surfaces A: Physicochemical and Engineering Aspects</i> 666 (2023): 131308.	Elsevier	5.2
27.	R Kumar Pandey, A Kumar, A Mandal, B Vaferi, Genetic algorithm optimization of deep structured classifier-predictor models for pressure transient analysis, <i>Journal of Energy Resources Technology</i> 145 (2), 023003, 2023.	ASME	3.41
28.	Anindya Sundar Goswami; Rajvardhan Rawat, Rohit Kumar Saw; Pathibha Pillai; Dinesh Joshi; Ajay Mandal; Formulation and Characterization of Nanoemulsions stabilized by Non-ionic Surfactant and their Application in Enhanced oil Recovery, <i>Petroleum Science and Technology</i> , 2023; DOI: 10.1080/10916466.2023.2181357	Taylor & Francis	0.719
Year 2022			
29.	Banerjee, T., Samanta, A. and Mandal, A., 2022. Mathematical regression models for rheological behavior of interaction between polymer-surfactant binary mixtures and electrolytes. <i>Journal of Dispersion Science and Technology</i> , 43(9), pp.1333-1345.	Taylor & Francis	2.34
30.	Narendra Kumar, Marcio Augusto Sampaio; Keka Ojha; Hussein Hoteit; Ajay Mandal: Fundamental aspects, mechanisms and emerging possibilities of CO2 miscible flooding in enhanced oil recovery: A review; <i>Fuel</i> , 2022	Elsevier	7.4
31.	Maiti, Moumita; Pillai, Prathibha; Sharma, Aniruddha; Bhaumik, Ajoy; Mandal, Ajay; Inhibition effect of synthesized Ionic liquids on hydrate formation: A kinetic and thermodynamic study"- <i>Energy & Fuels</i> , 2022, 36, 18, 10832–10844.	ACS	5.3
32.	Rohit Kumar Saw, Prathibha Pillai and Ajay Mandal, Synergistic Effect of Low Saline Ion Tuned Sea Water with Ionic Liquids for Enhanced Oil Recovery from Carbonate Reservoirs, <i>Journal of Molecular Liquids</i> 364 (2022): 120011.	Elsevier	6
33.	Pillai, Prathibha, Moumita Maiti, and Ajay Mandal. "Mini-review on Recent Advances in the Application of Surface-Active Ionic Liquids: Petroleum Industry Perspective." <i>Energy & Fuels</i> 36, no. 15 (2022): 7925-7939.	ACS	5.3
34.	Dinesh Joshi, Neetish Kumar Maurya, Narendra Kumar, Ajay Mandal, Experimental Investigation of Silica Nanoparticle Assisted Surfactant and Polymer systems for Enhanced Oil Recovery; <i>Journal of Petroleum Science and Engineering</i> , Volume 216, September 2022, 110791.	Elsevier	5.168
35.	Rakesh Kumar Pandey; Anil Kumar; Ajay Mandal; Behzad Vaferi; Employing deep learning neural networks for characterizing dual-porosity reservoir based on pressure transient tests. <i>Journal of Energy Resources Technology</i> 144, no. 11 (2022): 113002.	ASME	3.41
36.	Himanshu Kesarwani, Ajay Mandal, Shivanjali Sharma; Enhanced Oil Recovery from the Methyl Ester Sulfonate Derived from Flaxseed Oil: Interfacial, Adsorption and Rock Wetting Characteristics- <i>ChemistrySelect</i> 7, no. 13 (2022): e202104593.	ACS	2.307

37.	Maiti, M., Bhaumik, A.K. and Mandal, A., 2022. Geological characterization of natural gas hydrate bearing sediments and their influence on hydrate formation and dissociation. Journal of Natural Gas Science and Engineering, Volume 100, April 2022, 104491.	Elsevier	5.285
38.	Himanshu Kesarwani, Vartika Srivastava, Ajay Mandal, Shivanjali Sharma, Abhay Kumar Choubey: Application of α -MnO ₂ nanoparticles for residual oil mobilization through surfactant polymer flooding; Environmental Science and Pollution Research 29 (29), 44255-44270.	Springer	5.190
39.	Nilanjan Pal; Xuan Zhang; Muhammad Ali; Ajay Mandal; Hussein Hoteit, Carbon dioxide Thickening: A Review of Technological aspects, Advances and Challenges for Oilfield application, Fuel 315 (2022): 122947.	Elsevier	7.4
40.	Jayant Verma and Ajay Mandal, Potential Effective Criteria for Selection of Polymer in Enhanced Oil Recovery, Petroleum Science and Technology 40 (7), 879-892	Taylor and Francis	0.719
41.	Rakesh Kumar Pandey; Anil Kumar; Ajay Mandal; Optimized Deep Learning Model Assisted Pressure Transient Analysis for Automatic Reservoir Characterization, Petroleum Science and Technology 40 (6), 659-677.	Taylor and Francis	0.719
42.	Khan MY, Mandal A: Analytical model of incremental oil recovery as a function of WAG ratio and tapered WAG ratio benefits over uniform WAG ratio for heterogeneous reservoir, Journal of Petroleum Science and Engineering 209, 109955, 2022	Elsevier	5.168
43.	Prathibha Pillai & Ajay Mandal, Synthesis and characterization of surface-active ionic liquids for their potential application in enhanced oil recovery, Journal of Molecular Liquids 345 (2022): 117900.	Elsevier	6.0
44.	Rakesh Kumar Pandey; Anil Kumar; Ajay Mandal; A robust deep structured prediction model for petroleum reservoir characterization using pressure transient test data, Petroleum Research 7, no. 2 (2022): 204-219.	Elsevier	4.39
45.	Shubham Prakash, and Ajay Mandal, Scope and Opportunity of CO ₂ Sequestration for Enhanced Oil Recovery, MGMI NEWS JOURNAL, Vol. 48, (3&4), 2022.	MGMI	-
46.	Khan, Mohammad Yunus, and Ajay Mandal. "The impact of permeability heterogeneity on water-alternating-gas displacement in highly stratified heterogeneous reservoirs." Journal of Petroleum Exploration and Production Technology (2022): 1-27.	Springer	2.508
47.	Iqbal, O., Padmanabhan, E., Mandal, A. and Dvorkin, J., 2021. Characterization of geochemical properties and factors controlling the pore structure development of shale gas reservoirs. Journal of Petroleum Science and Engineering, 206, p.109001.	Elsevier	5.168
48.	Saxena, N. and Mandal, A., Natural Surfactants: Application in Enhanced Oil Recovery. - ISBN: 978-3-030-78548-2, 2022 SpringerLink	SpringerLink	-
	Year 2021		
49.	Nilanjan Pal, Hussein Hoteit, Ajay Mandal: Structural aspects, mechanisms and emerging prospects of Gemini surfactant-based alternative Enhanced Oil Recovery technology: A review, Journal of Molecular Liquids 339, 116811, 2021.	Elsevier	6

50.	Narendra Kumar, Amit Kumar, Ajay Mandal, Formation, Characteristics and Oil Industry Applications of Nanoemulsions: A Review, Journal of Petroleum Science and Engineering, Volume 206, November 2021, 109042	Elsevier	5.168
51.	Khan MY, Mandal A. FDP Optimization with Techno-Economic Viable Infills and Their Impact in Water/Miscible WAG Injection in Heterogeneous Reservoir. In IOR 2021 2021 Apr 19 (Vol. 2021, No. 1, pp. 1-19). European Association of Geoscientists & Engineers.	EAGE	-
52.	Nilanjan Pal; Ajay Mandal: Compositional Simulation Model and History-Matching Analysis of Surfactant-Polymer-Nanoparticle (SPN) Nanoemulsion assisted Enhanced Oil Recovery. Journal of the Taiwan Institute of Chemical Engineers 122, 1-13, 2021.	Elsevier	4.794
53.	Narendra Kumar; Nilanjan Pal; Ajay Mandal; Nanoemulsion Flooding for Enhanced Oil Recovery: Theoretical Concepts, Numerical Simulation and History Match, Journal of Petroleum Science and Engineering, 2021 Jul 1;202:108579.	Elsevier	5.168
54.	Himanshu Kesarwani, Shivanjali Sharma, Ajay Mandal, Application of Novel Colloidal Silica Nanoparticles in the Reduction of Adsorption of Surfactant and Improvement of Oil Recovery using Surfactant Polymer Flooding, ACS omega 6 (17), 11327-11339, 2021	ACS	4.1
55.	Moumita Maiti, Ajoy Bhaumik, Ajay Mandal, Performance of Water-Based Drilling Fluids for Deep-Water and Hydrate Reservoirs: Designing and Modelling Studies, Petroleum Science, Volume 18, Issue 6, 15 December 2021, Pages 1709-1728	Springer	4.090
56.	Ekta Chaturvedi, Moumita Maiti, Sukumar Laik, Ajay Mandal, Mineralogical and Structural Characterization of The Sediments of Krishna Godavari And Mahanadi Basin and their Influences on Hydrate Formation Kinetics, Advanced Powder Technology, Volume 32, Issue 4, April 2021, Pages 1247-1263	Elsevier	4.9691 34
57.	Kesarwani, Himanshu; Saxena, Amit; Mandal, Ajay; Sharma, Shivanjali, Anionic/Nonionic Surfactant Mixture for Enhanced Oil Recovery through the investigation of Adsorption, Interfacial, Rheological, and Rock Wetting Characteristics, Energy Fuels 2021, 35, 4, 3065–3078	ACS	5.3
58.	Tausif Ahmad, Ajay Mandal and Chandan Guria, Optimal synthesis of high fouling-resistant PVC-based ultrafiltration membranes with tunable surface pore size distribution and ultralow water contact angle for the treatment of oily wastewater, Separation and Purification Technology, Volume 257, 15 February 2021, 117829	Elsevier	9.10
59.	R. K. Pandey, A. K. Dahiya, and A. Mandal, “Identifying Applications of Machine Learning and Data Analytics Based Approaches for Optimization of Upstream Petroleum Operations,” Energy Technology, 2021 Jan;9(1):2000749.	Wiley	4.149
Year 2020			
60.	Tandrima Banerjee, Abhijit Samanta, Ajay Mandal, Mathematical Regression Models for Rheological behavior of Interaction between Polymer-Surfactant binary mixtures and Electrolytes, Journal of Dispersion Science and Technology, 2020 Dec 3:1-3	Taylor and Francis	2.34
61.	Ekta Chaturvedi, Sukumar Laik, Ajay Mandal, A Comprehensive Review of the Effect of Different Kinetic Promoters on Methane Hydrate Formation, Chinese Journal of Chemical Engineering, Volume 32, April 2021, Pages 1-16.	Elsevier	3.8

62.	Yunus Khan and Ajay Mandal, Improvement of Buckley-Leverett equation and its solution for gas displacement with viscous fingering and gravity effects at constant pressure for inclined stratified heterogeneous reservoir, Fuel. 2021 Feb 1;285:119172.	Elsevier	6.609
63.	Maiti, Moumita, Ravi Ranjan, Ekta Chaturvedi, Ajoy Kumar Bhaumik, and Ajay Mandal. "Formulation and characterization of water-based drilling fluids for gas hydrate reservoirs with efficient inhibition properties." Journal of Dispersion Science and Technology 42, no. 3 (2021): 338-351.	Taylor & Francis	2.34
64.	Joshi, D., N. Kumar, and A. Mandal. "Enhanced Oil Recovery Performance of Silica Nanofluid in Sandpack Model." In 82nd EAGE Annual Conference & Exhibition, vol. 2021, no. 1, pp. 1-5. European Association of Geoscientists & Engineers, 2021.	Conference Proceedings	-
65.	Pillai, P., and A. Mandal. "A Comprehensive Study for Evaluation of Imidazolium Based Ionic Liquid for Application in Enhanced Oil Recovery." In 82nd EAGE Annual Conference & Exhibition, vol. 2021, no. 1, pp. 1-5. European Association of Geoscientists & Engineers, 2021.	Conference Proceedings	-
66.	Saw, R.K. and Mandal, A., 2020. A mechanistic investigation of low salinity water flooding coupled with ion tuning for enhanced oil recovery. RSC advances, 10(69), pp.42570-42583.	RSC	4.036
67.	Narendra Kumar, Saif Ali, Amit Kumar and Ajay Mandal, Design and Formulation of Surfactant Stabilized O/W Emulsion for Application in Enhanced Oil Recovery: Effect of pH, Salinity and Temperature, Oil & Gas Science and Technology-Revue d'IFP Energies Nouvelles, 2020;75:72.	EDP Sciences	1.5
68.	Narendra Kumar and Ajay Mandal, Experimental Investigation of PEG 6000/Tween 40/SiO ₂ NPs Stabilized Nanoemulsion Properties: A versatile Oil Recovery Approach, Journal of Molecular Liquids. 2020 Aug 21:114087	Elsevier	6
69.	Nilanjan Pal and Ajay Mandal, Numerical Simulation of Enhanced Oil Recovery (EOR) studies for aqueous Gemini Surfactant-Polymer-Nanoparticle systems, <i>AIChE Journal</i> , 2020, p.e17020	Wiley	4.167
70.	Tausif Ahmad, Ajay Mandal and Chandan Guria, Optimal synthesis, characterization and antifouling performance of Pluronic F127/bentonite-based super-hydrophilic polyvinyl chloride ultrafiltration membrane for enhanced oilfield produced water treatment, Journal of Industrial and Engineering Chemistry, Volume 90, 25 October 2020, Pages 58-75	Elsevier	5.278
71.	Aditi Agarwal, Arunkumar Samanta, Barun Kumar Nandi, Ajay Mandal: Synthesis, characterization and performance studies of kaolin-fly ash-based membranes for microfiltration of oily waste water; Journal of Petroleum Science and Engineering; Volume 194, November 2020, 107475	Elsevier	5.168
72.	Tausif Ahmad, Ajay Mandal and Chandan Guria, A review of oily wastewater treatment using ultrafiltration membrane: A parametric study to enhance the membrane performance Journal of Water Process Engineering, Volume 36, August 2020, 101289	Elsevier	7.34
73.	Nilanjan Pal and Ajay Mandal, Enhanced Oil Recovery Performance of Gemini Surfactant-stabilized Nanoemulsions functionalized with partially hydrolysed polymer/silica nanoparticles, Chemical Engineering Science, Volume 226, 23 November 2020, 115887	Elsevier	5.23

74.	Narendra Kumar and Ajay Mandal, Wettability Alteration of Sandstone Rock by Surfactant Stabilized Nanoemulsion for Enhanced Oil Recovery - A Mechanistic Study; Colloids and Surfaces A: Physicochemical and Engineering Aspects, Volume 601, 20 September 2020, 125043	Elsevier	5.2
75.	Nilanjan Pal and Ajay Mandal. Oil Recovery Mechanisms of Pickering Nanoemulsions stabilized by Surfactant-Polymer-Nanoparticle assemblies: A Versatile Surface Energies' approach, FUEL, Volume 276, 15 September 2020, 118138	Elsevier	7.34
76.	Pal, Nilanjan, Amit Verma, Keka Ojha, and Ajay Mandal. "Nanoparticle-modified gemini surfactant foams as efficient displacing fluids for enhanced oil recovery." Journal of Molecular Liquids (2020): Volume 310, 15 July 2020, 113193	Elsevier	6
77.	Ahmad, Tausif, Chandan Guria, and Ajay Mandal. "Kinetic modelling and simulation of non-solvent induced phase separation: Immersion precipitation of PVC-based casting solution in a finite salt coagulation bath." Polymer (2020): 122527.	Elsevier	4.231
78.	Kumar A, Mandal A. Core-scale modelling and numerical simulation of zwitterionic surfactant flooding: Designing of chemical slug for enhanced oil recovery. Journal of Petroleum Science and Engineering. 2020 Apr 28;107333.	Elsevier	5.168
79.	Prathibha Pillai and Ajay Mandal, A comprehensive micro scale study of poly-ionic liquid for application in enhanced oil recovery: Synthesis, characterization and evaluation of physicochemical properties, Journal of Molecular Liquids, Volume 302, 15 March 2020, 112553	Elsevier	6
80.	Tausif Ahmad, Ajay Mandal and Chandan Guria, Enhanced performance of salt-induced Pluronic F127 and bentonite blended polyvinyl chloride ultrafiltration membrane for the processing of oilfield produced water ; Journal of Water Process Engineering, Volume 34, April 2020, 101144	Elsevier	7.34
81.	Manojkumar Gudala, Govindarajan, Suresh Kumar; Mandal, Ajay "Chemical Affinity Modeling of Methane Hydrate Formation and Dissociation in Presence of Surfactants" Energy & Fuels 2020, 34, 1, 319-331.	ACS	5.3
82.	Vinod Kumar, Nilanjan Pal, Anil Kumar Jangir, Dhana Lakshmi Manyala, Dharmesh Varade, Ajay Mandal, Ketan Kuperkar, "Dynamic interfacial properties and tuning aqueous foamability stabilized by cationic surfactants in terms of their structural hydrophobicity, free drainage and bubble extent, Colloids and Surfaces A: Physicochemical and Engineering Aspects Volume 588, 5 March 2020, 124362	Elsevier	5.2
83.	Yunus Khan and Ajay Mandal, Analytical Model for Gravity Segregation in WAG Displacement Recovery of Inclined Stratified Reservoirs" Journal of Petroleum Science and Engineering Volume 186, March 2020, 106722	Elsevier	5.168
84.	Khan, Mohammad Yunus, and Ajay Mandal. "Integrated field development plan optimisation of waterflood multiple complex carbonate reservoirs." International Journal of Oil, Gas and Coal Technology 24, no. 2 (2020): 205-240.	Inderscience Publishers Ltd.	0.752
85.	Pal, N., N. Kumar, and A. Mandal. "Synergistic oil displacement effects of dimeric surfactant-polymer-silica stabilized nanoemulsions over conventional EOR fluids." In EAGE 2020 Annual Conference & Exhibition Online, vol. 2020, no. 1, pp. 1-5. European Association of Geoscientists & Engineers, 2020.	Conference Proceedings	-

86.	Kumar, N., N. Pal, and A. Mandal. "Polymeric surfactant stabilized nanoemulsion characterization for enhanced oil recovery." In EAGE 2020 Annual Conference & Exhibition Online, vol. 2020, no. 1, pp. 1-5. European Association of Geoscientists & Engineers, 2020.	Conference Proceedings	-
87.	Dinesh Joshi & Ajay Mandal, Enhanced Oil Recovery of sandpack model via Silica Nanofluid Injection, The 82nd EAGE Annual Conference, Amsterdam, Netherlands. DOI: https://doi.org/10.3997/2214-4609.202011923 ; 8th-11th June 2020.	Conference Proceedings	
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h-index 7
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