# Dipanjan Bhattacharjee

**Current Position:** Assistant Professor, Department of Geology, Indira Gandhi National Tribal University, Madhya Pradesh, India, PIN 484887
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## Academic Profile/Research Statement:

I am a structural geologist specializing in shear zone dynamics, strain analysis, and neotectonic processes in Stable Continental Regions. My research integrates structural mapping, petrographic and geotechnical investigations, remote sensing methods such as InSAR, and Finite Element Modelling (FEM) to bridge fundamental tectonic studies with applied geoscience. I have extensive teaching experience at both undergraduate and postgraduate levels in structural geology, tectonics, engineering geology, and field mapping, and have successfully guided MSc and PhD students. In addition to publishing in reputed international journals, I have contributed consultancy expertise to geotechnical projects, particularly in tunnel geology and slope stability, ensuring direct application of geological knowledge to engineering practices. My academic career is further strengthened by research funding initiatives, and active involvement in professional societies. My aim is to integrate research, teaching, and consultancy to advance interdisciplinary geoscience while fostering strong academic and industry partnerships.

## Education:

| Degree | Institution | Year |
|---|---|---|
| **Ph.D. in Geology**<br>**Thesis:** Tectonics of Gavilgarh Fault Zone, Central India | University of Delhi | 2016 |
| **M.Sc. Applied Geology** | University of Calcutta | 2010 |
| **B.Sc. (Hons) Geology** | University of Calcutta | 2008 |

## Academic Appointments/ Professional Experience:

| Position | Institution | Duration | Type of Responsibility | Remarks |
|---|---|---|---|---|
| **Assistant Professor** | Indira Gandhi National Tribal University | 2017 – Present | Teaching and Research | Courses Taught: Structural Geology, Remote Sensing & GIS, Crystallography, Optical Mineralogy |
| **SERB-NPDG** | Indian Institute of Technology, Gandhinagar | 2016-2017 | Research | Research carried out on a topic entitled "Neotectonic evolution of Son- |

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|---|---|---|---|---|
| | | | | Narmadageo-fracture with special reference to Son-Narmada South Fault (SNSF) and Son-Narmada North Fault (SNNF) |
| **Assistant Professor (Ad-hoc)** | University of Delhi | 2015 – 2016 | Teaching | Courses Taught: Structural Geology, Remote Sensing & GIS |
| **Guest Lecturer** | University of Delhi | 2014 – 2015 | Teaching | Courses Taught: Structural Geology practical, Remote Sensing & GIS practical |
| **Total Teaching Experience** | **10 Years** | | **Total Research Experience** | **15 Years** |

## Research Interests:

- Tectonic reactivation and neotectonics
- Numerical and Analogue modelling for studying deformation kinematics.
- InSAR applications in surface deformation in relation with active tectonics
- InSAR applications in surface deformation

## Awards and Fellowships:

| # | Name of Awarding Body | Name of Award/Honor | Date | Level |
|---|---|---|---|---|
| 1 | UGC-BSR | Research Start-Up-Grant | 2019-02-12 | National |
| 2 | SERB | NPDF | 2016-11-02 | National |
| 3 | SERB | International Travel | 2014-04-27 | International |
| 4 | Joint Research Unit UMR 5275, Institute of Earth | Visiting fellow to Alpine Field Course | 2012-08-20 | International |
| 5 | UGC-CSIR | NET JRF | 2012-10-03 | National |
| 6 | UGC-CSIR | NET | 2009-12-20 | National |

## Selected Research Publications:


Ghosh, T., Chattopadhyay, A., Verma, G., Srivastava, S., Sarkar, A., **Bhattacharjee, D**., 2023. Digital mapping and GIS-based spatial analyses of the Pur-Banera Group in Rajasthan, India, with special reference to the structural control on base-metal mineralization. **Journal of Structural Geology** 166. https://doi.org/10.1016/j.jsg.2022.104762

Chattopadhyay, A., **Bhattacharjee, D**., Srivastava, S., 2020. Neotectonic fault movement and intraplate seismicity in the central Indian shield: A review and reappraisal. **Journal of Mineralogical and Petrological Sciences** 115. https://doi.org/10.2465/jmps.190824b

Sarkar, A., **Bhattacharjee, D**., Chattopadhyay, A., 2020. Size distribution of survivor clasts in pseudotachylyte and cataclasite: Implications for crushing and melting processes in seismic fault zones. **Journal of Earth System Science** 129. https://doi.org/10.1007/s12040-020-01480

Chattopadhyay, A., Bhattacharjee, D., 2019. Repeated reactivation of the Gavilgarh-Tan Shear Zone, Central India: Implications for the tectonic survival of deep-seated intra-continental fault zones. **Journal of Asian Earth Sciences** 186. https://doi.org/10.1016/j.jseaes.2019.104051

Mishra, B.K., **Bhattacharjee, D**., Chattopadhyay, A., Prusty, G., 2018. Tectonic and lithologic control over landslide activity within the Larji–Kullu Tectonic Window in the Higher Himalayas of India. **Natural Hazards** 92. https://doi.org/10.1007/s11069-018-3219-x

**Bhattacharjee, D**., Jain, V., Chattopadhyay, A., Biswas, R.H., Singhvi, A.K., 2016. Geomorphic evidences and chronology of multiple neotectonic events in a cratonic area: Results from the Gavilgarh Fault Zone, central India. **Tectonophysics** 677–678. https://doi.org/10.1016/j.tecto.2016.04.022

Chattopadhyay, A., **Bhattacharjee, D**., Mukherjee, S., 2014a. Structure of pseudotachylyte vein systems as a key to co-seismic rupture dynamics: The case of Gavilgarh-Tan Shear Zone, central India. **International Journal of Earth Sciences** 103. https://doi.org/10.1007/s00531-013-0986-1

Chattopadhyay, A., Jain, M., **Bhattacharjee, D**., 2014b. Three-dimensional geometry of thrust surfaces and the origin of sinuous thrust traces in orogenic belts: Insights from scaled sandbox experiments. **Journal of Structural Geology** 69. https://doi.org/10.1016/j.jsg.2014.09.020

## Research Funding and Consultancies:

| No | Title | Type | PI/Co-PI | Name of |
|---|---|---|---|---|
| 1 | Consultation for a part of the proposed project titled "Integrated Subsurface Characterization of Faults and Fractures in the Sohagpur West Block" | Ongoing Consultancy | Consultant | Reliance Industries Ltd (Petroleum E & P) |
| 2 | Geotechnical Investigation work for Tunnels, Viaduct, Major Bridges, Minor Bridges, ROBs, RUBs, and other structures at Koderma Detour section along DFCCIL – Vetting of Geotechnical investigation report. | Completed Consultancy | Consultant | SM Consultant Bhubaneswar, India |
| 3 | Geological Mapping & Geotechnical report for the work Exploration alternate alignments, Final location Survey, Geological mapping, Geotechnical investigation work in Sohna-Manesar Section of HRIDCL project. | Completed Consultancy | Consultant | SM Consultant Bhubaneswar, India |
| 4 | Mechanism of the Development of 'Out- of-Sequence' Thrust: An insight from Sand-Box Analogue Models | Research Project Completed | PI | UGC-BSR, Govt. of India |
| 5 | Neotectonic Evolution of Son-Narmada geo-fracture with special reference to Son-Narmada South Fault (SNSF) and Son-Narmada North Fault (SNNF) | Research Project Completed | PI | SERB, Govt. of India |

## Research Supervision:

| Name of the Course | Ongoing | Completed |
|---|---|---|
| PhD | 1 | 1 |
| M.Sc. Dissertation | 3 | 24 |

## Invited Talks and Conferences:

| # | Title of the Invited Lecture delivered/Paper presented | Details of Conference / Seminar/ FDP and | Category/Type of Event | Date of Presentation |
|---|---|---|---|---|
| 1 | Influence of pre-existing structural weakness on active tectonics in the eastern part of cratonised Peninsular India: An integrated approach of DInSAR and Numerical Modelling. | European Geosciences Union, Vienna | International (Abroad) | 2024-04-16 |
| 2 | The dynamics of fold-thrust tectonic wedge: An insight from impeccable simulation of Physical Sandbox | European Geosciences Union, Vienna | International (Abroad) | 2023-12-15 |
| 3 | Exact Representation of Analogue Sand- Box Condition with Finite Element Model for Tectonic Wedge Using ABAQUS™ | AGU Fall Meeting 2023, San Francisco | International (Abroad) | 2023-12-12 |
| 4 | D-InSAR- an alternative approach for focal mechanism of micro-earthquakes: A case study from Central Indian Tectonic Zone | Rock Deformation and Structures VI, Central University of Kerala | National | 2021-10-09 |
| 5 | PS-InSAR and river dynamics as a tool to delineate active tectonics: A case study from Son-Narmada geo-fracture, Central India | Rock Deformation and Structures VI, Central University of Kerala | National | 2021-10-08 |
| 6 | Channel width variation and coordinate transformation of river's profile into chi space: implications for the tectonic stability of its base | National Seminar on Recent Advances in Geoscience Research in India Department of Geology, Delhi University, Delhi | National | 2021-07-02 |

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| 7 | Neotectonic evolution of the southern part of CITZ and its implication to the seismicity in stable continental region | e-Lecture series on Structural and Tectonics organised by SGTSGI, India | National | 2021-03-20 |
| 8 | A synergic anal ysjs of seoni earthquake 2020 using sar dataset; implication for intraplate seismicity in central india | National Seminar on Recent Advances in Geoscience Research in India Department of Geology, Delhi University, Delhi | National | 2021-07-01 |
| 9 | Invited lecture on Research Methodology and Computer application in Geosciences | Lecture series for PhD Course work organised by the Pt. S. N. Shukla University, Shadol, M.P | State/University | 2019-09-30 |
| 10 | Polyphase reactivation of Gavilgarh-Tan Shear Zone and evolution of Satpura Mountains as a 'pop-up' structure | Rock Deformation and Structures V, University of Delhi, India | National | 2018-10-05 |
| 11 | Pop-up" like rejuvenation of satpura range causing seismicity in central indian craton? - a study with tectonic geomorphological approaches | IAG-EGU Session at ICG 2017 | International (within country) | 2017-11-07 |
| 12 | Polyphase neotectonic movements in the Gavilgarh Fault Zone, central Indian craton: evidences from geomorpho- tectonic analysis | European Geosciences Union, Vienna | International (Abroad) | 2014-05-20 |
| 13 | Geological significance of Phanerozoic fault reactivations in the western part of Gavilgarh-Tan shear Zone, central India | Rock Deformation and Structures, Lucknow University, UP | National | 2012-10-12 |

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| 14 | Morphology and microstructure of brittle pseudotachylyte vein systems from Gavilgarh-Tan Shear Zone, central India, and its seismogenic implications | Rock Deformation and Structures, Lucknow University, UP | National | 2012-10-13 |
| 15 | Three-dimensional geometry of thrusts and its control on the evolution of curved thrust traces in contractional orogens: an experimental investigation | Rock Deformation and Structures, Lucknow University, UP | National | 2012-10-14 |
| 16 | Arcuate thrust pattern in orogens with oblique convergence: an experimental study | Rock Deformation and Structures, Jadavpur University, Kolkata | National | 2010-10-15 |

## Other Activities and Responsibilities (Academic/Administrative):

### A. Organizational Activity:

1. Founding member of the Department of Geology at IGNTU, contributing to its establishment, academic development, and the creation of structured channels for student intake.
2. I have been working as the geological field instructor and coordinator for the geological field trips conducted by the Department of Geology, IGNTU, since I joined here in 2017.
3. Developed Sandbox experimental facility in the Department of Geology, IGNTU, with the grants from the project sanctioned to me under the UGC-Start-Up Scheme.
4. Developed sandbox experimental facility for visualization of deformation kinematics in the Department of Geology, University of Delhi, in association with Prof. Anupam Chattopadhyay.
5. Member of the admission committee for the admission of students in the PG and PhD courses in the Department of Geology, IGNTU

### B. Curriculum Development:

1. Working as a member of the Board of Studies (BoS), Department of Geology IGNTU, for developing curriculum as per the National Education Policy and prepared various modules for the syllabus of PG and PhD courses, running in the department.

2. Assisted Prof. Anupam Chattopadhyay in upgrading the Practical course content of Structural Geology in the Department of Geology, University of Delhi.

## C. Administrative Responsibilities

1. Representative/Coordinator of the Departmental of Geology, IGNTU for Internal Quality Assessment Cell (IQAC), IGNTU, India, with the responsibility of preparing data for the National Institutional Ranking Framework (NIRF) and National Assessment and Accreditation Council (NAAC).
2. Member of the Departmental Research Committee (DRC)-Geology, IGNTU
3. I have been a member of several Purchase Committees and a departmental representative to the Central Purchase Committee for the procurement of several scientific instruments for the Department of Geology, IGNTU, like XRF, Petrographical microscopes (research-grade and student-grade), thin section preparation machines, vibrating disc mill, jaw crushers, hot-air oven etc. and geological samples of rocks, minerals, thin sections and fossils.
4. Member of the task force for SWAYAM-MOOCs Courses in IGNTU, Amarkantak
5. I have been nominated as a member for registration with the Atomic Energy Regulatory Board (AERB) to obtain an e-licence for the operation of X-ray- related equipment in the Department of Geology, IGNTU.
6. Working as a reviewer for the 'Journal of Earth System Science' (ISSN: 0253-4126, Impact Factor 1.104)

## D. Paper Setting and Evaluation:

1. Being a module lead at the Department of Geology, IGNTU, I have worked as a Paper setter and Examiner for the papers namely i) Structural Geology and Tectonics, ii) Geomorphology and Remote Sensing, iii) Hydrogeology, iii) Engineering and Environmental Geology, iv) Mechanism of Crustal Deformation, v) Optical mineralogy and crystallography.
2. Work as a Geological Field instructor for the PG courses at the Department of Geology, IGNTU
3. As an Assistant Professor (Ad-hoc) in the Department of Geology, University of Delhi i) I have taken theory and practical classes of UG & PG courses for subjects like Structural Geology, Mineral Sciences (optical mineralogy), and Remote sensing & GIS ii) Worked as a geological field instructor and iii) as an Examiner.
4. Worked as External examiner for various UG and PG courses.

## E. Trainings and Workshops:

1. Completed Refresher Course on multidisciplinary research organized by MMTTC, IGNTU organized from 15th to 30th Match 2024.
2. Completed two-week refresher course on Managing online classes & Co-creating MOOCS 13.0, organized by TLC Ramanujan College, University of Delhi from 06$^{th}$ to 20$^{th}$ April 2022.
3. Completed SWAYAM ARPIT Online Course on Teacher and Teaching in Higher Education and qualified the exam held on 16/02/2020 by Savitribai Phule University.
4. Completed UGC-Sponsored Orientation Program organized by the Jadavpur University Kolkata from 26/08/2019 to16/09/2019.

5. Completed One week Faculty Development Program on MOOCs organized by IGNTU, Amarkantak from 12th to 18th March 2018.
6. Attended workshop LAMAMIS at DRDO-DTRL (2015) 12. Attended seminar by Leica Geosystem against procurement of DGPS in the Department of Geology, Delhi University (2015)
7. The publication in JSG on 3D geometry of the fault surfaces was listed under 25 'hottest' articles in Journal of Structural Geology during October – December 2014.
8. Selected and participated in twelve days **International Alpine Geological Field Course** (Sept 10-12, 2012) organized by UJF- Grenoble (France), Uni Milano Bicocca (Italy) and ETZ Zurich (Switzerland).
9. Undertaken ArcGIS training under ESRI-India (19th to 23rd September 2011)
10. Undertaken research training on Luminescence dating techniques at TL Laboratory, PRL, Ahmadabad, under supervision of Prof. A.K. Singhvi (April 2013 to June 2013)
11. Undertaken research training on the study of Anisotropic Magnetic Susceptibility (AMS) in deformed rock, at AMS Laboratory, IIT Kharagpur, under the supervision of Prof. M. Mamtani (June 2012 & November 2013).
12. Completed 4 years of training in painting from Bangiya Sangeet Parishad, Kolkata. I have also achieved an award in the all-India National Training and Painting competition (NTPC) in the year1999.

## Technical and Field Skills

1. Extensive field experience in structural geology, with a focus on deformational structures, gained through work across diverse tectonic settings ranging from active belts to passive margins in India and the Alps.
2. Proficient in a range of geoscientific and analytical software, including ArcGIS™, MATLAB™, InSAR processing tools, RockWorks™, AutoCAD™, CorelDRAW™, and Abaqus™.
3. Skilled in conducting physical modeling experiments using sandbox analogue modeling apparatus to investigate deformation processes.

## Languages

English (Fluent), Hindi (Fluent), Bengali (Fluent)

Dipanjan Bhattacharjee

Date: 27th August, 2025
Place: Amarkantak, India Signature