

Faculty biodata

1. Name: Dr. Usha Kumari

2. Designation: Assistant Professor

3. Department: Chemical Engineering

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6. Office Address: Chemical Engineering Department, BIT Sindri,
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7. Qualification:

<i>Degree</i>	<i>Institute /University/Board</i>
Ph.D. (Chemical Engineering)	IIT Kharagpur
M. Tech (Chemical Engineering)	IIT Roorkee
B. Tech (Chemical Engineering)	BIT Sindri
Intermediate	JAC, Ranchi
Matriculation	JAC, Ranchi

8. Area of Specialization: Pollution control, Separation and purification process, Material surface engineering, Industrial and domestic wastewater treatment, Alginated and composite adsorbent, Particle engineering, Waste to energy, Microbial fuel cell, Fixed and semi-fluidized bed reactor, Membrane fabrication, Biomass pyrolysis, Optimization, Adsorption, Remediation of *Echerchia Coli* polluted water, microplastics.

Characterization skills: SEM/EDX analysis, FTIR analysis, XRD analysis, XRF analysis, NMR analysis, TEM analysis, Raman Spectroscopy, TGA/DTG analysis, Ion chromatography (IC), Zetasizer analyser, Particle size analysis, XPS analysis, ICP-MS, etc.

Software skill: OriginPro, Life cycle assessment (LCA), Design of Experiments (DOE), Matlab, Edraw, MS word, Power point, Excel, etc.

9. Teaching Experience:

<i>Position held</i>	<i>Name of Organization</i>	<i>From</i>	<i>To</i>
Assistant Professor	BIT Sindri	Jan 2022	Present
Teaching assistant	IIT Kharagpur	July 2017	July 2021
Teaching assistant	IIT Roorkee	July 2015	July 2016

10. Publication:

(Scopus ID: 57201087203)

Google Scholar profile: <https://scholar.google.com/citations?user=Ej1MGQAAAAJ&hl=en>

Total Google Scholar Citations: 500; h-index -12; i10-index-12

Research papers

- [1] U. Kumari, S.K. Behera, B. C. Meikap, A novel acid modified alumina adsorbent with enhanced defluoridation property: Kinetics, isotherm study and applicability on industrial wastewater, *Journal of Hazardous Material*, 365 (2019) 868-882. (Elsevier; Impact Factor: 14.224; Q1)
doi: <https://doi.org/10.1016/j.jhazmat.2018.11.064>
- [2] U. Kumari, A. Mishra, H. Siddiqi, B.C. Meikap, Effective defluoridation of industrial wastewater by using acid modified alumina in fixed-bed adsorption column: Experimental and breakthrough curves analysis, *Journal of Cleaner Production*, 279 (2021) 123645. (Elsevier; Impact Factor: 11.072; Q1)
doi: <https://doi.org/10.1016/j.jclepro.2020.123645>
- [3] U. Kumari, S.K. Behera, H. Siddiqi, B.C. Meikap, Facile method to synthesize efficient adsorbent from alumina by nitric acid activation: Batch scale defluoridation, kinetics, isotherm studies and implementation on industrial wastewater treatment, *Journal of Hazardous Material*, 381 (2020) 120917. (Elsevier; Impact Factor: 14.224; Q1)
doi: <https://doi.org/10.1016/j.jhazmat.2019.120917>
- [4] U. Kumari, H. Siddiqi, M. Bal, B.C. Meikap, Calcium and zirconium modified acid activated alumina for adsorptive removal of fluoride: performance evaluation, kinetics, isotherm, characterization and industrial wastewater testing, *Advanced Powder Technology*, 31 (5) (2020) 2045-2060. (Elsevier; Impact Factor: 4.969; Q1)
doi: <https://doi.org/10.1016/j.apt.2020.02.035>
- [5] U. Kumari, S. Biswas, B.C. Meikap, Defluoridation characteristics of modified ferroalloy electric arc furnace slag: Batch, column, isotherm, kinetic study and treatment of industrial wastewater, *Environment Technology and Innovation*, 18 (2020) 100782. (Elsevier; Impact Factor: 7.758; Q1)
doi: <https://doi.org/10.1016/j.eti.2020.100782>
- [6] U. Kumari, S.K. Behera, B.C. Meikap, Defluoridation of synthetic and industrial wastewater by using acidic activated alumina adsorbent: characterization and optimization by response surface methodology, *Journal of Env. Science Health, Part A*, 54(1) (2019) 79-88. (Taylor & Francis; Impact Factor: 2.582; Q2)
doi: <https://doi.org/10.1080/10934529.2018.1521674>
- [7] S. Biswas, S.S. Mohapatra, U. Kumari, B.C. Meikap, T.K. Sen, Batch and continuous closed circuit semi-fluidized bed operation: Removal of MB dye using sugarcane Bagasse Biochar Alginate Composite adsorbents, *Journal of Environmental Chemical Engineering*, 8(1) (2020) 103637. (Elsevier; Impact Factor: 7.968; Q1)
doi: <https://doi.org/10.1016/j.jece.2019.103637>

- [8] S.D. Behera, U. Kumari, R. Shankar, P. Mondal, Performance analysis of a double-chambered microbial fuel cell employing a low-cost sulfonated polystyrene proton exchange membrane, *Ionics*, 24 (11) (2018). (Springer; Impact Factor: 2.961; Q2).
doi: <https://doi.org/10.1007/s11581-018-2480-z>
- [9] H. Siddiqi, U. Kumari, S. Biswas, A. Mishra, B.C. Meikap, A synergetic study of reaction kinetics and heat transfer with multi-component modelling approach for the pyrolysis of biomass waste, *Energy*, 204 (2020) 117933. (Elsevier; Impact Factor: 8.857; Q1).
doi: <https://doi.org/10.1016/j.energy.2020.117933>
- [10] A. Mishra, U. Kumari, V.K. Turlapati, H. Siddiqi, B.C. Meikap, Extensive thermogravimetric and thermo-kinetic study of waste motor oil based on iso-conversional methods, *Energy Conversion and Management*, 221 (2020) 113194. (Elsevier; Impact factor: 11.533; Q1).
doi: <https://doi.org/10.1016/j.enconman.2020.113194>
- [11] H. Siddiqi, M. Bal, U. Kumari, B.C. Meikap, In-depth physiochemical characterization of detailed thermo-kinetic study of biomass wastes to analyze its energy potential, *Renewable Energy*, 148 (2020) 756-771. (Elsevier; Impact Factor: 8.634; Q1).
doi: <https://doi.org/10.1016/j.renene.2019.10.162>
- [12] S.K. Behera, U. Kumari, B.C. Meikap, A review of chemical leaching of coal by acid and alkali solution, *Journal of Mining and Metallurgy A: Mining*, 54(1) (2018) 1-24. (Impact Factor: 1.035; Q2)
doi: <https://dx.doi.org/10.5937/JMMA1801001B>
- [13] P. Maiti, H. Siddiqi, U. Kumari, A. Chatterjee, B.C. Meikap, Adsorptive remediation of azo dye contaminated wastewater by ZnCl₂ modified bio-adsorbent: batch study and lifecycle assessment, 2022, *Powder technology* 415 (2023) 118153 (Elsevier, Impact factor- 5.64, Q1)
doi: <https://doi.org/10.1016/j.powtec.2022.118153>
- [14] H. Siddiqi, S. Biswas, U. Kumari, H. Bindu VNV, S. Mukharjee, B.C. Meikap, A comprehensive insight into devolatilization thermo-kinetics for an agricultural residue: Towards a cleaner and sustainable energy, *Journal of Cleaner Production*, 310 (2021), 127365. (Elsevier; Impact Factor: 11.072; Q1)
doi: <https://doi.org/10.1016/j.jclepro.2021.127365>
- [15] A. Mishra, H. Siddiqi, U. Kumari, S. Mukherjee, B.C. Meikap, A comprehensive review of the pyrolysis of waste lubricating oil to generate high grade fuel oil, *Renewable & Sustainable Energy Reviews*, 150 (2021) 111446. (Elsevier; Impact Factor: 16.799; Q1).
doi: <https://doi.org/10.1016/j.rser.2021.111446>
- [16] M. Bal, I.D. Behera, U. Kumari, S. Biswas, B.C. Meikap, Hydrodynamic study and particulate matter removal in a self-priming venturing scrubber, *Environmental Technology & Innovation*, 20 (2020) 101167. (Elsevier; Impact Factor: 7.758; Q1)
doi: <https://doi.org/10.1016/j.eti.2020.101167>
- [17] H. Siddiqi, A. Mishra, U. Kumari, P. Maiti, B.C. Meikap, Utilizing agricultural residue for the cleaner bio-fuel production and simultaneous air pollution mitigation due to stubble

burning: A net energy balance and total emission assessment, *ACS Sustainable Chemistry & Engineering*, 9 (2021) 47. (ACS, Impact Factor: 9.224; Q1)

doi: <https://doi.org/10.1021/acssuschemeng.1c06202>

- [18] J. Mahabeer, U. Kumari, D. Lokhat, M. Carsky, B.C. Meikap, Implementation of microplastics derived from waste plastic for uptake of MB dye: Performance and LCA study, 2022, *Desalination*, 546 (2023) 116214 (Elsevier, Impact factor- 11.21, Q1)
doi: <https://doi.org/10.1016/j.desal.2022.116214>

Book Chapter

- [1] U. Kumari, R. Shankar, P. Mondal, Chapter - 8: Electrodes for Microbial Fuel Cells, Book: Progress and Recent Trends in Microbial Fuel Cells (2018) (Publisher: Elsevier).
doi: <https://doi.org/10.1016/B978-0-444-64017-8.00008-7>
- [2] U. Kumari, K. Swamy, A. Gupta, R.R. Karri, B.C. Meikap, Chapter - 8: Global water challenge and future perspective, Book: Green Technologies for the Defluoridation of Water (2021) (Publisher: Elsevier).
doi: <https://doi.org/10.1016/B978-0-323-85768-0.00002-6>

11. International Conference Attended

- [1] U. Kumari, B.C. Meikap, Acid modified alumina: a simple, cheap and efficient solution to batch or continuous defluoridation, International Conference on Strategies toward Green Deal Implementation – Water and Raw Materials, Cracow, Poland, 2020.
- [2] U. Kumari, B.C. Meikap, Fluoride removal by acid activated alumina at International Conference of Clean and Green Energy, Paris, France, 2018.
- [3] U. Kumari, B.C. Meikap, Removal of fluoride from industrial wastewater by binary acid and heat-treated alumina at 5th International Symposium on Green Chemistry, Sustainable Development and Circular Economy, Skiathos island, Greece, 2018.
- [4] U. Kumari, P. Mondal, Energy Production and Treatment of Wastewater through Microbial Fuel Cell, International conference on Innovations in Sustainable Water and Wastewater Treatment Systems, Pune, India, 2016.

12. Award/Recognition Bestowed on Faculty (State/National/International)

1. Winner (first runner-up) of innovative research based competition titled *Rural Drinking Water Hackathon, 2019*, organized by IIT Kharagpur, and MHRD, India, in association with University of Edinburg, United Kingdom. Certificate and cash prize awarded by deputy director (Dr. S.K. Bhattacharya) of IIT Kharagpur.
2. Selected as *Best Researcher* by the website www.sciencefather.com for one of the research paper published in Elsevier.
3. Awarded for securing *School Top Rank* in matriculation.

13. Fellowship and academic achievement

1. MHRD fellowship for Doctor of Philosophy (PhD).
2. MHRD fellowship for Master of Technology (M. Tech).
3. Qualified the Graduate Aptitude Test in Engineering (GATE) with AIR- 824.
4. Qualified Jharkhand Combined Entrance Competitive Examination (JCECE) with state rank (Gen) - 468.