

Dr. Saurabh Datta Gupta

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Brief Introduction & Key Skills:

Experienced and accomplished academic portfolio on teaching and research activity with adequate knowledge as an exploration and reservoir geophysicist in the Oil & Gas industry, with ten years of experience at the national and overseas levels in versatile industrial subjects of hydrocarbon exploration. Applying Geophysical knowledge to the creative and problem-solving environment on innovative research work and use of fair management skills to achieve optimum utilisation of its resources and maximum utilization.

- Exploration seismic: Acquisition, Processing & Interpretation.
- Quantitative Interpretation: Computational Geophysics, Rock Physics Template analysis, Reservoir Characterization, Reservoir modelling.
- Conventional & unconventional Hydrocarbon: LRLC (Low Resistivity & Low Contrast) reservoir, Gas Hydrate, 4D Seismic, OBC/OBN (Ocean Bottom Cable/Ocean Bottom Nodes), CBM (Coal Bed Methane), Shale Gas & Shale Oil.
- Policies & Administration: Handled portfolio as per the norms of DGH (Director General Hydrocarbon) & MoP&NG (Ministry of Petroleum and Natural Gas), JV Partners. Academic administration – Institute, Department, Hostels, committees & conferences.

Academic Qualification:

Milestone	From	Year
Secondary	West Bengal Board of Secondary Education	1998
Higher Secondary	West Bengal Council of Higher Secondary Education	2000
Graduation (B.Sc.)	University of Calcutta, Kolkata	2003
Masters (M.Sc.Tech.)	Indian Institute of Technology (Indian School of Mines. Dhanbad)	2006
Ph.D	Indian Institute of Technology (Indian School of Mines. Dhanbad)	2012

Summary of Professional Experience:

Sl. No.	Last Position held	Institution	From	To
1.	Associate Professor	Indian Institute of Technology (Indian School of Mines), Dhanbad	2022	Current
2.	Assistant Professor	Indian Institute of Technology (Indian School of Mines), Dhanbad	2016	2022
3.	Sr. Geoscientist (Reservoir Geophysics)	Petronas, Kuala Lumpur, Malaysia	2014	2016
4.	Manager (Geosciences)	Gujarat State Petroleum Corporation Ltd., Gandhinagar, Gujarat, India	2006	2014

Research Areas:

- Exploration Seismic & Rock Physics
- Reservoir Geophysics, Reservoir Modelling & Quantitative Interpretation
- Conventional & Unconventional Fossil Fuel Exploration
- Coal Bed Methane (CBM)
- Carbon sequestration
- Seismic Imaging & Geomechanics
- Carbonate & Shale reservoir
- Underground Coal Gasification (UCG)
- Storage/Natural Hydrogen
- Waveform analysis in Planetary Science

Teaching, including number and name of subjects taught for PG & UG: IIT (ISM) Dhanbad, (Year 2016 to Current)

Academic Year	Semester	Subjects
2016-17	Monsoon	1. Geophysical Prospecting (GPC21101/GPC21201; GPC95101/GPC95201) 2. Earth Planetary Science (GPC93101)
	Winter	1. Reflection Seismology (GPC52103/GPC52203) 2. Near Surface Geophysics (GPC26101/GPC26201) 3. Near Surface Drilling (GPE56104), (GPE56204) (Academic Support with Ext. Faculty)
2017-18	Monsoon	1. Geophysical Prospecting (GPC21101/GPC21201; GPC95101/GPC95201) 2. Earth Planetary Science (GPC93101)
	Winter	1. Reflection Seismology (GPC52103/GPC52203) 2. Reservoir Geophysics & Deepwater Imaging (GPE52104) 3. Reservoir Geophysics & Deepwater Imaging (GPC26102/GPC90102) 4. Near Surface Geophysics (GPC26101/GPC26201) 5. Near Surface Drilling (GPE56104), (GPE56204) (Academic Support with Ext. Faculty)
2018-19	Monsoon	1. Geophysical Prospecting (GPC21101/GPC21201; GPC95101/GPC95201) 2. Earth Planetary Science (GPC93101)
	Winter	1. Reservoir Geophysics & Deepwater Imaging (GPC26102/GPC90102) 2. Near Surface Drilling (GPE52115) 3. Reflection Seismology (GPC52103/GPC52203) 4. Reservoir Geophysics & Deepwater Imaging (GPE52104)
2019-20	Monsoon	1. Petroleum Geophysics (GPC551) 2. Geotechnical Modelling (GPC531) 3. Earth and Planetary System (GPC93101)
	Winter	1. Seismic Exploration – I (GPC511/GPC512) 2. Reservoir Geophysics and Deepwater Imaging (GPC26102) 3. Petroleum Geophysics Practical (GPC553)
2020-21	Monsoon	1. Seismic Data Processing and Interpretation (GPC517/GPC519) 2. Research Methodology and Statistics (GPC555)
	Winter	1. Seismic Data Acquisition (GPC 511/ GPC 512) 2. Reservoir Geophysics and Deepwater Imaging (GPC 26102) 3. Reservoir Geophysics and Deepwater Imaging (GPD 510)
2021-22	Monsoon	1. Seismic Data Processing and Interpretation Practical (GPC517/GPC519) 2. Formation Evaluation (GPD502)
	Winter	1. Seismic Data Acquisition (GPC 511/ GPC 512) 2. Reservoir Geophysics and Deepwater Imaging (GPD 510) 3. Subject co-ordinator/Instructor: Well Logging (GPC 510)
2022-23	Monsoon	1. Seismic Data Processing and Interpretation Practical (GPC517/GPC519) 2. Geophysical Prospecting (GPE 202/GPE 203)
2022-23	Winter	1. Reservoir Geophysics and Deepwater Imaging (GPD 510) 2. Research Methodology and Statistics (GPC555)
2023-24	Monsoon	1. Seismic Data Processing and Interpretation Practical (GPC517/GPC519) 2. Geophysical Prospecting (GPE 202)
2023-24	Winter	1. Seismic Data Acquisition (GPC 511/ GPC 512) 2. Reservoir Geophysics and Deepwater Imaging (GPD 510)
2024-25	Monsoon	1. Seismic Data Processing and Interpretation Practical (GPC517/GPC519) 2. Geophysical Prospecting (GPE 202)
2024-25	Winter	1. Seismic Data Acquisition (GPC 511/ GPC 512/NGPC 523/NGPC5 24) 2. Reservoir Geophysics and Deepwater Imaging (GPD 510/ NGPC 538)
2025-26	Monsoon	1. Seismic Data Processing and Interpretation Practical (GPC517/GPC519/NGPC529/NGPC534) 2. Introduction to Petroleum Geophysics (NGPC203) 3. Geophysical Prospecting (GPE 202) (Partial)
2025-26	Winter	1. Seismic Data Acquisition (GPC 511/ GPC 512/NGPC 523/NGPC524) 2. Reservoir Geophysics and Deepwater Imaging (GPD 510/ NGPC 538) 3. Introduction to Petrophysics & Geomechanics (NGPC 207) (Partial)

Geophysical Field Training, Department of Applied Geophysics:

- Key member for Winter Geophysical Field Training Programme for UG/PG students, at Bakreshwar, West Bengal, 2025.
- Conducted Industrial Training programme for the students with ONGC, Vadodara & ONGC, Chennai, 2020, 2021 & 2022.

- Field In-charge for Winter Geophysical Training in 2019 & 2022.
- Key member for Winter Geophysical Training, at Baliapur, 2018.
- Key member for Winter Geophysical Field Training Programme for UG/PG students, at UCIL, Narowapahar, Jharkhand, 2016.
- Hands on drilling and well logging programme demonstration at Mining Associates in Asansol for M.Sc.Tech. and M.Tech. students during to assist the external faculty member, 2017.

Development of new courses & experiments:

A couple of courses in view of global industrial requirements have been introduced, such as,

- Geostatistical Modeling for Oil and Gas Field Development (GPO502)
- Advanced Seismic Data Interpretation (GPO504)
- Petroleum Geophysics (GPC551)

Designed & restructured new theory & practical sessions and problems in line with industrial requirements on,

- Seismic Data Acquisition (GPC511 / GPC512),
- Seismic Data Processing and Interpretation Practical (GPC517/ GPC519)
- Reservoir Geophysics and Deep-Water Imaging (GPD510).

Incorporated and implemented case studies in my teaching. Took initiatives to get formal approval from the companies like ONGC, Oil India and other national oil companies to use their data from specific fields for teaching purposes. Field examples from the operations of E&P companies of India and abroad was used for the first time to give an application-based understanding to the students.

Laboratory Development & Industry-Academia relation:

1. Academic support from CGG, India with worth more than 1 MMUSD (Academic License support by CGG: Humpson Russell & Jason).
2. Developed Exploration Seismic & Simulation research laboratory.
3. Developed Reservoir Characterization Centre jointly with Petroleum Engineer Department.
4. Associated with Rock Physics teaching laboratory as co- in charge.
5. Associated with Seismic Data Processing teaching laboratory in charge.
6. Academic license support from IHS Kingdom Suit.
7. Academic license support from Ikon Science RokDoc & Rock Physics Dashboard of GBS.

Supervision:

No. of Ph.D awarded: 07

1. Raman Chahal
Broad Area: Establishment of Hydrocarbon potentiality in Jurassic age of Jaisalmer sub-basin
Supervisor: Sole
Year of award: 2021
2. Sugata Kumar Sinha
Broad Area: Enhance the production of Coal Bed Methane (CBM) in Damodar River Valley basin
Supervisor: Sole
Year of award: 2021
3. Santosh Dubia
Broad Area: Seismic Imaging using High Performance Computing Associated with Hydrocarbon Exploration
Supervisor: As a principal supervisor in joint guidance.
Year of award: 2023
4. Nabanita Pradhan
Broad Area: Seismic Imaging using & Quantitative Interpretation for Hydrocarbon Exploration from Jaisalmer sub-basin
Supervisor: Sole
Year of award: 2024
5. Pydiraju Yalamanchi
Broad Area: Petrophysical Analysis through AI & ML approach including Quantitative Interpretation (QI) for Hydrocarbon Exploration from Carbonate formation of Jaisalmer sub-basin.
Supervisor: Sole

Year of award: 2024

6. Shantanu Chakraborty
Broad Area: Estimation of Improved Reservoir properties through analysis of Rock Physics, Petrophysics parameters and Seismic Quantitative Interpretation (QI) in KG basin.
Supervisor: Converted to Sole
Year of award: 2024
7. Priyanka Gautam
Broad Area: Geophysical Analysis for Groundwater Exploration using Ground Penetrating Radar (GPR) and Magnetic data
Supervisor: Sole
Year of award: 2026

Ph.D Ongoing:

Name of Candidate	Registration No. with date (Full time/Part time)	Working Area	Sole or Joint
Sasmita Hembram	17DR000340 & 17/03/2017 (Full time)	Seismic Imaging & Attribute	Sole
Pampa Malik	24DR0235 28/09/2024 (Full time)	Geologic Hydrogen Exploration & Reservoir Geophysics	Sole
Bereket Abraha (International student from Ethiopia)	25im0002 24/07/2025 (Full time)	Deep Learning based FWI for 3D Seismic Imaging	Sole
Sanjay Mandal	25DR0295 01/11/2025 (Full time)	Planetary Science – Lunar Exploration	Joint
Sayan Mallick working in Oil India Ltd	23DP0091 & 22-12-2023 (Part time)	Reservoir parameters improvise and interferometry analysis for Hydrocarbon Exploration	Sole

Dissertation/Project work for M.Sc.Tech./Integrated M.Tech./M.Tech.

Discipline for Students Guidance of dissertation/Project	Completed	Ongoing
3 years M.Sc.Tech.(Applied Geophysics)	35	09 + 03 (Co supervision)
5 years Integrated M.Tech. (Applied Geophysics)	07	02 + 01 (Co supervision)
2 years M. Tech.in 1. Earthquake Science and Engineering 2. Petroleum Exploration and 3. Geo-Exploration	14 & 01 (joint)	02

Externally funded R&D Projects, Faculty Mobility Programme (FMP) & CoE(s):

1. Development of an integrated workflow based on geoscientific data analysis for identification of Coal Bed Methane (CBM) resource prospectivity at the bidding stage; Sanctioned Authority: Director General of Hydrocarbon (DGH), Government of India.
2. Development of Joint Inversion Model for Lunar Geophysical Data: Sanctioned Authority: PRL/ISRO, Government of India.
3. Development of Integrated Geocellular model for CBM resource estimation with the support of Machine Learning based sub-surface image resolution enhancement and implementation of Joint-Inversion algorithm from newly acquired geoscientific data in the South Rewa Basin, Wardha valley (Wardha-Godavari basin), Kamptee sub-basin, Cambay-Kutch- Saurashtra basin and Rajasthan basin India; Sanctioned Authority: Director General of Hydrocarbon (DGH), Government of India.
4. CBM resource estimation and feasibility study of field development using fully-integrated Geocellular model approach coupled with AI/ML algorithms in the Damodar River Valley, Godavari, Mahanadi, Satpura and Rajmahal Basin, India; Sanctioned Authority: Director General of Hydrocarbon (DGH), Government of India.
5. Development of customized processing sequences of exploration seismic data in the Damodar River valley basin to

detect coal seams-based reservoir towards extended CBM exploration through the build-up of high-resolution image; Sanctioned Authority: Essar Oil & Gas Exploration and Production Ltd. (EOGEPL).

6. Development of Innovative and Cutting-Edge Indigenous Technologies for Critical Minerals Exploration and Smart/Sustainable Mining; Sanctioned Authority: ANRF, Government of India.
7. Development of Prospectivity Mapping Framework and Tools for Geological Hydrogen Exploration; Sanctioned Authority: Safechem Enterprises Pvt. Ltd. (Spectrum Impact), Mumbai, Maharashtra.
8. Conduction Land Subsidence Study using DInSAR methodology for EOGEPL, Durgapur; Sanctioned Authority: Essar Oil & Gas Exploration and Production Ltd. (EOGEPL).
9. Completed Minor project under Technical Quality Improvement Programme, MHRD on Seismic attribute analysis for coal seam detection in West Bokaro region; Sanctioned Authority: MHRD, Government of India.
10. **FMP Project with DGH (Director General of Hydrocarbon) (2022):** CBM Resource estimation of South Rewa basin and surrounding potential areas through integrated modelling.
11. **FMP Project:** Field scale simulation study and production forecasting for a part of Sohagpur West CBM Block of Reliance Industries Limited.
12. **Development Canter of Excellence:** Centre for Earth, Energy, and Environmental Research; Centre funded based on support of the various consultancy projects.
13. **Development Canter of Excellence:** Wadhvani Innovation Network (WIN-CoE); Sanctioned Authority: Wadhvani Charitable Foundation, a California

Consultancy Projects:

1. Geoscience Modelling based corehole prioritization study in two CBM Blocks of Transcontinental Natural Resources Pvt. Ltd. (TNRL) in Madhya Pradesh - 1. SR-ONHP (CBM)-2022/4 & 2. SR-ONHP (CBM)-2022/5.
2. Proposal for Map based Conceptual Subsurface Ace Model for CBM Block SR-ONHP (CBM)-2021/6.
3. Subsurface Reservoir Siulation & Modelling Studies to support expansion of field development plan of Raniganj CBM Blocks of Essar Oil and Gas Exploration and Production Limited (EOGEPL).
4. Pre-feasibility Study, CBM Resource estimation and ranking of CBM blocks offered under special CBM round 2022 for Oil India Limited.
5. Prospectivity Analysis and Resource Estimation of CBM block SP-ONHP (CBM)-2021/1 for Invenire Petrodyne Energy.
6. Insitu P-Wave and S-Wave velocity Analysis for determination of Physico-Mechanical Properties of Coal and in-Seam Dirt bands of coal Seams/Mines of MCL.
7. Field scale reservoir simulation study of Raniganj CBM field of Essar Oil & Gas Exploration and Production Ltd. (EOGEPL) as a part of technical work association between IIT (ISM-Dhanbad) and EOGEPL.
8. Electrical resistivity tomography (ERT) and Seismic Refraction Tomography (SRT) for Aquifer study and fracture zone mapping near Vadodara.
9. Field scale simulation study and production forecasting for a part of Sohagpur West CBM Block of Reliance Industries Limited (RIL) (**FMP mode**).
10. Consultancy study of unstable zones of Reservoir slope in Himachal Pradesh area under SJVN Ltd.
11. Sub-surface Characterization using Ground Penetrating Radar (GPR) survey in Railway Acquired Land over parts of West Bengal, Jharkhand and Bihar state.
12. Modelling, GIIP Estimation, and Productio Forecasting of North Karanpura CBM, Block.
13. Seismic Data Acquisition followed by Processing and Interpretation at Indore Region.

EDP (Executive Development Programme)/Short Courses/Conference:

- Specialized Training Programme for Sub-surface Professionals related to CBM exploration in Essar Oil and Gas Production Limited (EOGEPL)
- Convener, 2022, Prof. Jagdeo Singh Memorial Lecture & Workshop on AI and Automation for Geophysical Exploration and Sustainable Resource Management.
- Arranged drilling short course on Oil and Gas Well Drilling Technology and New Trends as Co-PI/Joint PI in 2017-18.
- Associated as teacher for executives from ONGC, non-petroleum engineers in 2017 to 2020.
- Associated as short course faculty member on Geophysical software practice for Sub-surface imaging sponsored by SERB, DST, Govt. of India.

➤ Course Instructor of EDP programme:

Sl. No.	No. of Lectures	Event
1.	15 nos. of lectures on 3D seismic survey	ONGC EDP programme conducted by Department of Petroleum Engineering
2.	10 nos. of lectures on Geocellular model	ONGC EDP programme conducted by Department of Petroleum Engineering
3.	2 nos. of lectures on 3D seismic survey	IOCL EDP programme conducted by Department of Petroleum Engineering
4.	2 lecture and 1 practical demonstration on software learning workshop	Student's workshop conducted by Department of Applied Geophysics

Award & Honours:

- **2nd Best Ph.D Thesis Award from IGU (Indian Geophysical Union), 2014.**
- **Editorial Board Member, Journal of Petroleum and Production Technology, Springer**
- **Editorial Board Member, Nature Scientific Report, Springer**
- **Editorial Board Member, The Journal of Indian Geophysical Union**
- **Reviewer, Journal of Petroleum Science & Engineering**
- **Reviewer, Geophysics**
- **Reviewer, Journal of Applied Geophysics**
- **Reviewer, Plos One**
- **Reviewer, Geological Survey of India**
- **Reviewer, Himalayan Geology**
- **Reviewer, Environmental Earth Sciences**
- **Reviewer, Journal of Earth System Science**

Publications:**International Journal Paper**

1. Hembram, S., Verma, S., Datta Gupta, S., Dutta, A., and Yalamanchi, P., 2026, Geomechanical Characterization of Reservoir and Caprock Integrity for CO₂ Sequestration Assessment in the Jaisalmer Basin, India, Journal of Earth System Science (Accepted)
2. Datta Gupta, S., and Sinha, S.K., 2026, Analysis of Geostatistical Model to Identify the Potential of Challenging Coal Bed Methane (CBM) Reservoir with the Support of Machine Learning (ML) and Synthetically Generated Seismic Data: A Study from Jharia Coalfield of the Damodar River Valley Basin, India. Pure Appl. Geophys, <https://doi.org/10.1007/s00024-026-03957-6>
3. Kiran, R., Saif, Md., Wood, D. A., Datta Gupta, S, Kumar, A., Upadhyay, R., and Rajak, V.K., 2025, Geological Hydrogen Prospectivity of Iron Ore Deposits in India Based on Semiquantitative Analysis, ACS Omega, 10 (25), 27332-27347, DOI: 10.1021/acsomega.5c02770
4. Yalamanchi, P., Datta Gupta, S. and Upadhyay, R. 2025, Evaluating the effectiveness of ensemble machine learning approaches for pore pressure prediction using petrophysical log data in carbonate reservoir. Acta Geophys.,

<https://doi.org/10.1007/s11600-025-01530-8>.

5. Pradhan, N., and Datta Gupta, S., 2024, Improvement of Seismic Image Based on Coordinate Transformation and Incorporation of Anisotropy Factors in Seismic Velocity. *Pure Appl. Geophys.*, <https://doi.org/10.1007/s00024-024-03630-w>.
6. Kiran, R., Upadhyay, R., Rajak, V. K., Kumar, A., and Datta Gupta, S., 2024, Underpinnings of reservoir and techno-economic analysis for Himalayan and Son-Narmada-Tapti geothermal sites of India, *Renewable Energy*, 237 (A), <https://doi.org/10.1016/j.renene.2024.121630>.
7. Pradhan, N., and Datta Gupta, S., 2024, Identification of challenging gas-bearing reservoir based on machine learning (ML) and computed conversion-based AVO analysis: a study from Jaisalmer Sub-basin, India, *J Petrol Explor Prod Technol* 14, 421–452, <https://doi.org/10.1007/s13202-023-01721-3>.
8. Yalamanchi, P., and Datta Gupta, S., 2024, Estimation of pore structure and permeability in tight carbonate reservoir based on machine learning (ML) algorithm using SEM images of Jaisalmer sub-basin, India, 2024, *Scientific Report*, 14, 930, <https://doi.org/10.1038/s41598-024-51479-9>.
9. Chakraborty, S., Datta Gupta, S., Devi, V. and Yalamanchi, P., 2024, Using rock physics analysis driven feature engineering in ML-based shear slowness prediction using logs of wells from different geological setup, *Acta Geophysica*, 72, 3237–3254, <https://doi.org/10.1007/s11600-023-01266-3>.
10. Upadhyay, R., Datta Gupta, S., and Rajak, V.K., 2023, Impact of pressure-dependent diffusivity on transient pressure analysis of a dry Coalbed Methane (CBM) wells: A new approach. *J Earth Syst Sci* 132, 34, <https://doi.org/10.1007/s12040-022-02040-7>.
11. Kiran, R., Upadhyay, R., Rajak, V.K., Datta Gupta, S., and Pama, H., 2023, Comprehensive study of the underground hydrogen storage potential in the depleted offshore Tapti-gas field, *International Journal of Hydrogen Energy*, 48 (33), 12396-12409, <https://doi.org/10.1016/j.ijhydene.2022.12.172>.
12. Dhubia, S., Routa, A.K., Datta Gupta, S. and Mohanty, P.R., 2023, Velocity variation coefficient-based angle-dependent gradient conditioning scheme: a new strategy for an enhanced full waveform inversion. *J Petrol Explor Prod Technol.*, <https://doi.org/10.1007/s13202-022-01592-0>.
13. Datta Gupta, S., Upadhyay, R. and Rajak, V.K., 2022, Establishment of economic viability for hydrocarbon production through a geocellular model developed in challenging geological reservoir of onshore sedimentary basin, India, *Himalayan Geology*, 43 (2), 471-489.
14. Gautam, P., and Datta Gupta, S., 2022, Uses of Green's function for enhancing the image resolution of Ground Penetrating Radar (GPR) data, *Journal of Applied Geophysics*, 201, 104621, <https://doi.org/10.1016/j.jappgeo.2022.104621>
15. Dhubia, S., Routa, A. K., Datta Gupta, S., Mohanty, P. R and Rao, P. H., 2022, Wavefield reconstruction of pseudo spectral reverse time migration using a one-point wide based minimum boundary saving scheme, *Journal of Earth System Science*, 131, 185, <https://doi.org/10.1007/s12040-022-01933-x>.
16. Datta Gupta, S., Sinha, S.K., and Chahal, R., 2022, Capture the variation of acoustic impedance property in the Jaisalmer Formation due to structural deformation based on post-stack seismic inversion study: a case study from Jaisalmer sub-basin, India. *J Petrol Explor Prod Technol*, <https://doi.org/10.1007/s13202-021-01442-5>.
17. Vijay Kumar, S.P., Ganesh Kumar, S. and Datta Gupta, S., 2022, Performance assessment of composite skirted ground reinforcement system in liquefiable ground under repeated dynamic loading conditions, *Bull Earthquake Eng.*, <https://doi.org/10.1007/s10518-021-01298-4>.
18. Hembram, S., and Datta Gupta, S., 2021, Constraints of wavelet estimation in successful Spectral Decomposition analysis for Channel feature detection: a case study in Carbonate reservoir of Jaisalmer Sub-Basin, India, *Journal of Seismic Exploration*, 30, 381-404.
19. Yalamanchi, P., and Datta Gupta, S., 2021, Selection of a Suitable Rock Mixing Method for Computing Gardner's Constant Through a Machine Learning (ML) Approach to Estimate the Compressional Velocity: A study from the Jaisalmer sub-basin, India, *Pure Appl. Geophys.* 178, 1825–1844, <https://doi.org/10.1007/s00024-021-02733-y>.
20. Sinha, S.K., and Datta Gupta, S., 2021, A Geological Model for Enhanced Coal Bed Methane (ECBM) recovery process: A case study from the Jharia coalfield region, India, *Journal of Petroleum Science and Engineering*, v.201, 108498, <https://doi.org/10.1016/j.petrol.2021.108498>.
21. Chahal, R., and Datta Gupta, S., 2020, Capture the variation of the pore pressure with different geological age from

seismic inversion study in the Jaisalmer sub-basin, India, *Petroleum Science*, DOI: 10.1007/s12182-020-00517-y.

22. Sinha, S.K., and Datta Gupta, S., 2020, Missing Coal Seam between East and West Bokaro near Lugu Hill of Damodar Basin, India: A Geological Model, *Journal of Geological Society of India*, 96(3), 298-307.
23. Pradhan, N., Datta Gupta, S., and Mohanty, P.R., 2019, Velocity anisotropy analysis for shale lithology of the complex geological section in Jaisalmer sub-basin, India, *Journal of Earth System Science*, <https://doi.org/10.1007/s12040-019-1226-2>.
24. Datta Gupta, S and Gupta, R., 2017, Importance of coloured inversion technique for thin hydrocarbon sand reservoir detection—A case in mid Cambay basin, *Journal of the Geological Society of India*, Springer, 90(4), 485-494.
25. Chatterjee, R., Datta Gupta, S., and Mandal, P.P., 2017, Fracture and Stress orientation from borehole Image logs, a case study from Cambay Basin, Springer, India, *Journal of the Geological Society of India*, 89 (5), 537-580.
26. Chatterjee, R., Datta Gupta, S., and Farooqui, M.Y., 2013, Reservoir identification using full stack seismic inversion technique: A case study from Cambay basin oilfields, India, *Journal of Petroleum Science and Engineering*, Elsevier, 109, 87-95.
27. Chatterjee, R., Datta Gupta, S., and Farooqui, M.Y., 2012, Application of Nuclear Magnetic Resonance log for evaluation of low resistivity reservoirs: A case study from Cambay basin, India, *Journal of Geophysics and Engineering*, IOP, 9, 595-610.
28. Datta Gupta, S., Chatterjee, R., and Farooqui, M.Y., 2012, Formation evaluation of fractured basement, Cambay basin, India, *Journal of Geophysics and Engineering*, IOP, 9, 162-175.
29. Datta Gupta, S., Chatterjee, R., and Farooqui, M.Y., 2012, Rock physics template (RPT) analysis of well logs and seismic data for lithology and fluid classification in Cambay Basin, *International Journal of Earth science*, 101 (5), 1407-1426.

International Conference (accepted/presented/Oral/Poster)

1. Capture the Structural Deformation Due to Tectonic Activities in the Shallow Subsurface of the Moon Based on Waveform and Velocity Contrast Analysis, AOGS ((Asia Oceania Geosciences Society)-2025, Held 27th July to 1st August, Singapore.
2. Understanding the Structural Variations Within the Shallow Subsurface of the Moon Using Meteorite Impacts as Tracers – A Model-based Study, AOGS ((Asia Oceania Geosciences Society)-2024, Held 23rd to 28th June, Gangwon-do, South Korea.
3. Prasad Karanam, D., Datta Gupta, S., Kumar, J., Kumar A., and John, J, 2022, Meteoroids as Causative Sources for Selected Seismic Events - A relook at Apollo Seismic Data, 44th COSPAR Scientific Assembly. Held 16-24 July 2022, Athens, Greece (online).
4. Quantitative Interpretation towards hydrocarbon exploration based on residual oil signature from drilled well data: a case study from Jaisalmer sub-basin, India, European Association of Geoscientists and Engineers (EAGE), Asia-Pacific, Kuala Lumpur, Malaysia, 2018.
5. Application of quantitative interpretation for development of challenging reservoir in limestone formation of Rajasthan Basin, India, GEO-India, Association of Petroleum Geologist (APG), India, NOIDA, 2018.
6. GSPC Mitigates Risk and Optimizes Business Performance by laying out strong foundation of E&P Corporate Database through Corporate Database Managed Service (GSPC-CDMS) Project Society of Petroleum Geophysicist (SPG), Hyderabad, 2012.
7. Integrated Subsurface Analysis for Development of a Basalt Reservoir, Cambay Basin – India, International Petroleum Technology Conference (IPTC), Bangkok, 2011.
8. Major Pay Sand Delineation through Inversion study from Mid to Northern Cambay Basin Field, India, Society of Petroleum Geophysicist (SPG), Hyderabad, 2010.
9. Evaluation of Low Resistivity Reservoir in Cambay Basin, India, Annual India Oil & Gas Industry Symposium and Exhibition (IORS), 2010, Mumbai.
10. Fluid Flow Modeling through Fractured Porous Medium, Society of Petroleum Geophysicist (SPG), Kolkata, 2006.

National Conference/workshop (accepted/presented/Oral/Poster)

1. Characterization of sub-surface Formation Towards Identification of Geothermal Resources: A Study using Geophysical Quantitative Interpretation, 7th International Conference on Geothermal Energy: Shaping Innovations for a Sustainable Future, PDEU, Gandhinagar, India, 7th February 2025, Gandhinagar, India.
2. Capture the feasibility of Geosequestration in the Pre-cambrian basement of the Jaisalmer sub-basin through the identification of entrapment of conventional natural gas, 46th Annual Convention, AEG (Association of Exploration Geophysicist), 12th to 13th December 2024, Hyderabad.
3. Identification of Rock type based Spectral Decomposition analysis of Carbonate reservoir for Hydrocarbon exploration, 2nd Triennial Congress, FIGA, NGRI, Hyderabad, 2019.
4. Hydrocarbon bearing Facies detection through Geobody capturing in Carbonate reservoir – a case study from Rajasthan Basin, India, Indian Geophysical Union (IGU), Bhopal, 2018.
5. Fracture and facies characterization in basaltic reservoir – a case study from Indian sedimentary basin, Horizon and Fault picking for interpreting the 3D seismic image: Rajasthan basin, Emerging Trend of Geophysical Research for Make in India (ETGRMI), IIT(ISM) Dhanbad, 2018.
6. Velocity modelling for complex carbonate reservoir, Emerging Trend of Geophysical Research for Make in India (ETGRMI), IIT(ISM) Dhanbad, 2018.
7. Porosity and Permeability maps development using rock physics properties near Kujjo Ghatto area of West Bokaro of Damodar Basin, Emerging Trend of Geophysical Research for Make in India (ETGRMI), IIT(ISM) Dhanbad, 2018.
8. Capturing the uncertainties of water saturation for formation, Emerging Trend of Geophysical Research for Make in India (ETGRMI), IIT(ISM) Dhanbad, 2018.
9. Horizon and Fault picking for interpreting the 3D seismic image: Rajasthan basin, Emerging Trend of Geophysical Research for Make in India (ETGRMI), IIT(ISM) Dhanbad, 2018.
10. Separation of thin Reservoir facies in Carbonate Reservoir through Genetic Inversion, Indian Geophysical Union (IGU), Hyderabad, 2017.
11. Lithology Prediction of Carbonate reservoir through attribute studies, Indian Geophysical Union (IGU), Hyderabad, 2017.
12. Reservoir Characterization of Carbonate facies towards hydrocarbon exploration in Jaisalmer sub-basin, India, Conference, workshop on Challenges in Petrophysical Evaluation and Rock Physics Modelling of Carbonate reservoirs, Likely Elucidations and way forwards characterisation, Department of Earth Science, IIT Bombay, Mumbai, 2017.
13. Finding of thin hydrocarbon bearing sands in small marginal field through coloured inversion technique – a case study in mid Cambay basin, India, Indian Geophysical Union (IGU), Hyderabad, 2016.

Book Chapter

Chahal R., Datta Gupta S., 2020, Reservoir Characterization of Carbonate Facies Towards Hydrocarbon Exploration in Jaisalmer Sub-basin, India. In: Singh K., Joshi R. (eds) Petro-physics and Rock Physics of Carbonate Reservoirs. Springer, Singapore. https://doi.org/10.1007/978-981-13-1211-3_17.

Key responsibility for Institutional Administrative work with tenure in IIT(ISM) Dhanbad:

Nature of work	Tenure
Professor-in-Charge (PIC), (International Relations & Alumni Affairs)	2025 to current
Faculty In-charge (Hostel Management)	2023-2024
Associate Dean (Hostel Management)	2022 to 2023

Coordinator (Hostel Management)	2021 to 2022
Coordinator, Mineral Exploration, TIH (Technical Innovation Hub), Mining 4.0.	2020 to current
Coordinator, Earth Science, Centre for Earth, Energy and Environmental Research (CEEER)	2019 to current
Chief Warden & warden at Amber Hostel (Student's capacity – 1600)	2017 to 2020
Involved in various Government agencies such as DGH, MoPNG for liaising with the IIT(ISM) towards the current trend of the industrial requirement for hydrocarbon exploration.	2018 onwards

Key responsibility for Departmental Administrative work with tenure in IIT(ISM) Dhanbad:

Nature of work	Tenure
Convener, DPGC (Departmental Post-Graduate Committee), Department of Applied Geophysics	2024 to current
Convener, DPGC (Departmental Post-Graduate Committee), Department of Applied Geophysics	2020 to 2022
In-charge Training and Placement Cell, Department of Applied Geophysics	2018 to 2022
Member, DPGC (Departmental Post-Graduate Committee), Department of Applied Geophysics	2019 to 2020
Member Secretary, DAC (Departmental Advisory Committee), Department of Applied Geophysics	2018 to 2020
Faculty coordinator/treasure Geophysical society, Department of Applied Geophysics	2018 to 2021

Other major responsibilities for the Institution and Department in IIT(ISM) Dhanbad:

1. Co-Convener, Centenary Basant Celebration 2026.
2. Organizing Secretary of Centenary Foundation Week Celebration – 2025.
3. Co-convener of National conference Emerging trends in Earth Sciences: Geohazards and Resource Management (ETES-2024)
4. Key team member of Basant, III & Convocation programme.
5. Faculty coordinator for student conference and workshop, Geoconfluence February, 2021.
6. Convener, Webinar on “Triggered seismicity and permeability evolution in faulted and fractured reservoirs” by Prof. Derek Elseworth, Pennsylvania State University, USA, August, 2021.
7. Conducted JEE Advanced examination physically as IR in Ranchi center during Covid-19 situation, 2020 & 2021.
8. Co-Convener, Basant 2020.
9. Participation for donating food during Covid-19 pandemic situation to the needy people of villages near to Dhanbad with the help of IIT(ISM) Dhanbad and local society, 2020.
10. Co-convener for student conference and workshop, Geoconfluence 2020.
11. Conducted ETGRMI-2018 as a treasurer, Diamond Jubilee Celebration of Department of Applied Geophysics.
12. Co-convener for student conference Geoconfluence 2017.
13. Associated as key organizer for IGU 2016 and 1st FIGA conference at IIT(ISM) Dhanbad.
14. Committee members, actively involved in major administrative structures in department as well as in institution such as CIIE, IR&AA, Task Force Dean (R&D), Digital Learning Monitoring Cell, Media Branding Cell, TEQIP-III, Earth Model group, AI group, Centre for CBM Exploration group, EOR group etc.
15. Associated as a key team member in various occasions such as Foundation Day, Basant, Convocation etc.
16. Key faculty for carrying out the coordinator ship of joint run 2 years M.Tech. course with Applied Geology: M.Tech. (Geoexploration).
17. Involved as an invigilator and scrutinizer for various admission & examination process in the institution.
18. Represent, Institute in various conference and summit such as Petrotech-2016, New Delhi, Knowledge Expo-2017, New Delhi, Momentum Jharkhand-2018, Ranchi, Disha-2018. Kerala.

Membership in the Professional Body:

1. Actively associated as treasurer in Geophysical Society and fresher, farewell and other educational workshop handled with efficient manner
2. Annual Member of American Association Petroleum Geologist (AAPG)
3. Annual Member of Society of Exploration Geophysicist (SEG)
4. Lifetime Member of IGU (Indian Geophysical Union)
5. Lifetime Member ASCI (Administrative Staff College of India)

Working Summary of Past Industrial Experience:

A. Petronas, Kuala Lumpur, Malaysia, Reservoir Geophysicist; (Year 2014 to 2016):

1. Associated as Reservoir Geophysicist in **famous RIM reservoir EOR field** as key Reservoir Geophysicist in PETRONAS.
2. Responsible for Seismic VOI analysis through EOR point of view
3. Responsible for QI study and analysis for supporting EOR development model in CGG Jason.
4. Involved in Seismic Interpretation in shore-face and fluvial environment
5. Associated with 4D seismic feasibility study in the EOR field and its implication in injection of well in the field.
6. Associated as a key Geophysicist for well placement in development well drilling.
7. Responsible for Fluid Substitution Model and Dry Rock Model for EOR project to analysis the reservoir nature.
8. Responsible as key member for field data acquisition and the feasibility study and uncertainty analysis for Geophysical field data acquisition.
9. Responsible for findings the channel geometry under shallow gas impacted seismic with using GI technology along complex seismic attribute analysis.
10. Played a major role for correlating with sequence stratigraphic play analysis with fine layer reservoir layering with frequency blending, waveform analysis and structural reconstruction.
11. Responsible for key Geophysical support to the static modeller on facies/property model development for Geo-cellular point of view.
12. Responsible for conducting the challenging QI feasibility study/QI analysis for Non-Associated Gas reservoir in deep reservoir for EOR field.
13. Responsible as a Geophysicist of economic analysis on OBC/ONB multicomponent seismic acquisition plan inform of seismic VOI.
14. Responsible with RPT (Rock Physics Template) analysis for reservoir characterization in Sarawak and Peninsular Malaysia field in Ikon Science RokDoc.
15. Played major role reservoir level seismic interpretation, velocity modelling, time to depth conversion and depth uncertainty analysis.
16. Played major role for talent development for young Geoscientist as a coach.
17. Associated as a key Geophysicist for analysis of shallow hazard survey analysis on further drilling plan.
18. Associated as a key member with acquisition and processing team on feasibility study of seismic OBC/ONB multicomponent new seismic data acquisition for the EOR filed.

B. Gujarat State Petroleum Corporation Limited, Gandhinagar, Gujarat, Manager (Geosciences); (Year 2006 to 2014):

1. Associated with 3D onshore seismic data acquisition on Ankleshwar block (CB-ONN-2003/2), KG basin, Andhra

Pradesh with ONGC. The instrument was UL408 for data quality check and FPU and Rajasthan Block (RJ-ONN-2004/1) as an operator party with contractor GT, Poland. The instrument was IO Image, Sercel 408 and source was Vibrator.

2. Involved with the onsite quality control of seismic data being processed by a 3rd party contractor, Samit Enterprises, New Delhi of Ankleshwar block (CB-ONN-2003/2) with PROMAX (LANDMARK) software.
3. Involved with high resolution calibrated Velocity modeling and Inversion for reservoir characterization in CGG Jason Geoscience Workbench.
4. Responsible for 3D seismic data Interpretation of Tarapur block (CB-ON/2) and Ankleshwar block (CB- ONN-2003/2) where in Tarapur block 4 wells are going to produce Oil & Gas. My role in the team is to interpret the section in Landmark Openworks and Kingdom SMT.
5. Responsible for preparation of Geological Model (static) of Tarapur block (CB-ON/2), Ankleshwar (CB- ONN-2003/2) Ahmedabad (CB-ONN-2000/1) and KG offshore (KG-OSN-2001/3) through Schlumberger PETREL software.
6. Responsible with RPT (Rock Physics Template) analysis of Gas Discovery in CB-ONN-2003/2 block; reservoir characterization in CB-ONN-2000/1 and CB-ON/2 block through Ikon Science RoKDoC application.
7. Responsible with different Geocellular Modelling of different Cambay Basin onshore operated block regarding Appraisal Plan, DoC (Declaration of Commerciality) and FDP (Field Development Plan) process.
8. Involved with run inversion for various Cambay basin onshore operated block for reservoir characterization at different level.
9. Responsible for well to seismic tie, velocity model preparation and depth conversion for various Cambay basin onshore operated project for static model preparation.
10. Associated with the integrated team for Play, Prospect, lead maturation and Uncertainty analysis for the discovery for different Cambay basin onshore operated blocks/fields.
11. Associated with techno-economics analysis in line DoC (Declaration of Commerciality) and FDP (Field Development Plan) for different onshore discoveries.
12. Involved with AVO analysis for fluid and lithology prediction different kind of reservoir for Cambay basin onshore project.
13. Involved with integrated team to analysis the tight, fractured, unconventional, low resistivity reservoir in Cambay basin onshore field.
14. Responsible for Fluid Substitution Model and Dry Rock Model for onshore project to analysis the reservoir nature.
15. Completed Post Stack Inversion project in FDP stage for CB-ONN-2003/2 block in CGG Hampson Russell.
16. Completed Pre-Stack Inversion project in FDP stage for CB-ON/2 and CB-ONN-2003/2 block in Hampson Russell.
17. Involved in 9 FDP/RFDP project as a key Geophysicist for CB-ON/2; CB-ONN-2000/1; CB-ONN-2002/3 and CB-ONN-2003/2 onshore blocks in Cambay Basin, India.
18. Involved with the team for analysis the seismic interpretation at various levels for overseas project.
19. Involved with GSPC official team for NELP VIII and NELP IX block evaluation study for bidding.
20. Involved with Schlumberger CDMS project regarding Seismic Data analyzing.
21. Associated with Integrated team for Development Project in marginal field of Cambay basin.

Professional Language Skill:

Matlab, Python, Octave, R, Seismic Unix

Instrumentation Skills:

Geometrics GEOD, GSSI GPR, Geometrics Strata-Visor, IRIS ERT, Magnetometer

Industrial Professional Software & Application Skill & Training:

- PETREL Training by SCHLUMBERGER (2006).
- JASON Training by FUGRO JASON (2007 & 2008).
- OPENWORKS Training by LANDMARK (2008).
- PETROSKILLS Training on Prospect and Play Analysis (2009).
- PETROSKILLS Training on Sandstone Reservoir (2009).
- HUMPHSON RUSSELL Roll out by CGG (2009).
- CDMS (Data Management training) Training by SCHLUMBERGER (2010).
- KINGDOM SUIT SMT by SMT (2010).
- 3D Seismic Attribute for Reservoir Characterization (SPG 2010).
- DECISION SPACE DESKTOP Training by Landmark (2012).
- GEOSTATISTICAL INVERSION Training by CGG JASON (2013).
- MACHINE LEARNING, Stanford University, USA through Courser (18th May 2020 to 27th July 2020: 11 Weeks)

Health Safety Training:

- Helicopter Underwater Escape Training (HUET).
- Offshore – Personal Survival Techniques Training (PST).