Rakesh Kumar, Ph.D.

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Research Interests

Groundwater pollution, Wastewater treatment, Microplastic pollution, Emerging contaminants, Nutrient management, Adsorption, converting bioresources into biomaterials (e.g., engineered biochar), Nature-based solutions for contaminant remediation, Sustainability and resilience of water and solid waste and agricultural residue management, statistical and stochastic modeling, data-driven methodologies, and risk analysis, Environmental law and policy, Environmental science and modeling

Academic and Professional Qualifications

Ph.D., 2023	School of Ecology and Environment Studies, Nalanda University, Rajgir, India
M.Sc., 2019	School of Ecology and Environment Studies, Nalanda University, Rajgir, India
B.Tech., 2017	College of Agricultural Engineering, Dr. Rajendra Prasad Central Agricultural University, Pusa, India

Professional Experience

December 2023 - Present	Postdoctoral Fellow, Department of Biosystems Engineering, Auburn University, Auburn, AL, USA
June - November 2023	Visiting Research Scholar, Department of Biosystems Engineering, Auburn University, Auburn, AL, USA

Scholarly Activities and Professional Recognitions

2024 onwards	Young Water Professional, Diffuse Pollution & Eutrophication, IWA
2023	Certificate of Excellence, Total Environment Research Themes Journal, Elsevier
2020-2023	Nalanda Fellowship/Stipend, Nalanda University
2021	Best Oral Presentation Award by GBPUA&T, Pant Nagar, India
2021	GATE in Environmental Science and Engineering, MHRD, GoI
2020	Travel Grant, Fall Meeting, American Geophysical Union, USA
2019	UGC-NET in Environmental Sciences
May-July 2018	Focus Area Science Technology Summer Fellowship (FAST-SF), Indian Academy of Science, Bangalore, India
2017-19	Means-cum-Merit Scholarship, Nalanda University
2013-17	Monthly Stipend & Book Grant by Government of Bihar during Undergraduate program

Research Internship/Industrial Experience

August - October 2018	Intern, Unnat Bharat Abhiyan, Ministry of Human Resource Development, Government of India at Nalanda University, Rajgir, India
May - July 2018	Summer Research Internship, Indian Academy of Science, Bangalore, India
February - June 2017	VST Tillers Tractors Ltd., Bangalore, India

Editorial Experiences & Professional Services

- **Editorial Board Member**, Discover Water, Springer (2024-present)
- **Editorial Board Member**, Discover Environment, Springer (2024-present)
- **Associate Editor,** Frontiers in Environmental Health (2024-present)
- **Review Editor** of **Frontiers in Environmental Science** and **Bioprocess Engineering**
- **Early Career Editorial Board**, Science of the Total Environment (2024-present)
- **Newsletter Assistant**, *The Hydrogeologist* Newsletter of the Geological Society of America, United States of America
- **International Water Association Reviewer** for IWA World Water Congress & Exhibition, August 2024
- **Managing Guest Editor** for virtual special issue entitled "*Groundwater Pollution and Sustainable Development Goals: A Crucial Resource for Achieving Sustainable Environment"* in **Groundwater for Sustainable Development**
- **Managing Guest Editor** for virtual special issue entitled "*Fate and transport of co-contaminants in soil and water environments: Risk, resilience, and remediation"* in **Journal of Hazardous Materials Advances**
- **Reviewer** of leading journals: ACS Applied Bio Materials, Industrial & Engineering Chemistry Research, Environmental Science & Technology Letters, Chemical Engineering Journal; Journal of Hazardous Materials; Science of the Total Environment; Environmental Pollution; Environmental Research; Chemosphere; Journal of Water Processing Engineering; and others

Training and skills in experimental and modelling techniques

- ***Fieldwork skills:*** Microplastic sampling, groundwater sampling and remediation, pumping test, soil core sampling, poultry and biochar application in agricultural soil cores for nutrient leaching and management
- ***Experimental and Analytical Skills:*** UV-vis spectrophotometer, Zeta Potential & Zetasizer, nanoparticle tracking, centrifuge, microscope, thermogravimetric, scanning electron microscopy, x-ray diffraction, Fourier-transform infrared spectroscopy, energy-dispersive X-ray spectroscopy, Brunauer–Emmett–Teller, AQ2 discrete analyzer, ICP-OES
- ***Computer Modeling Skills****:* OriginPro, ImageJ, CXTFIT, HYDRUS-1D, STANMOD, Python (basic), MODFLOW (basic)

Patent

A novel modified biochar-mediated sand column (2024) Application No.202431009004 A, Official Journal of The Patent Office, Government of India

Professional Membership

2020 - present	National Ground Water Association, USA
2020 - present	Japan Geoscience Union, Japan
2019 - present	American Geophysical Union, USA
2023 - present	Geological Society of America, USA
2023 - present	American Chemical Society, USA
2024 - present	International Water Association, London, UK

Peer-Reviewed Research Publications

1. **Kumar, R***, Lamba, J*, Adhikari, S, Kasera, N, Torbert HA (2025) Influence of iron-modified biochar on phosphate transport and deposition in saturated porous media under varying pH, ionic strength, and biochar dosage. *Chemosphere*, 143932. https://doi.org/10.1016/j.chemosphere.2024.143932 **(*Corresponding author)**
2. Padha, S, **Kumar, R***, Sharma, Y, Dhar, A* (2025) Unravelling land-based discharge of microplastics in River Basantar of Jammu & Kashmir, India: Understanding sinking behaviours and risk assessments. *Journal of Contaminant Hydrology*, 104490 https://doi.org/10.1016/j.jconhyd.2024.104490 **(*Corresponding author)**
3. Sangkham, S, Pitakpong, A, **Kumar, R** (2025) Advanced approaches to microplastic removal in landfill leachate: Advanced oxidation processes (AOPs), biodegradation, and membrane filtration. *Case Studies in Chemical and Environmental Engineering*, 101056. https://doi.org/10.1016/j.cscee.2024.101056
4. Sinha, RK, **Kumar, R***, Pharytal, SS*, Sharma, P (2024) Interventions of citizen science for mitigation and management of plastic pollution: Understanding sustainable development goals, policies, and regulations. *Science of The Total Environment*, 176621. https://doi.org/10.1016/j.scitotenv.2024.176621 **(*Corresponding author)**
5. L. Gallitelli, P. Girard, U. Andriolo, C. Roebroek, M. Liro, G. Suaria, C. Martin, A.L. Lusher, K. Hancke, Blettler MCM, O. Garcia-Garin, I.E. Napper, L. Corbari, A. Cózar, C. Morales-Caselles, D. González-Fernández, J. Gasperi, T. Giarrizzo, G. Cesarini, K. De, M. Constant, P. Koutalakis, G. Gonçalves, P. Sharma, S. Gundogdu, **R. Kumar**, N.A. Garello, A.L.G. Camargo, K. Topouzelis, F. Galgani, S.J. Royer, G.N. Zaimes, F. Rotta, S. Lavender, V. Nava, J. Castro-Jiménez, T. Mani, R. Crosti, V.M. Azevedo-Santos, F. Bessa, R. Tramoy, M.F. Costa, C. Corbau, A. Montanari, C. Battisti, M. Scalici (2024) Monitoring macroplastics in aquatic and terrestrial ecosystems: Expert survey reveals visual and drone-based census as most effective techniques, *Science of The Total Environment*, 176528. https://doi.org/10.1016/j.scitotenv.2024.176528.
6. Bhushan, D, Shoran, S, **Kumar, R***, Gupta, R* (2024) Plant biomass-based nanoparticles for remediation of contaminants from water ecosystems: Recent trends, challenges, and future perspectives. *Chemosphere*, 143340. https://doi.org/10.1016/j.chemosphere.2024.143340 **(*Corresponding author)**
7. Singh, G, Thakur, N*, **Kumar, R*** (2024) Nanoparticles in drinking water: Assessing health risks and regulatory challenges. *Science of The Total Environment*, 174940. https://doi.org/10.1016/j.scitotenv.2024.174940 **(*Corresponding author)**
8. Sudarsan, JS[#], Dogra, K[#], **Kumar, R[#]**, Raval, NP[#], Leifels, M, Mukherjee, S, Trivedi, MH, Jain, MS, Zhang, J, Barceló, D, Mahlknecht, J (2024) Tricks and tracks of prevalence, occurrences, treatment technologies, and challenges of mixtures of emerging contaminants in the environment: With special emphasis on microplastic. *Journal of Contaminant Hydrology*, 104389. https://doi.org/10.1016/j.jconhyd.2024.104389 **(#equally contributed as first author)**
9. **Kumar, R***, Kundu, D, Kormoker, T, Joshi, S, Rose, PK, Kumar, S, Sahoo, PK, Sharma, P, Lamba, J (2024) Phycoremediation of potentially toxic elements for agricultural and industrial wastewater treatment: Recent advances, challenges, and future prospects. *Desalination and Water Treatment*, 100505. https://doi.org/10.1016/j.dwt.2024.100505 **(*Corresponding author)**
10. Islam, MA, **Kumar, R**, Sharma, P, Zhang, S, Bhattacharya, P, Tiwari, A (2024) Wastewater-Based Surveillance of Mpox (Monkeypox): An Early Surveillance Tool for Detecting Hotspots. *Current Pollution Reports*, 1-14. https://doi.org/10.1007/s40726-024-00299-6
11. Kumar, D[#], **Kumar, R[#]**, Sharma, M, Awasthi, A, Kumar, M (2024) Global Water Quality Indices: Development, Implications, and Limitations. *Total Environment Advances*, 200095. https://doi.org/10.1016/j.teadva.2023.200095 **(#equally contributed as first author)**

12. Mishra R, Chavda P, **Kumar R**, Pandit R, Joshi M, Kumar M, Joshi C (2024) Exploring genetic landscape of low-density polyethylene degradation for sustainable troubleshooting of plastic pollution at landfills. *Science of The Total Environment*, 168882. https://doi.org/10.1016/j.scitotenv.2023.168882
13. Yogi, K, Rabari, V, Patel, K, Patel, H, Trivedi, J, Rakib, MRJ, **Kumar, R,** Proshad, R, Walker, T (2024) Gujarat's plastic plight: unveiling characterization, abundance, and pollution index of beachside plastic pollution. *Discover Oceans* 1, 8. https://doi.org/10.1007/s44289-024-00008-7
14. Rakib, MRJ, Sarker, A, Nezha, M, Islam, ARMT, **Kumar, R,** Sharma, P, Idris, AM (2024) Spatiotemporal distribution, trophic transfer, and research uncertainty of heavy metals in a subtropical highly polluted river: A critical review. *Regional Studies in Marine Science*, 103327. https://doi.org/10.1016/j.rsma.2023.103327
15. Rakib, MRJ, Miah, S, Hossain, MB, **Kumar, R**, Jolly, YN, Akter, S, Islam, MS, Idris, AM (2024) Delineation of Trace Metal Level in Fish Feed and Farmed Fish, Tilapia (Oreochromis mossumbicus) and Their Consequences on Human Health. *Regional Studies in Marine Science*, 103403. https://doi.org/10.1016/j.rsma.2024.103403
16. **Kumar, R***, Sharma, P, Sharma, PK, Rose, PK, Singh, RK, Kumar, N, Sahoo, PK, Maity, JP, Ghosh, A, Kumar, M, Bhattacharya, P, Pandey, A (2023) Rice husk Biochar - a novel engineered bio-based material for transforming groundwater-mediated fluoride cycling in natural environments. *Journal of Environmental Management*, 118222. https://doi.org/10.1016/j.jenvman.2023.118222 **(*Corresponding author)**
17. **Kumar, R***, Sharma, P, Rose, PK, Sahoo, PK, Bhattacharya, P, Pandey, A, Kumar, M (2023) Co-transport and deposition of fluoride using rice husk-derived biochar in saturated porous media: Effect of solution chemistry and surface properties. *Environmental Technology and Innovation*. 30, 103056. https://doi.org/10.1016/j.eti.2023.103056 **(*Corresponding author)**
18. Mishra, S[#], **Kumar, R[#]**, Kumar, M (2023) Use of Treated Sewage or wastewater as an Irrigation Water for Agricultural Purposes-Environmental, Health, and Economic Impacts. *Total Environment Research Themes*, 6, 100051. https://doi.org/10.1016/j.totert.2023.100051 **(#equally contributed as first author)**
19. Verma, A, Sharma, A, **Kumar, R**, Sharma, P (2023) Nitrate contamination in groundwater and associated health risk assessment for Indo-Gangetic Plain, India. *Groundwater for Sustainable Development*, 23, 100978. https://doi.org/10.1016/j.gsd.2023.100978
20. Ali, S, Shekhar, S, **Kumar, R**, Brindha, K, Li, P (2023) Genesis and Mobilization of Fluoride in Groundwater of India: Statistical Evaluation, Health Impacts, and Potential Remedies. *Journal of Hazardous Materials Advances*, 11, 100352. https://doi.org/10.1016/j.hazadv.2023.100352
21. Jolly, YN, Rakib, MRJ, **Kumar, R**, Sultana, S, Rahman, SMM, Kabir, J, Akter, S, Mamun, KM, Fatema, KJ, Mehnaz, M, Paul, P (2023) Evaluation of surface water quality near pollution sources in Buriganga River and deciphering their probable emergence, ecological, and health risk aspects. *Regional Studies in Marine Science*, 63 102988. https://doi.org/10.1016/j.rsma.2023.102988
22. Sharma, PK, Singh, RK, **Kumar, R**, Kumar, N, Ghosh, A, Sharma, P, Kumar, A, Bhattacharya, P, Kar, M (2023) Adsorptive behavior of Fe/Zn-modified nanobiochar for arsenic removal from naturally contaminated groundwater. *Groundwater for Sustainable Development*, 23, 101011. https://doi.org/10.1016/j.gsd.2023.101011
23. Jolly, YN, Rakib, MRJ, **Kumar, R***, Islam, ARMT, Rabby, A, Mamun, KM, Akter, S, Kabir, J, Bhuiyan, TJ, Chowdhury, AM, Idris, AM (2023) Deciphering the source of heavy metals in industrially affected river sediment of Shitalakshya river, Bangladesh, and potential ecological and health implications. *Journal of Hazardous Materials Advances*, 10, 100268. https://doi.org/10.1016/j.hazadv.2023.100268 **(*Corresponding author)**

24. Nathani, NM, Mootapally, C, Sharma, P, Solomon, S, **Kumar, R**, Fulke, AB, Kumar, M (2023) Microbial machinery dealing diverse aromatic compounds: Decoded from pelagic sediment ecogenomics in the gulfs of Kathiawar Peninsula and Arabian Sea. *Environmental Research*, 115603. https://doi.org/10.1016/j.envres.2023.115603
25. Rose, PK, Kumar, R, **Kumar, R***, Kumar, M, Sharma, P (2023) Congo red dye adsorption onto cationic amino-modified walnut shell: Characterization, RSM optimization, isotherms, kinetics, and mechanism studies. *Groundwater for Sustainable Development,* 100931. https://doi.org/10.1016/j.gsd.2023.100931 **(*Corresponding author)**
26. Kumar, M, Shekhar, S, **Kumar, R**, Kumar, P, Govarthanan, G, Chaminda, T (2023) Drinking water treatment and associated toxic byproducts: concurrence and urgence. *Environmental Pollution*. 320, 121009. https://doi.org/10.1016/j.envpol.2023.121009
27. Sachdeva, S, **Kumar, R**, Sahoo, PK, Nadda, AK (2023) Recent advances in biochar amendments for immobilization of heavy metals in an agricultural ecosystem: A systematic review. *Environmental Pollution*, 319, 120937. https://doi.org/10.1016/j.envpol.2022.120937
28. Tripathi, S[#], **Kumar, R**[#], Mondal, P[#], Thakur, AK, Singh, S, Kaur, G, Sharma, M, Kumar, M (2023) Urban fingerprinting on the River Ganges: A perspective of Emerging Contaminants Status. *Total Environment Research Themes*, 100028. https://doi.org/10.1016/j.totert.2023.100028 **(#equally contributed as first author)**
29. **Kumar, R**, Verma, A, Rakib, MRJ, Gupta, PK, Sharma, P, Garg, A, Girard, P, Tejraj MA (2023) Adsorptive behavior of micro(nano)plastics through biochar: Co-existence, consequences, and challenges in contaminated ecosystems. *Science of the Total Environment*, 159097. https://doi.org/10.1016/j.scitotenv.2022.159097.
30. Rose, PK, Poonia, V, **Kumar, R***, Kataria, N, Sharma, P, Lamba, J, Bhattacharya, P (2023) Congo red dye removal using modified banana leaves: Adsorption equilibrium, kinetics, and reusability analysis. *Groundwater for Sustainable Development.* 23*,* 101005. https://doi.org/10.1016/j.gsd.2023.101005 **(*Corresponding author)**
31. Al Nahian, S, Rakib, MRJ, **Kumar, R**, Haider, SMB, Sharma, P, Abubakr, MI (2023) Distribution, characteristics, and risk assessments analysis of microplastics in shore sediments and surface water of Moheshkhali channel of Bay of Bengal, Bangladesh. *Science of the Total Environment.* 855, 158892. https://doi.org/10.1016/j.scitotenv.2022.158892
32. Kormoker, T, Islam, MS, Siddique, MAB, Kumar, S, Phoungthong, K, Kabir, MH, Iqubal, KF, **Kumar, R**, Ali, MM, Islam, ARMT (2023) Layer-wise physicochemical and elemental distribution in an urban river water, Bangladesh: potential pollution, sources and human health risk assessment. *Environmental Science: Advances*. https://doi.org/10.1039/d3vA00094j
33. Thakur, A, **Kumar, R**, and Sahoo, PK (2022) Uranium and Fluoride Removal from Aqueous Solution Using Biochar: A Critical Review for Understanding the Role of Feedstock Types, Mechanisms, and Modification Methods. *Water*, 14(24), 4063. https://doi.org/10.3390/w14244063
34. Al Nahian, S, Rakib, MRJ, Haider, SMB, **Kumar, R**, Walker, TR, Khandaker, MU, Idris, AM (2022) Baseline marine litter abundance and distribution on Saint Martin Island, Bay of Bengal, Bangladesh. *Marine Pollution Bulletin*. 183, 114091. https://doi.org/10.1016/j.marpolbul.2022.114091
35. **Kumar, R**, Sharma, P, Yang, W, Sillanpää, M, Shang, J, Bhattacharya, P, Vithanage, M, Maity, JP (2022) State-of-the-art research progress on adsorptive removal of fluoride-contaminated water environments using biochar-based materials: Practical feasibility through reusability and column transport studies. *Environmental Research*, 214(4), 114043. https://doi.org/10.1016/j.envres.2022.114043
36. Rakib, MRJ, Rahman, MA, Onyena, AP, **Kumar, R**, Sarker, A, Hossain, MB, Islam, ARMT, Islam, MS, Rahman, MM, Jolly, YN, Idris, AM, Ali, MM, Bilal, M, Sun, X (2022) A comprehensive review of heavy metal pollution in the coastal areas of Bangladesh:

abundance, bioaccumulation, health implications, and challenges. *Environmental Science and Pollution Research*. https://doi.org/10.1007/s11356-022-22122-9

37. Sinha, R[#], **Kumar, R[#]**, Abhishek, K, Shang, J, Bhattacharya, S, Sengupta, S, Kumar, N, Singh, RK, Mallick, J, Kar, M, Sharma, P (2022) Single-step synthesis of activated magnetic biochar derived from rice husk for hexavalent chromium adsorption: Equilibrium mechanism, kinetics, and thermodynamics analysis. *Groundwater for Sustainable Development*, 18, 100796. https://doi.org/10.1016/j.gsd.2022.100796 **(#equally contributed as first author)**
38. **Kumar, R**, Sinha, R, Rakib, MRJ, Padha, S, Ivy, N, Bhattacharya, S, Dhar, A, Sharma, P (2022) Microplastics Pollution Load in Sundarban Delta of Bay of Bengal, *Journal of Hazardous Materials Advances*, 100099. https://doi.org/10.1016/j.hazadv.2022.100099
39. Sinha, R[#], **Kumar, R[#]**, Sharma, P, Kant, N, Shang, J, Aminabhavi, TM (2022) Removal of hexavalent chromium via biochar-based adsorbents: State-of-the-art, challenges, and future perspectives, *Journal of Environmental Management*, 317, 115356. https://doi.org/10.1016/j.jenvman.2022.115356 **(#equally contributed as first author)**
40. Wani, I, Kushvaha, V, Garg, A, **Kumar, R**, Naik, S, Sharma, P (2022) Review on effect of biochar on soil strength: Towards exploring usage of biochar in geo-engineering infrastructure, *Biomass Conversion and Biorefinery*, https://doi.org/10.1007/s13399-022-02795-5
41. Rakib, MRJ, Hossain, MB, **Kumar, R**, Ullah, MA, Nahian, SA, Rima, NN, Choudhury, TR, Liba, SI, Yu, J, Khandaker, MU, Sulieman, A, Sayed MM (2022 Spatial distribution and risk assessments due to the microplastics pollution in sediments of Karnaphuli River Estuary, Bangladesh, *Scientific Reports,* 12, 8581. https://doi.org/10.1038/s41598-022-12296-0
42. Al Nahiana, S, Rakib, M R J, Haider, S M B, **Kumar, R**, Mohsen, M, Sharma, P, Khandaker, M U (2022) Occurrence, spatial distribution, and risk assessment of microplastics in surface water and sediments of Saint Martin Island in the Bay of Bengal, *Marine Pollution Bulletin,* 179, 113720. https://doi.org/10.1016/j.marpolbul.2022.113720
43. **Kumar, R[#],** Ivy, N[#], Bhattacharya, S, Dey, A, Sharma, P (2022) Coupled effects of microplastics and heavy metals on plants: uptake, bioaccumulation, and environmental health perspectives, *Science of the Total Environment*, 836, 155619. https://doi.org/10.1016/j.scitotenv.2022.155619 **(#equally contributed as first author)**
44. Acharya, B S, Ahmmed B, Chen Y, Jason, H D, Haygood L, Robert, T H, **Kumar, R***, Lerback, J, Liu, H, Mehan, S, Mehana*, M, Sopan, D P, Bhaleka, D P, Pamela, L S, URycki, D (2022) Hydrological Perspectives on Integrated, Coordinated, Open, Networked (ICON) Science, *Earth and Space Science.* https://doi.org/10.1029/2022EA002320 (***Corresponding author**)
45. **Kumar, R**, Manna, C, Padha, S, Verma, A, Sharma, P, Dhar, A, Ghosh, A, Bhattacharya, P (2022) Micro(nano)plastics pollution and human health: How plastics can induce carcinogenesis to humans? *Chemosphere*, 298, 134267. https://doi.org/10.1016/j.chemosphere.2022.134267
46. Kumar, R, Singh, S, **Kumar, R***, Sharma, P (2022) Groundwater Quality Characterization for Safe Drinking in Sheikhpura District of Bihar, India: A Geospatial Approach, *Frontiers in Water*. https://doi.org/10.3389/frwa.2022.848018 (***Corresponding author**)
47. Sharma, P K[#], **Kumar, R[#]**, Singh, R K, Sharma, P, Ghosh, A (2022) Review on arsenic removal using biochar-based materials, *Groundwater for Sustainable Development*, 17, 100740. https://doi.org/10.1016/j.gsd.2022.100740 **(#equally contributed as first author)**
48. Padha, S, **Kumar, R**, Dhar, A, Sharma, P (2022) Microplastics pollution in mountain terrains and foothills: A review on source, extraction, and distribution of microplastics in remote areas. *Environmental Research*, 207, 112232. https://doi.org/10.1016/j.envres.2021.112232
49. **Kumar, R**, Sinha, R, Sharma, PK, Ivy, N, Kumar, P, Kant, N, Jha, A, Jha, PK, Gupta, PK, Sharma, P, Singh, RK, Singh, RP, Ghosh, A, Vara Prasad, PV (2021) Bioaccumulation of Fluoride in Plants and Its Microbially Assisted Remediation: A Review of Biological

Processes and Technological Performance. *Processes*, 9, 2154. https://doi.org/10.3390/pr9122154

50. **Kumar, R,** Sharma, P, Verma, A, Jha, PK, Singh, P, Gupta, PK, Chandra, R, Vara Prasad, PV (2021) Effect of physical characteristics and hydrodynamic conditions on transport and deposition of microplastics in riverine ecosystem. *Water*, 13(19), 2710. https://doi.org/10.3390/w13192710
51. **Kumar, R,** Verma, A, Shome, A, Sinha, R, Sinha, S, Jha, PK, Kumar, R, Kumar, P, Shubham, Das, S, Sharma, P, Vara Prasad, PV (2021) Impacts of plastic pollution on ecosystem services, sustainable development goals and need to focus on circular economy and policy interventions. *Sustainability*, 13(17), 9963. https://doi.org/10.3390/su13179963
52. **Kumar, R,** Bhattacharya, S, Sharma, P (2021) Novel insights into adsorption of heavy metal ions using magnetic graphene composites. *Journal of Environmental Chemical Engineering*, 9(5):106212. https://doi.org/10.1016/j.jece.2021.106212
53. **Kumar, R**, Sharma, P, Manna, C, Jain, M (2021) Abundance, interaction, ingestion, ecological concerns, and mitigation policies of microplastic pollution in riverine ecosystem: A review. *Science of the Total Environment*, 782:146695. https://doi.org/10.1016/j.scitotenv.2021.146695
54. **Kumar, R**, Sharma, P, Bandyopadhyay, S (2021) Evidence of Microplastics in Wetlands: Extraction and Quantification in Freshwater and Coastal Ecosystems. *Journal of Water Process Engineering*, 40:101966. https://doi.org/10.1016/j.jwpe.2021.101966
55. **Kumar, R**, Sharma, P (2021) Microplastics Pollution Pathways to the Groundwater in India. *Current Science*, 120(2):249.
56. **Kumar, R**, Sharma, P, Aman, AK, Singh, RK (2020) Equilibrium Sorption of Fluoride on the Activated Alumina in Aqueous Solution, *Desalination and Water Treatment*, 197:224-236. https://doi.org/10.5004/dwt.2020.26002

Book Chapters

1. **Kumar, R**, Ali, S, Sandun Sandanayake, S, Islam, MA, Ijumulana, J, Maity, JP, Vithanage, M, Armienta, MA, Sharma, P, Hamisi, R, Kimambo, V, Bhattacharya, P (2024) Fluoride as a Global Groundwater Contaminant. In: R. Naidu (Ed.) Inorganic Contaminants and Radionuclides. Elsevier, Netherlands. https://doi.org/10.1016/B978-0-323-90400-1.00010-0
2. Zang, J, Kumar, M, **Kumar, R** (2024). Urban Maintenance and Robustness. In: Yao, R. (eds) Resilient Urban Environments. Cities and Nature. Springer, Cham. https://doi.org/10.1007/978-3-031-55482-7_17
3. Rose, PK, Kataria, N, Khoo, KS, Narwal, N, Dhull, SB, **Kumar, R**, Rani, S, Kumar, P (2024) Pristine and Modified Biochar for Pharmaceuticals Removal from Aquatic Systems. In: V. K. Garg, A. Pandey, N. Kataria, C. Faggio (Eds.) Pharmaceuticals in Aquatic Environments. CRC Press, Boca Raton. http://doi.org/10.1201/9781003436607-8
4. Singh, R, **Kumar, R**, Sharma, P (2022) Micro-plastic in the subsurface: Extraction and characterization from sediments of River Ganga near Patna, Bihar. In: Gupta, PK, Yadav, B, Himanshu, S (eds.) Advance in Remediation Techniques for Polluted Soils and Groundwater, Elsevier. https://doi.org/10.1016/B978-0-12-823830-1.00013-4
5. **Kumar, R**, Nanda, AHG, Sharma, P (2021) Environmentally Sound Technologies for Sustainability and Climate Change. In: Leal Filho, W, Azul, AM, Brandli, L, Lange Salvia, A, Wall, T (eds.) Partnerships for the Goals, Encyclopedia of the UN Sustainable Development Goals, Springer Nature, Switzerland AG. https://doi.org/10.1007/978-3-319-71067-9_27-1
6. **Kumar, R**, Sharma, P (2021) Recent Developments in Extraction, Identification and Quantification of Microplastics from Agricultural Soil and Groundwater. In: Gupta, PK, Bharagava, RN (eds.) Fate and Transport of Subsurface Pollutants, Springer Nature, Singapore, pp 125-143. https://doi.org/10.1007/978-981-15-6564-9_7

Conference Presentations/Workshops

1. **Kumar, R,** Lamba, J, Adhikari, S, Torbert HA (2024) Co-transport and deposition of biochar and arsenic through saturated porous media, Geological Society of America, GSA Annual Meeting, Anaheim, California (USA).
2. **Kumar, R,** Lamba, J, Adhikari, S, Torbert HA (2024) Impact of biochar on phosphate transport and deposition under varying pH, ionic strength, and biochar dosage, IWA 21st International Conference on Diffuse Pollution and Eutrophication, Navigating Diffuse Pollution: Pathways to Carbon Neutrality, International Water Association DIPCON, Chiang Mai, Thailand.
3. **Kumar, R** (2023) Co-transport and deposition of fluoride using rice husk-derived biochar in saturated porous media under influence of solution chemistry and surface properties, American Geophysical Union, AGU Fall Meeting, San Fransisco, California (USA).
4. **Kumar, R** (2023) Adsorptive behaviour of rice husk biochar for transforming groundwater-mediated fluoride cycling in natural environments, Geological Society of America, GSA Annual Meeting, Pittsburgh, Pennsylvania (USA).
5. Sharma, P, Singh, RK, **Kumar, R**, Ghosh, A, Sharma, P, Kumar, A (2023) Synthesis and exploration of physical properties of nanobiochar from rice straw for its applications in arsenic remediation from water, 7th Conference on Industrial and Production Engineering, CPIE 5431.
6. Sharma, P, Singh, RK, **Kumar, R**, Ghosh, A, Sharma, P (2023) Remediation of arsenic from water via raw nanobiochar, International Interdisciplinary Conference on Energy, Nanotechnology & Internet of Things, 86, Puducherry, India.
7. **Kumar, R**, Sharma, P (2022) Removal of fluoride using modified biochar from contaminated water ecosystem, AGU Fall Meeting, San Francisco, CA, B25C-1583.14
8. **Kumar, R**, Sharma, P (2022) Adsorptive removal mechanism for fluoride-contaminated water environments using biochar-based materials: Challenges and recommendations, Colloquium for Young Researchers: Towards developing International Collaborations, DKU Center for Natural Resources and Sustainability, Deutsch-Kasachische Universitat, Almaty, Kazakhstan.
9. Sinha, R, **Kumar, R**, Sharma, P (2022) Single-step synthesis of activated magnetic biochar derived from rice husk for hexavalent chromium adsorption, Colloquium for Young Researchers: Towards developing International Collaborations, DKU Center for Natural Resources and Sustainability, Deutsch-Kasachische Universitat, Almaty, Kazakhstan.
10. Singh, R, **Kumar, R,** Sharma, P (2021) Evidence of urbanization on microplastic pollution in the sub-surface ecosystem of River Ganga near Patna, Bihar (India), American Geophysical Union Fall Meeting, San Francisco, CA.
11. **Kumar, R** (2021) Fate and Transport of Microplastics in the Groundwater System, Threats and challenges to sustainability of natural resources: contemporary remedial tools and techniques, GBPUA&T, Pantnagar, Uttrakhand, India
12. **Kumar, R**, Sharma, P (2020) Removal of fluoride using activated alumina: adsorption isotherms, kinetics and thermodynamics analysis. Fall Meeting, AGU Fall Meeting, San Francisco, CA, H089-0003.
13. **Kumar, R**, Sharma, P, Singh, RK (2019) Equilibrium sorption of fluoride on the activated alumina in aqueous solution. Fall Meeting, AGU Fall Meeting, San Francisco, CA, GH23B-1237.

News/Media Attention/Scientific Blogs

- No impact on drinking water supply because of high fluoride https://timesofindia.indiatimes.com/city/delhi/no-impact-on-drinking-water-supply-because-of-high-fluoride-levels-djb/articleshow/109604903.cms

- Groundwater toxins: NGT seeks answers https://timesofindia.indiatimes.com/city/delhi/groundwater-toxins-ngt-sets-six-week-deadline-for-cgwa-and-states/articleshow/107897404.cms
- Application of Biochar in Agricultural Systems, Alabama Cooperative Extension System https://www.aces.edu/blog/topics/crop-production/application-of-biochar-in-agricultural-systems/
- Making meals without microplastics: Tips for safer cutting boards. https://www.ewg.org/news-insights/news/2023/10/making-meals-without-microplastics-tips-safer-cutting-boards
- Biochar: The Miracle Material For a Sustainable World. https://earth.org/biochar/
- Solution for crop burning? Rice husk biochar found to efficiently remove groundwater fluoride. https://www.downtoearth.org.in/blog/science-and-technology/solution-for-crop-burning-rice-husk-biochar-found-to-efficiently-remove-groundwater-fluoride-91268
- The macro issues of microplastics. https://www.ewg.org/news-insights/news/2023/08/macro-issues-microplastics
- Science-based solutions should dominate upcoming plastic pact convention. https://www.downtoearth.org.in/blog/pollution/science-based-solutions-should-dominate-upcoming-plastic-pact-convention-89500
- Rice husk biochar removes fluoride from groundwater, prevents drinking water contamination, new study shows. https://www.downtoearth.org.in/blog/water/rice-husk-biochar-removes-fluoride-from-groundwater-prevents-drinking-water-contamination-new-study-shows-88119
- Plastic pollution in Nigeria is poorly studied but enough is known to urge action. https://theconversation.com/plastic-pollution-in-nigeria-is-poorly-studied-but-enough-is-known-to-urge-action-184591
- How to manage risks in entire water supply chain: Manual by WHO, IWA has tips for suppliers. https://www.downtoearth.org.in/blog/world/how-to-manage-risks-in-entire-water-supply-chain-manual-by-who-iwa-has-tips-for-suppliers-88484
- Bay of Bengal: https://en.wikipedia.org/?curid=47892 (Citation: Microplastics pollution load in Sundarban delta of Bay of Bengal)
- Study likely to help in treatment of fluoride-contaminated water. https://timesofindia.indiatimes.com/city/patna/study-likely-to-help-in-treatment-of-fluoride-contaminated-water/articleshow/78339485.cms