Curriculum vitae

Dr. Bandita Barman

Assistant Professor
Department of Civil Engineering
IIT (ISM), Dhanbad, INDIA

Email: bandita@iitism.ac.in
0326-223-5398 (O); 9085778672 (M)

RESEARCH INTERESTS

Sediment Transport and Fluvial Hydrodynamics, Turbulent Flow Modelling, Surface Water Flow Modelling, Modeling and Simulation of Fluvial Processes, CFD.

EDUCATION

PhD, August 2018

Indian Institute of Technology Guwahati, India

- Thesis title: Turbulent flow structures and morphological characteristics of mining affected alluvial channel.
- Advisors: Prof. Arup Kumar Sarma and Prof. Bimlesh Kumar

M.Tech., June 2015

Indian Institute of Technology Guwahati, India

- Thesis title: Morphological modeling of alluvial channel with aggregate mining.
- CGPI: 9.78/10

B.E. in Civil Engineering, 2011

Assam Engineering College, Jalukbari, India

- Percentage: 84.47%

AWARDS

Key funded Post-Doctoral Research Fellowship, Wuhan University, China, 2019
MHRD PhD scholarship, IIT Guwahati, 2015
MHRD MTech scholarship, IIT Guwahati, 2013
3rd Rank in BE, 2011
Engineering Merit Scholarship in B.E. from Govt. of Assam

RESEARCH EXPERIENCE

Post-Doctoral Research Fellow, Feb 2019 – Sept 2019
Wuhan University, China

- Project title: Experimental investigations of channel thalweg profile of Jingjiang reach (Middle Yangtze River)
- Advisor: Prof. Junqiang Xia

TEACHING EXPERIENCE

Assistant Professor July, 2021-present
Department of Civil Engineering, **IIT (ISM) Dhanbad**

Assistant Professor October, 2019-July, 2021
Department of Civil Engineering, **SVNIT Surat**

Assistant Professor (Adhoc) August, 2018- December, 2018
Department of Civil Engineering, **NIT Meghalaya**

Assistant Lecturer August, 2011- July, 2013
Jigmey Namgyel Polytechnic, Bhutan

PUBLICATIONS
(Journal published)

1. Gurugubelli Yatirajulu, P V Timbadiya, and **Bandita Barman**. Probability density functions in an asymmetric alluvial sinuous channel, *Stochastic Environmental Research and Risk Assessment*, 2025. **(IF 3.9)**
2. Saundarya Narayan Kashyap, **Bandita Barman**, Turbulent flow characteristics over gravel bed channel with submerged vegetation patches, *Physics of Fluids*, 37 (3), 2025. (**IF 4.1**)
3. Laxman V Rathod, P. V. Timbadiya, and **Bandita Barman**. Turbulent flow structure in a symmetric compound channel with flexible emergent vegetation over floodplains. *Ecohydrology*, 18 (1), 2025. **(IF 2.5)**
4. Laxman V Rathod, P V Timbadiya, and **Bandita Barman**. Turbulent Anisotropy and Coherent Structures in Flow through a Symmetric Compound Channel with Emergent Floodplain Vegetation, *Physics of Fluids*,37 (1), 2025. **(IF 4.1)**
5. Ravi Kumar Mishra, **Bandita Barman**, Tinesh Pathania. 3D Modeling of Hydro-Morphodynamic Characteristics of Mining Affected Alluvial Channel using TELEMAC3D and GAIA, *Physics of Fluids*, 36 (10), 2024. **(IF 4.1)**
6. Gurugubelli Yatirajulu, P V Timbadiya, and **Bandita Barman**. Flow turbulence and morphological characteristics in an asymmetric alluvial sinuous channel, *Ocean Engineering*, 312: 119341, 2024. **(IF 4.6)**
7. Gurugubelli Yatirajulu, P V Timbadiya, and **Bandita Barman**. Turbulent flow structures and Reynolds stress anisotropy in an asymmetric sinuous mobile channel, *Physics of Fluids*, 36 (8), 2024. **(IF 4.1)**
8. **Bandita Barman,** Saundaraya Narayan Kashyap, and Bimlesh Kumar**.** Flow velocity prediction in a vegetated channel using soft computing techniques, Multiscale and Multidisciplinary Modeling, Experiments and Design, 1-11, 2024. (**IF 1.9**)
9. **Bandita Barman,** Jyotirmoy Barman, and Bimlesh Kumar. Fractal dimensions of hydraulic parameters in sand mined alluvial channel. *Water Supply*, 22 (6): 2022, 6143–6156. **(IF 1.768)**
10. **Bandita Barman** and Bimlesh Kumar. Quantification of Turbulent Flow Anisotropy in an alluvial channel Mining Pit. *Marine Georesources and Geotechnology*, 2022/ https://doi.org/10.1080/1064119X.2022.202550. **(IF 2.673)**
11. **Bandita Barman**, Bimlesh Kumar, and Arup Kumar Sarma. Impact of sand mining on alluvial channel flow characteristics. *Ecological Engineering*, 135, 36-44, 2019. **(IF 4.035)**
12. **Bandita Barman**, Bimlesh Kumar, and Arup Kumar Sarma, Dynamic characterization of migration of a mining pit in an alluvial channel. *International Journal of Sediment Research*, 34, 155-165, 2019. **(IF 2.902)**
13. **Bandita Barman**, Bimlesh Kumar, and Arup Kumar Sarma, Turbulent flow structures and geomorphic characteristics of mining affected alluvial channel. *Earth Surface Processes and Landforms*, 43, 1811-1824, 2018. **(IF 4.133)**
14. **Bandita Barman**, Anurag Sharma, Bimlesh Kumar, and Arup Kumar Sarma, Multiscale characterization of migrating sand wave in mining induced alluvial channel. *Ecological Engineering*, 102, 199-206, 2017. **(IF 4.035)**
15. **Bandita Barman**, Arup Kumar Sarma, and Bimlesh Kumar, Mining Pit Migration of an Alluvial Channel: Experimental and Numerical Investigations. *ISH Journal of Hydraulic Engineering*, Online ISBN 978-3-319-55125-8, 2018. **(IF 0.451)**

Journals (under review)

1. Laxman V Rathod, P. V. Timbadiya, and **Bandita Barman**. Flow hydrodynamics in a compound channel with submerged flexible floodplain vegetation. *Journal of Hydraulic Engineering*, Revision submitted. (IF 2.8)
2. Laxman V Rathod, P V Timbadiya, and **Bandita Barman**. Flow and submerged flexible vegetation interaction in a compound channel, *Journal of Hydrology*, under review **(IF 6.3)**
3. Gurugubelli Yatirajulu, P V Timbadiya, and **Bandita Barman**. Evolution of flow turbulence and higher order correlations in an asymmetric alluvial sinuous channel, *Acta Geophysica*, under review. **(IF 2.1)**

BOOK CHAPTER

Bandita Barman, Bimlesh Kumar, and Arup Kumar Sarma. Experimental study on mining pit migration. Book Title: *Development of water resources in India*, Series Title: Water Science Technology Library Series, Springer, Vol. 84, Chapter 26, ISBN: 978-3-319-55124-1.

Koradia Ashishkumar K, **Bandita Barman**. Numerical Solution of Two-Dimensional Shallow Water Flow with Finite Difference Scheme. Book Title: Fluid Mechanics and Hydraulics: International Conference on Hydraulics, Water Resources and Coastal Engineering, (pp. 115-126). Series Title: Lecture Notes in Civil Engineering Singapore: Springer Nature Singapore, ISBN 978-981-19-9150-9.

CONFERENCE PAPERS (Last 5 Years)

1. Ravi Kumar Mishra, **Bandita Barman**, and Tinesh Pathania. Hydro-Morphodynamic Characteristics of a Mining Pit Near a Channel Confluence, 41st IAHR World Congress, Singapore, 22-27 June, 2025.
2. Ravi Kumar Mishra, **Bandita Barman**, and Tinesh Pathania. A critical overview of impact of sediment mining on fluvial systems, UNCCRD Delta Sumit, Bangkok, 17-20 March, 2025.
3. Ravi Kumar Mishra, **Bandita Barman**, and Tinesh Pathania. Estimating Bathymetry of a Mining Affected Straight Alluvial Channel, 29th International Conference on Hydraulics, Water Resources, River and Coastal Engineering, CWPRS Pune, 18-20 December, 2024.
4. Laxman V Rathod, Timbadiya P.V., and **Bandita Barman**. Investigating the Flow Hydrodynamics in a Compound Channel with Flexible Vegetated Floodplains, 29th International Conference on Hydraulics, Water Resources, River and Coastal Engineering, Central Water & Power Research Station (CWPRS), Pune, India during 18-20 December, 2024.
5. Yatirajulu Gurugubelli, Timbadiya P.V., and **Bandita Barman**. Flow Turbulence and Third Order Correlations in an Asymmetric Sinuous Channel, 29th International Conference on Hydraulics, Water Resources, River and Coastal Engineering, Central Water & Power Research Station (CWPRS), Pune, India during 18-20 December, 2024.
6. Saundarya Narayan Kashyap and **Bandita Barman**. Velocity distribution in a narrow open channel with submerged rigid vegetation, 29th International Conference on Hydraulics, Water Resources, River and Coastal Engineering, CWPRS Pune during 18-20 December 2024.
7. Rozy Kumari and **Bandita Barman**. Numerical Modelling of Sediment Transport Dynamics in Braided Rivers: A Comprehensive Review, 29th International Conference on Hydraulics, Water Resources, River and Coastal Engineering, Central Water & Power Research Station, Pune, INDIA during 18-20 December,2024.

8. Laxman V Rathod, Timbadiya P.V., and **Bandita Barman**. Impact of Flexible Emergent Vegetation on Open Channel Velocity Distribution in a Compound Channel, 28th International Conference on Hydraulics, Water Resources,Environmental and Coastal Engineering , NIT Warangal during 21-23 December, 2023.
9. Yatirajulu Gurugubelli, Timbadiya P.V., and **Bandita Barman**. Turbulent Flow Characteristics of Asymmetric Sinuous Bend, 28th International Conference on Hydraulics, Water Resources,Environmental and Coastal Engineering, NIT Warangal during 21-23 December, 2023.
10. Laxman Rathod, Gurugubelli Yatirajulu, P. V. Timbadiya and, **Bandita Barman**. Performance of Acoustic Doppler Vectrino Profiler in Measurement of Velocity Profile in Mobile Bed Channel, 23rd congress of the international association for hydro environmental engineering and research – Asia pacific division, IIT Madras 2022.
11. Gurugubelli Yatirajulu, P. V. Timbadiya and, **Bandita Barman**. Longitudinal and Lateral Velocity in a Sinuous Channel Bend, International Seminar on Sustainable Technologies for River Erosion Alleviation and Management (STREAM – 2022)
12. Gurugubelli Yatirajulu, P. V. Timbadiya and, **Bandita Barman**. Review on Morphology and Turbulence Characteristics in Meandering Rivers, EGU General Assembly 2022.
13. Laxman Rathod, P. V. Timbadiya and, **Bandita Barman**. Flow Resistance Due to Rigid and Flexible Vegetation: A Review, EGU General Assembly 2022.
14. Laxman V Rathod, **Bandita Barman**, Bimlesh Kumar. Estimation of Bed Material Load using Artificial Intelligence Techniques, EGU General Assembly 2021. (Online)
15. Koradia Ashishkumar K, **Bandita Barman**. MacCormack Finite-Difference Scheme for Simulation of Flood Hydrograph, International Conference (Online) on Water and Environment (ICWE- 2021) March 22-23, 2021 (Best paper award)
16. Jyotiprakash Tarei, **Bandita Barman.** Performance of Mac-Cormack finite difference scheme with TVD and Artificial Viscosity, Water Resources and Coastal Engineering (HYDRO), NIT Rourkela, 2020. (Online)

SPONSORED RESEARCH PROJECTS

1. Coordinator: Dr. Anshumali

PIs

Dr Bandita Barman /Dr Kironmala Chanda/ Dr Tinesh Pathania /Dr Sanjit Kumar Pal/Dr. Renu V

Sponsoring Agency: Indian Institute of Technology (ISM) Dhanbad

IIT(ISM)/2021-2022/826/INSTITUTE, **Rs. 21,00,000/-**

Delineation of the Administrative Boundary of the Banki River, Garhwa District, Jharkhand: An Implication in Restoration and Conservation of the Ganga River Basin

2. PI

Dr Bandita Barman

Sponsoring Agency: Indian Institute of Technology (ISM) Dhanbad, FRS(174)/2022-2023/CE, **Rs.15,00000/-**

Turbulent characteristics of flow over heterogeneous submerged vegetation patches.

CONSULTANCY PROJECT	Sedimentation Study of Siang and Dibang Rivers of Arunachal Pradesh (External consultant)

TEACHING RESPONSIBILITIES	<u>Theory</u>	
	Hydrogeology and Well Hydraulics (UG/PG) CFD in Civil Engineering (PG) River Engineering (PG) Fluid Mechanics and Machines (UG) Engineering Graphics (UG)	IIT (ISM) Dhanbad
	Fluid Mechanics (UG) Hydraulic Engineering(UG) Energy and Environmental Engineering(UG)	SVNIT Surat
	Hydrology and Water Resources Engineering (UG) Solid Mechanics (UG)	NIT Meghalaya

TEACHING RESPONSIBILITIES	<u>Practical</u>	
	Advance Testing Laboratory (PG) Engineering Graphics(UG) Water Resources Engineering(UG)	IIT (ISM) Dhanbad
	Hydraulic Engineering (UG) Hydraulic and Hydraulic Machine (UG) Water Resources Engineering-II (UG) Hydraulic Engineering Laboratory (PG)	SVNIT Surat

PHD STUDENTS GUIDED (Ongoing)

1. Saundarya Narayan Kashyap (Sole)
2. Ravi Kumar Mishra (Co-guide: Dr. Tinesh Pathania, IIT (ISM) Dhanbad)
3. Rozy Kumari (Sole)
4. Amit Sharma (Sole)
5. Ritesh Ranjan (Co-Guide)
6. Gurugubelli Yatirajjulu, External Guide (SVNIT Surat)
7. Laxman V Rathod, External Guide (SVNIT Surat)

MTECH STUDENTS GUIDED (Ongoing/Completed)

1. Rajdeep (2025-2026) IIT (ISM) Dhanbad
2. Sanoj Bharti (2025-2026)
3. Ankit Kumar (2024-2025)

Dissertation title: Hydrodynamic modeling of flow characteristics in a sediment pit using k-ω & LES models.

4. Arjun D C (2024-2025)

Dissertation title: Simulation of debris flow and its impact on hydraulic structure in mountainous regions.

5. Rakesh Kumar (2023-2024)

Dissertation Title: experimental study on turbulent parameters in narrow channel with gravel bed

6. Ashish Kumar (2022-2023)

Dissertation Title: Experimental study on watershed responses under heterogeneous vegetation patterns.

SVNIT Surat

7. Koradia Ashishkumar K (2020-2021)

Dissertation Title: Numerical modelling of 2-D shallow water flow with finite difference scheme.

8. Saundarya Narayan Kashyap (2020-2021)

Dissertation Title: Flow prediction in vegetative channel using machine learning techniques.

9. Kranthi Teja Potnuri (2020-2021)

Dissertation Title: Hydrodynamic Parameters in an Alluvial Channel.

10. Laxman V Rathod(2019-2020)

Dissertation Title: Estimation of bed material load using artificial intelligence techniques

11. Jyotiprakash Tarei(2019-2020)

Dissertation Title: Performance of MacCormack finite difference scheme with TVD and artificial viscosity

MTECH PROFESSIONAL PROJECT GUIDED

Sayed Farhan Ali, Palai Manoj Kumar, Hridhya A (SVNIT Surat)
Project Title: Study of width and braiding index of the Brahmaputra river in Assam

ADMINISTRATIVE RESPONSIBILITIES

FIC, Water Resource Engineering Lab IIT (ISM) Dhanbad
Member, DUGC
Member, Department documentation cell
Member, TEQIP

SVNIT Surat

Departmental Training and Placement Coordinator (Feb 2020-July 2021)
Warden of Mother Teresa Bhavan, SVNIT Surat (March 2021-July 2021)
Co-chairperson of CES (Civil Engineering Student Chapter), SVNIT Surat (September 2020-July 2021)

OTHERS

- Organized three days workshop on Technological Advances in Hydrodynamic Modelling & Measurement: Application in Flood & Stream Flow Studies, 3rd to 5th April, 2025 (Organizing secretary)
- Co-chaired a breakout session on 'Hydro-geomorphology of river deltas: stressors, impact and solution' in the first UNCCRD Delta summit at Asian Institute of Technology, Bangkok.
- Acted as Co-organizing secretary Hydro 2021
- Conducted One-week short term training program on 'Design of Storm Water Drainage Systems as per CPHEEO-2019'at Civil Engineering Department, Sardar Vallabhbhai National Institute of Technology – Surat
- Reviewed technical articles for Physics of Fluid, Natural Hazards, Progress in Computational Fluid Dynamics, an International Journal; ISH Journal of Hydraulic Engineering