Balram Tiwari

Date of Birth: 09th April 1989
Correspondence Address**:**
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Academic Qualifications:

Qualification	Subjects	Institution	Year of passing	Percentage
Ph.D.	Coal Geology, Coal petrology, Hydrocarbon exploration, Coal Bed Methane (CBM), Shale Gas	IIT(ISM), Dhanbad	2021	NA
M.Tech (Mineral Exploration**)**	Petroleum and Gas Hydrate Exploration, Applied Coal Petrology, Petroleum Exploration, Coal Bed Methane and Shale Gas Exploration, Engineering Geophysics, Fuel Geology and Geophysical Exploration	IIT(ISM), Dhanbad	2014	8.62 (OGPA)
M. Sc. (Geology)	Specialization in Applied Coal Petrology and Petroleum Exploration	Ranchi University, Ranchi, Jharkhand	2012	71.69 %
B. Sc. (Geology Honors)	Honors: Geology Subsidiaries: Physics, Mathematics, Hindi, Environmental Science	St. Xavier's College, Ranchi, Jharkhand	2010	80.20%
Intermediate	Physics, Mathematics, Chemistry, English, Computer Science, Phy. Education	DAV Public School, Khalari, Ranchi, Jharkhand (CBSE)	2007	68.66%
Matriculation	English, Science, Maths Sanskrit, Social Science, Computer	DAV Public School, Khalari, Ranchi,Jharkhand (CBSE)	2005	79.50%

Ph.D. thesis

Title: An Insight into Organopetrographical, Geochemical and Microstructural Characteristics to Quench the Quest of Shale Gas and Coal Bed Methane in Jharia Basin, India.
Supervisor: Prof. Atul Kumar Varma, IIT(ISM), Dhanbad, India
External Guide: Dr. V.A. Mendhe (CSIR-CIMFR, Dhanbad), India
Institute: IIT(ISM), Dhanbad, India; **Year of Award:** 2021

Coursework studied:

Petroleum and Gas Hydrate Exploration, Applied Coal Petrology, Petroleum Exploration, Coal Bed Methane and Shale Gas Exploration, Engineering Geophysics, Fuel Geology and Geophysical Exploration, Exploration Geochemistry, Engineering Geophysics, Tectonics and Structural methods for Exploration, Resource Evaluation and Geostatistics, Advance Geostatistics and Mineral Economics, Remote Sensing and Geomorphology, Mineralogy, Instrument and analytical Techniques in Geochemistry, Igneous, Sedimentary and Metamorphic Petrology, Ore Geology, Mining Geology.

Academic work experience (Roles and Responsibilities) during PhD:

Teaching Assistant in the Department of Applied Geology, IIT(ISM), Dhanbad

- Assisted students in identifying coal macerals under Coal Microscope, micro-lithotype, coal lithotypes, cleats in coal.
- Assisted in Coal Geology practical classes of M. Tech (Mineral & Petroleum Exploration) 1st semester, M.Sc. Tech 3rd semester, M.Sc. Tech 5th semester, in IIT(ISM), Dhanbad, India.
- Assisted in geological fieldwork, collection of coal and shale samples from opencast and Underground Mines, and from exploratory boreholes, CBM desorption study in field.
- Assisted in research paper writing and dissertation to M. Tech (Mineral & Petroleum Exploration) and M.Sc. students.

Reviewer in Arabian Journal of Geosciences:

No of reviews completed: 06

Project experience:

Positions held	Institute	Duration	Nature of Work
Worked as a Project Fellow under kind supervision of Dr. A.K. Singh and Dr. D. Mohanty	Central Institute of Mining and Fuel Research (CIMFR), Dhanbad	16.06.2014 to 05.02.2015	Collection of core coal samples from exploratory boreholes, Proximate Analysis, Ultimate Analysis, Logging of coal and Determination of Adsorption behaviour of Coal Bed Methane"

M. Tech Dissertation:

Title: Geochemical Characterisation of Pallahara Granite Gneiss: Implications for Uranium Exploration

Geological Field area: Visited field area Keonjhar, Pallahara, in Orissa and collected Granite (porphyritic and fine grained), Older Metamorphic Tonalite Gneiss (OMTG) samples.

Supervisor: Dr. Sukanta Dey, IIT(ISM), Dhanbad, India

Year: 2014

Professional Recognition/ Award

S.No	Name of Award	Awarding Agency	Year
01.	Gold Medal (for securing 1st rank in M. Tech)	Indian School of Mines, Dhanbad	2014
02.	Student Travel award (750 $)	The Society of Organic Petrology (TSOP), Beijing, China	2018
03.	International Travel Support	Science and Engineering Research Board, DST, India	2019

Publications *(List of papers published in SCI Journals).*

Bishnoi, D., Ghosh, S., **Tiwari, B.**, Varma A.K., Mathews, R.P., Chetia, R. 2021. Palaeocene-Eocene organic sedimentary archives of Bikaner-Nagaur Basin, Rajasthan, India: An integrated revelation from biogeochemical and elemental proxies. International Journal of Coal Geology 247, 103848.

https://doi.org/10.1016/j.coal.2021.103848 **(Impact factor: 6.806)**

Tiwari, B., Ojha, A., Ghosh, S., Varma A.K., Mendhe, V.A., Mondal, A. 2020. A composite microstructural and geochemical approach to quench the quest for hydrocarbon from Barren Measures shales of Jharia Basin, India. Journal of Natural Gas Science and Engineering 78, 103310.

https://doi.org/10.1016/j.jngse.2020.103310 **(Impact factor: 4.965)**

Hazra, B., Wood, D.A., Varma, A.K., Sarkar, B.C., **Tiwari, B.**, Singh, A.K. 2018. Insights into the effects of matrix retention and inert carbon on the petroleum generation potential of Indian Gondwana shales. Marine and and Petroleum Geology 91, 125–138.

https://doi.org/10.1016/j.marpetgeo.2017.12.028 **(Impact factor: 4.348)**

Mendhe, V.A., Kumar, S., Kamble, A. D., Mishra, S., Varma, A. K., Banerjee, M., Mishra, V.K., Sharma, S., Buragohain, J., **Tiwari, B.** 2018.Organo-mineralogical insights of shale gas reservoir of Ib-River Mand-Raigarh Basin, India. Journal of Natural Gas Science and Engineering 59, 136-155.

https://doi.org/10.1016/j.jngse.2018.08.026 **(Impact factor: 4965)**

Varma, A.K., Mishra, S., **Tiwari, B**., Hazra,B., Kumar, S., Panigrahi, D. C., Ojha, A. 2019. Petrographic controls on phosphorous distribution in coal seams of Jharia basin, India, Journal of Earth System Science 128, 103.

https://doi.org/10.1007/s12040-019-1128-3 **(Impact factor: 1.371)**

Kumar, S., Varma, A.K., Mendhe, V.A., Tiwari, B 2021. Multi-scale pore characterization of Barakar shale in the Mand-Raigarh Basin, India: scientific upshots from geochemical approaches and imaging techniques. Arabian Journal of Geosciences 14, 2188 .

https://doi.org/10.1007/s12517-021-08585-z **(Impact factor: 1.827)**

International Conferences:

- **Tiwari, B**., Varma, A.K., Ojha, A., Ghosh, S., Mendhe, V.A., 2019. A multiproxy approach to quench the quest for hydrocarbon from Barren Measures shales of Jharia coal Basin, India. An abstract volume published at 71st International Committee for coal and Organic Petrology (ICCP) during 15th to 21st September, 2019, Hague, Netherlands. (**Oral Presentation**).
- Varma, A.K., **Tiwari, B.,** Mondal, A., Samad, S.K., Mendhe V.A. Petrographic and geochemical characterization of Barren Measures shales from Jharia coal Basin, India. International Conference and Exhibition on Energy and Environment: Challenges and Opportunities, February 20-22, 2019, Vigyan Bhawan, New Delhi. (**Poster Presentation**).
- Varma, A.K., **Tiwari, B.,** Mondal, A., Mendhe, V.A., Biswas, S. Geochemical, petrographical and thermal characteristics of Barren Measures shales of Jharia coal basin, India and their implications for hydrocarbon generation and production. 35th TSOP Annual Meeting August 17-21, 2018 - Beijing, CHINA. (**Oral Presentation**).
- Varma, A.K., **Tiwari, B**., Mondal, A., Mendhe, V.A., Verma A.K., Kumar, S., 2017. Thermal maturity and hydrocarbon potential of shales from Jharia coal basin, Jharkhand, 2017, 7th World PetroCoal Congress and Exhibition 2017, Organized by Energy and Environment Foundation, 15-17 February 2017, New Delhi. (**Poster Presentation**).

Foreign Exposure:

- Presented paper at 71st International Committee for Coal and Organic Petrology (ICCP) during 15th to 21st September, 2019 in The Hague, Netherlands.
- Presented paper at 35th The Society of Organic Petrology (TSOP) Annual Meeting August 17-21, 2018 in Beijing, CHINA.

Laboratory Experiences:

- GC-IRMS of coal and shale, at Birbal Sahni Institute of paleobotany (BSIP), Lucknow in (2020) under the guidance of Dr. Anupam Sharma.
- Trace element and Rare earth elements (REE) analysis of coal and shale samples through HRICP-MS CSIR- National Geophysical Research Institute (NGRI), Hyderabad in (2019) under the guidance of Dr. M. Mohan.
- Carried XRD analysis (with quantification of mineral) of coal and shale samples at Department of Earth Sciences, IIT Bombay under supervision of Dr. Trupti Chandrasekhar in 2017.
- Low Pressure N_2 Adsorption study of coal and shale samples at Central Institute of Mining and Fuel Research (CIMFR), Dhanbad in (2018**)** under the guidance of Dr. V. A. Mendhe**.**

- Organic geochemical extraction (lipid biomarker, GC-MS) of coal and shale, at Birbal Sahni Institute of paleobotany (BSIP), Lucknow in (2017) under the guidance of Dr**.** Runcie P. Mathews**.**
- Sample preparation and analysis for major element oxide analysis of shale samples using X-Ray Fluorescence at Steel Authority of India Limited (SAIL), Ranchi in (2017) under the guidance of A.K. Prasad.
- Micropetrography of macerals of coal and shale samples under transmitted, reflected and fluorescence light microscope at Coal Geology and Organic Petrology Laboratory, Department of Applied Geology, IIT(ISM), Dhanbad in (2016) under the guidance of Prof. A. K. Varma.
- Sample preparation and analysis of coal and shale samples by Rock Eval Pyrolysis at CSIR- National Geophysical Research Institute (NGRI), Hyderabad in (2016) under the guidance of Dr. D.J. Patil.
- SEM-EDX study of coal and shale sample at Central Research Facility (CRF), at IIT(ISM) Dhanbad in (2015).
- Preparation of coal samples for proximate analysis, Ultimate analysis, Adsorption study of coal and shale at Central Institute of Mining and Fuel Research (CIMFR), Dhanbad in (2014) under the guidance of Dr. A.K. Singh.

Experience with instruments:

- Coal Petrological microscopes, Leica DM 2700 and DM 6000 microscope,
- Rock Eval 6 pyrolyzer (Turbo version).
- Fourier Transform Infrared **(**FTIR) spectroscopy and Raman spectroscopy
- CHNS Analyzer,
- CBM Canister
- Gas Chromatography-Mass Spectroscopy GC-MS (7890 B),
- Gas Chromatography-Isotope Ratio Mass Spectrometer (GC-IRMS)
- High Resolution Inductively Coupled Mass Spectroscopy (HR-ICPMS)
- Quantachrome AutosorbiQ™2 MP-XR, Adsorption study instrument
- Rikako Koyama XRF instrument,
- PANalytical EMPYREAN X-ray diffractometer (XRD)

(Dr. Balram Tiwari)