



Indian Institute of Technology (Indian School of Mines) Dhanbad



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From the HoD's Desk

It is a privilege to introduce this edition of the Department of Applied Geology Newsletter, highlighting the diverse academic pursuits, research contributions, and field engagements that define our department. Geology plays a vital role in understanding and addressing some of society's most pressing concerns, including resource management, energy needs, environmental protection, and natural hazards.

Our department is dedicated to fostering a learning environment that integrates strong theoretical knowledge with practical field experience and innovative research. This approach equips our students with analytical skills, scientific insight, and professional competence necessary to excel in both industry and academia.

I sincerely appreciate the commitment and achievements of our faculty members, students, research scholars, and alumni. Their continued efforts and successes significantly enhance the reputation of our department on both national and global platforms.

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Editorial Board

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Publications

- Altaher, Z. A., Ghosh, S., & Mukherjee, M. K. (2026). Control of structural lineaments on the distribution of hazardous coal fire zones in Jharia Coalfield, Eastern India. *Natural Hazards*, 122(8), 326.
- Bar, S., Sahu, R., Bhaumik, A. K., Bera, S. K., & Ghorai, S. K. (2026). Microplastiglomerates as emerging pollutant sinks: Characterization and heavy metal retention studies. *Science of The Total Environment*, 1017, 181491.
- Dora, M. L., Kumaravel, V., Khuntia, D. B. K., Lenka, S., Prasanth, M. M., Malviya, V. P., ... & Randive, K. (2026). Rare preservation of epithermal Cu–Au–Pb–Zn mineralization associated with mesoproterozoic arc magmatism in the Bastar Craton, Central India. *Lithos*, 108415.
- Behera, R. C., Singh, S., Barla, A., Kumar, K. V., Reddy, N. R., & Dash, M. (2026). Invisible gold mineralization within the Vempalle Dolostone, Joolakalva Area, Cuddapah Basin, Southern India: Insights from in-situ and whole-rock geochemistry. *Lithos*, 108462.
- Chakraborty, A. P. K. S., Mukhopadhyay, S., Jha, D. K., & Roberts, P. (2026). Quaternary Research in South Asia: Exploring Human-Environment Interaction. *Quaternary Environments and Humans*, 100098.
- Chakraborty, P., Sen, P., Peketi, A., Mishra, S., Chakraborty, P., Kumari, J., ... & Hazra, B. (2026). Source-specific health risks of metallic elements in road dust from coal mining affected urban areas using an integrated PMF–HHR–Monte Carlo framework. *Environmental Geochemistry and Health*, 48(2), 70.
- Chatterjee, S., Arif, M., & Singh, S. (2026). Rock magnetic properties as a proxy for cooling rate in basaltic lavas: insights from Rajmahal Traps, Eastern India. *Journal of Earth System Science*, 135(2), 55.
- Chowdhury, M., Hazra, B., Sarkar, K., & Vishal, V. (2026). Evolution of Geomechanical and Pore Structure in Thermally Altered Coal and Shale: Significance for Subsurface CO₂ Storage (No. EGU26-1087). *Copernicus Meetings*.
- Dastidar, S. G., Sarkar, K., Chandra, D., Vishal, V., & Hazra, B. (2026). Experimental Investigation of Geochemical Interactions between Supercritical CO₂ and Shale (No. EGU26-756). *Copernicus Meetings*.
- Khare, S. K., & Venkatesh, A. S. (2026). U–Pb Geochronology and Petrogenesis of Dongargarh Granite, Bastar Craton, Central India: Insights Into Crustal Growth and Critical Metals Mineralization Across Archean-Proterozoic Transition. *Geological Journal*.
- Mukherjee, R., & Venkatesh, A. S. (2026). Unveiling the fluid-rock and carbonate-organic carbon interaction in gold-critical metals (Cu-graphite) mineralization: Insights from the Bhukia deposit, Rajasthan within the MIAC-IOCG-ISCG metallogenic framework of the northwestern Indian Shield. *Lithos*, 108496.
- Patrick, N. M., Vats, N., Bhaumik, A. K., Mohanty, S., & Chattopadhyay, K. (2025). Plio-pleistocene sediment grain size variability in the Western Bay of Bengal: Evidences of Indian Summer Monsoon intensification. *Marine Geology*, 107682.
- Reinhardt, A. L., Riris, P., Harris, B., Jha, D. K., de Lima Primam, G. L., Bauermann, S. G., ... & Behling, H. (2026). Late holocene vegetation dynamics, fire regimes, and human impact in Southern Brazil: A multi-proxy palaeoecological record from the Matematico Lake. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 113556.

- Sahoo, A., Tripathy, A., Mazumder, M., Singh, T. N., & Liu, S. (2026). Divergent Thermal Damage Pathways in Coal-Measure Sandstone and Shale: Implications for High-Temperature Energy Subsurface Systems. *Energy & Fuels*.
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- Tripathy, A., Mazumder, M., Sahoo, A., Liu, S., Singh, T. N., & Pan, Z. (2025). Decoupling Organic and Mineralogical Controls on Micropore Architecture and Sorption Behavior in Permian Shales. *Gas Science and Engineering*, 205833.
- Vats, N., Bhaumik, A. K., Das, M., Mohanty, S., & Singh, R. K. (2025). Correspondence of ENSO-like processes to the thermocline planktic foraminifera in the East China Sea over the last 400 ka. *Journal of the Palaeontological Society of India*, 70(2), 384-393.
- Wilmsen, M., Metzner, N., Bansal, U., Berensmeier, M., & Böning, P. (2026). Glaucony formation during warm phases of Earth history: Lessons learnt from Upper Cretaceous greensand giants. *Global and Planetary Change*, 105374.

R & D Projects

Demonstration of CO₂ Mineralization on Steel Slag and Ultramafic Rock Residues Using a Hybrid Shockwave-Assisted Reactor System. DST ANRF-ARG; Fund to be sanctioned. Awarded the project along with IIT Guwahati faculty in 2026. Prof. A. S. Venkatesh as Hon. Investigator

Awards and Achievements

Prof. Sahendra Singh delivered two expert lectures on “Gold Metallogeny with special reference to India” and “Application of Nano-geoscience in gold exploration” in the training programme entitled “Refresher Course on Gold Exploration”, organised by Geological Survey of India Training Institute at FTC Kuju, Ramgarh on 9th March 2026

Ms. Arya Vinod, a Ph.D. scholar of Prof. Anup Krishna Prasad, has received an "Early Career Scientist" grant from EGU to present an oral paper at the European Geosciences Union (EGU) General Assembly 2026 (3–8 May 2026, Vienna, Austria). The EGU General Assembly is one of the world's largest geoscience conferences, attracting thousands of researchers globally. The abstract titled “A Novel Method for Rapid and Reliable Estimation of GCV of Coal Using Mid-Infrared FTIR Spectroscopy and a Multi-Model Machine Learning Approach” has been accepted under Session GI2.1: Artificial Intelligence in Geosciences: applications, innovative approaches and new frontiers. The study integrates mid-IR FTIR spectroscopy with machine learning algorithms to develop a rapid and reliable method for predicting coal calorific value, demonstrating advancements in artificial intelligence techniques in geoscientific analysis. In addition to "Early Career Scientist" grant from EGU, she has also received International Travel Support from the Institute.

Saheli Ghosh Dastidar received an “Early Career Scientist’s Travel support” Grant for attending EGU26, from the EGU Programme Committee.

Prof. Deepak Kumar Jha joined as a Member of Editorial Board of Discover Geoscience (Springer Nature).

Conferences and Workshops



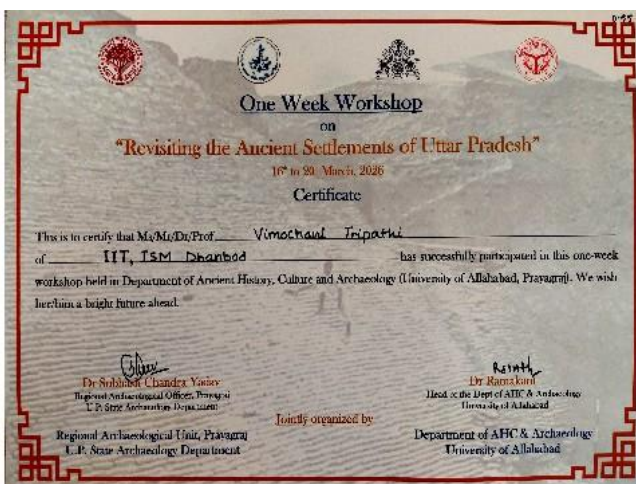
Prof. Deepak Kumar Jha delivered a talk on “Climate Context for Human Evolution in India: Evidence from Sedimentary Lipids, Stable Isotopes and Charcoal” as a Keynote Speaker at the National Workshop on “Collaborative Paleo-anthropology and Population Genetics Research” during 23-24 March 2026, organised by the BHU- Anthropological Survey of India, at BHU, Varanasi, India



Prof. Deepak Kumar Jha delivered a talk on “Deep-time geoarchaeological perspectives: A climate-driven human-environment dynamics in the Ganga watershed, India” as a Keynote Speaker at the 1st National Conference on “MissionY: Land Acquisition for Rivers (National Framework for Rejuvenation of Small Watersheds)” during 22-23 March 2026 at Department of Environmental Science and Engineering, IIT (ISM) Dhanbad, India.

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Ms. Vimochani Tripathi, a PhD scholar of Prof. Deepak Kumar Jha, participated in the workshop titled “Revisiting Ancient Settlements of Uttar Pradesh” during 16-20 March 2026, organised by the University of Allahabad. The workshop facilitated insightful discussions with geologist and archaeologists, offering significant guidance that has helped refine her research focus and plan future work in Geoarchaeology of the Ganga Plain.



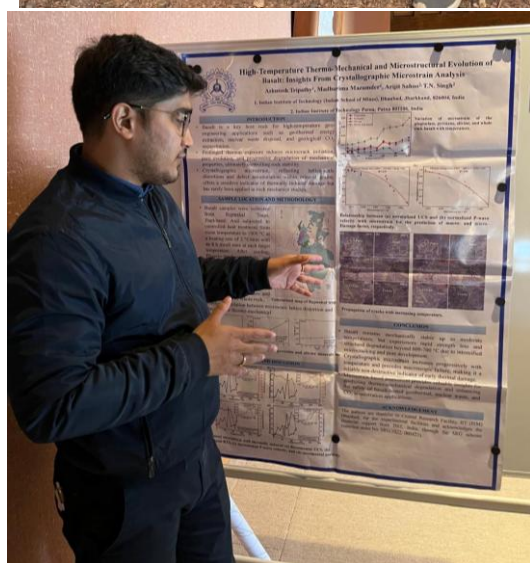
Prof. S. Sarangi delivered an invited lecture on “A futuristic REE deposit in an unconventional host rock” in Odisha Mining Corporation, Bhubaneswar, Odisha in Feb 2026 and carried extensive fieldwork in Carbonatite and Bauxite mines near Rayagada & Koraput, Odisha along with his PhD scholars Mr. M. K. Surdas Singh and Ms. Subhrajyostna Paul in association with OMC Officials. The OMC sponsored the entire field visits from transport to hospitality.



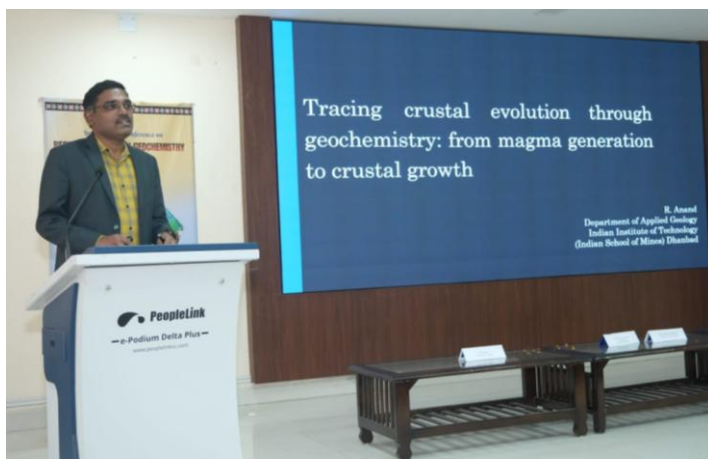


Prof. Udit Bansal attended Field workshop on “Depositional dynamics and their role in sequence development, Vindhyan Supergroup, Central India” under the aegis of Indian Association of Sedimentologists during 16-20 Feb 2026 in and around Maihar, MP.

(Photo: Prof. Udit Bansal with Prof. Subir Sarkar, a renowned Sedimentologist)



Prof. Ashutosh Tripathy attended the 16th EuroConference on “Rock Physics and Rock Mechanics” held in Les Diablerets, Switzerland during 19-23 Jan 2026. Prof. Tripathy received the young researcher grant from the organizers of the 16th Euroconference and the International Travel Support from DST-ANRF to attend the 16th Euroconference.



Prof. R. Anand delivered a talk as a Resource Person in the “International Conference on Recent Advances in Geochemistry” organized by the Department of Geology, Fakir Mohan University, Balasore, Odisha on 17th January 2026.



Ms. Nikita Kumari, a Ph.D. scholar of Prof. Pintu Prusty participated in the workshop titled “Basic Course on Isotope Hydrology” conducted from 5-9 January 2026, organized by the Hydrological Investigations Division, National Institute of Hydrology, Roorkee. The workshop provided an excellent platform for interaction with hydrologists and scientists, enhancing insightful discussions on isotope-based approaches in hydrological investigations.



Prof. M. K. Mukherjee (centre) along with the research team on the outcrop near Ziro, in Arunachal Pradesh. Note the dark black graphite vein in the centre of the photograph behind the team.

Prof. M. K. Mukherjee carried out field investigations including data collection, section measurement, sample analysis and structural geological mapping of the mineralized zones of Vanadim and graphite in the Khetabari formation around Ziro and Siru Rizo in Arunachal Pradesh. This is as a part of ongoing collaborative research between IIT(ISM) Dhanbad, Geological Survey of India and School of Environmental Science, JNU New Delhi, for critical mineral exploration.



Prof. M. K. Mukherjee (second from right) in the outcrops of grapite bearing Khetabari formation in Daba Gamlin area near Siru Rijo, Arunachal Pradesh. Other members are geologists from GSI Itanagar

Alumni Achievements

Dr. Rambabu Singh, an alumnus of the Department of Applied Geology has joined the Department of Earth Sciences, IIT Bombay as an Assistant Professor in Feb 2026

Dr. Ramesh Chandra Behera an alumnus of the Department of Applied Geology has joined the Department of Earth Sciences, IIT Bombay as a Post-Doctoral Researcher under the supervision of Prof. Shakthi Saravanan Chinnaswamy