

PRABHAKAR SHARMA

**Professor, Department of Agricultural Engineering & Technology
School of Engineering, Nagaland University, Dimapur, Nagaland, India**



Education

2004—2007: Ph.D. in Land & Water Engineering at Biological Systems Engineering, Washington State University, Pullman, USA.

2002—2004: M.S. in Water Resources Engineering and Management at Stuttgart University, Stuttgart, Germany.

2000—2002: M.Tech. in Aquacultural Engineering at Department of Agricultural & Food Engineering, Indian Institute of Technology, Kharagpur, India.

1995—2000: B.Tech. in Agricultural Engineering at Rajendra Agricultural University, Pusa, Bihar, India.

Professional Experience

From Oct 2023: Professor, Department of Agricultural Engineering & Technology, School of Engineering, Nagaland University, Dimapur, Nagaland, India.

Jun 2024-Jun 2024: Visiting Scientist: College of Land Science and Technology, China Agricultural University, Beijing, China.

Oct 2014-Mar 2023: School of Ecology and Environment Studies, Nalanda University, Rajgir, Nalanda, Bihar, India.

Dec 2018-Dec 2018: Visiting Scientist: Dept. Soil and Environmental Resources, China Agricultural University, Beijing, China.

Feb 2018-Feb 2018: Visiting Scientist: Disaster Prevention Research Institute, Kyoto University, Japan.

Nov 2017-Dec 2017: Visiting Scientist: Dept. Soil and Environmental Resources, China Agricultural University, Beijing, China.

Jun 2017-Jul 2017: Visiting Scientist: Dept. Crop and Soil Sciences, Washington State University Research Center, Puyallup, WA, USA.

Jun 2015-Jul 2015: Visiting Scientist: Environmental Sciences Group, Royal Military College, Kingston, Ontario, Canada.

Feb 2011-Sep 2014: Assistant Professor at Department of Earth Sciences, Uppsala University, Uppsala, Sweden.

Feb 2010-Jan 2011: Postdoctoral Research at Civil and Environmental Engineering, The University of Western Ontario, London, Ontario, Canada.

Feb 2008-Jan 2010: Postdoctoral Research at Section of Environmental Engineering, Aalborg University, Ålborg, Denmark.

Research Interests

- Colloid and colloid-facilitated contaminant transport.
- Transport and retention of emerging pollutants in soil and water.
- Transport and leakage of CO₂ gas through the heterogeneous subsurface system.
- Flowing fluid electric conductivity logging of a deep borehole.
- Long-term impact on groundwater quantity and quality after surface water recharge.

Awards and Honors

- 2022: Best paper award by *Journal of Irrigation & Drainage Engineering*, American Society of Civil Engineers for “An integrated site selection criterion for aquifer storage and recovery”
- 2018: Editor’s Citation for Excellence in Review Award for *Vadose Zone Journal* for excellent service as a reviewer.
- 2016: Certificate of Excellence in Reviewing, in recognition of the excellent quality of peer review, contributed to *Chemosphere* journal.

Professional Services

- *Editorial Board Member*: Materials Science & Energy Technologies, Biochar, Carbon Research, Frontiers in Environmental Science (guest editor); Frontiers in Water: Environmental Water Quality, Groundwater for Sustainable Development (guest editor).
- *Reviewer of several leading journals*: Environmental Science & Technology, Journal of Physical Chemistry, Water Research, Journal of Hazardous Materials, Environmental Pollution, Environmental Research, Journal of Hydrology, Water Resources Research, Science of the Total Environment, Biochar, etc.

Publications (See also at: <http://orcid.org/0000-0003-0894-0809> or <https://scholar.google.co.in/citations?hl=en&tzom=-330&user=ICoSrI8AAAAJ>)

1. Kokon, L.; Imyanglula; Lairenjam, C.; **Sharma, P.**; Zimik, W. 2024. Spatio-temporal analysis of land use changes and their impact on temperature and vegetation in Dimapur district. *Afr. J. Bio. Sci.* 6(14):249-274.
2. **Sharma, P.**; Abhilasha; Abhishek, K.; Bhattacharya, S.; Shubhalakshmi Sengupta, S.; Seth, C.S. 2024. Removal of lead in water by potassium hydroxide-activated biochar developed from *Syzygium cumini* stem. *Discover Chemical Engineering* 4:17.
3. **Sharma, P.** 2024. Microplastic contamination in food processing: Role of packaging materials. *Food Science Engineering* 5(2):271-287.
4. Kumar, R.; Kundu, D.; Kormokar, T.; Joshi, S.; Rose, P.K.; Kumar, S.; Sahoo, P.K.; **Sharma, P.**; Lamba, J. 2024. A review on phytoremediation of heavy metals for agricultural and industrial wastewater treatment. *Desalin. Water Treat.* 319: 100505.
5. Islam, M.A.; 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* 10: 312–325.
6. **Sharma, P.**; Vidyarthi, V.K. 2024. Impact of microplastic intake via poultry products: Environmental toxicity and human health. *J. Hazard. Mater. Adv.* 14: 100426.
7. **Sharma, P.** 2024. Biochar application for sustainable soil erosion control: A review of current research and future perspectives. *Front. Environ. Sci.* 12: 1373287.
8. **Sharma, P.**; Sharma, P.; Abhishek, K. 2024. Sampling, separation, and characterization methodology for quantification of microplastic from the environment. *J. Hazard. Mater. Adv.* 14: 100416.
9. Kundu, D.; **Sharma, P.**; Bhattacharya, S.; Gupta, K.; Sengupta, S.; Shang, J. 2024. Kinetics of Methylene Blue dye removal using biochar derived from leaf and stem of *Lantana camara* L. *Carbon Res.* 3:22.

10. **Sharma, P.**; Sharma, P. 2024. Micro(nano)plastics: Invisible compounds with a visible impact. *F1000Research* 13:69.
11. Rakib, M.R.J.; Sarker, A.; Nezha, M.; Islam, A.R.M.T.; Kumar, R.; **Sharma, P.**; Idris, A.M. 2024. Spatiotemporal distribution, trophic transfer, and research uncertainty of heavy metals in a subtropical highly polluted river: A critical review. *Reg. Stud. Mar. Sci.* 69: 103327.
12. Sharma, P.K.; Singh, R.K.; Kumar, R.; Kumar, N.; 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. *Materials Today: Proceedings* (In press)
13. **Sharma, P.** 2023. Biochar colloids mobilization by consecutive fluid displacement in unsaturated condition. *Groundw. Sustain. Dev.* 23: 101030.
14. Elkhilifi, Z.; Lahori, A.H.; Shahib, I.I.; Iftikhar, J.; Wang, S.; He, L.; Meili, L.; Gendy, E.A.; **Sharma, P.**; Chen, Z. 2023. Comparative assessment of phosphate adsorption properties and mechanisms on Mg/Al-engineered sewage sludge biochar in aqueous solution. *J. Water Process Eng.* 56: 104443.
15. Sharma, P.K.; Singh, R.K.; Kumar, R.; Kumar, N.; Ghosh, A.; **Sharma, P.**; Kumar, A.; Bhattacharya, P. 2023. Adsorptive behavior of Fe/Zn-modified nanobiochar for arsenic removal from naturally contaminated groundwater. *Groundw. Sustain. Dev.* 23: 101011.
16. Rose, P.K.; 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. *Groundw. Sustain. Dev.* 23: 101005.
17. Ivy, N.; Bhattacharya, S.; Dey, S.; Gupta, K.; Dey, A.; **Sharma, P.** 2023. Microplastic and arsenic in soil-plant environment: Individual, synergistic, and/or antagonistic effects. *Chemosphere* 338: 139542.
18. Sangkham, S.; Islam, M.A.; Adhikari, S.; Kumar, R.; **Sharma, P.**; Sakunkoo, P.; Tiwari, A. 2023. Evidence of microplastic contamination in groundwater and human health risk assessment perspectives: A review. *Groundw. Sustain. Dev.* 23: 100981.
19. Verma, A.; Sharma, A.; Kumar, R.; **Sharma, P.** 2023. Nitrate contamination in groundwater and associated health risk assessment for Indo-Gangetic Plain, India. *Groundw. Sustain. Dev.* 23: 100978.
20. Kumar, R.; **Sharma, P.**; Sharma, P.; Kumar, N.; Rose, P.K.; Singh, R.K.; Sahoo, P.K.; Maity, J.P.; Kumar, M.; Bhattacharya, P.; Pandey, A. 2023. Adsorptive behaviour and techno-economic analysis of modified rice husk-derived biochar for fluoride removal: isotherms, kinetics, and thermodynamics analysis. *J. Environ. Manage.* 343: 118222.
21. Abhishek, K.; Parashar, N.; Patel, M.; Hait, S.; Srivastava, A.; Ghosh, P.; **Sharma, P.**; Pandey, A.; Kumar, M. 2023. Recent advancements in antimony (Sb) removal from water and wastewater by carbon-based materials: A systematic review. *Environ. Monit. Assess.* 195: 758.
22. Jolly, Y.J.; Rakib, M.R.J.; Kumar, R.; Sultana, S.; Rahman, S.M.M.; Kabir, J.; Akter, S.; Mamun, K.M.; Fatema, K.J.; Mehnaz, M.; Paul, P.; Bhat, E.A.; Paray, B.A.; **Sharma, P.**; Bhattacharya, P. 2023. Evaluation of surface water quality near pollution sources in Buriganga River and deciphering their probable emergence, ecological, and health risk aspects. *Reg. Stud. Mar. Sci.* 63: 102988.
23. Islam, M.A.; Hassan, M.N.; Tiwari, A.; Raju, M.A.W.; Jannat, F.; Sangkham, S.; Shammam, M.I.; **Sharma, P.**; Bhattacharya, P.; Kumar, M. 2023. An analysis of 23-years Dengue & meteorological correlation: persistent public health concern in Bangladesh. *Int. J. Environ. Res. Public Health* 20(6): 5152.

24. Rose, P.K.; 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. *Groundw. Sustain. Dev.* 21: 100931.
25. Kumar, R.; **Sharma, P.**; Rose, P.K.; Sahoo, P.K.; 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. *Environ. Technol. Innov.* 30: 103056.
26. Bhattacharya, S.; Abhishek, K.; Samiksha, S.; **Sharma, P.** 2023. Source, occurrence, transport, detection and disinfection of SARS-CoV-2 in wastewater streams. *J. Hazard. Mater. Adv.* 9: 100221.
27. Kumar, M.; Sridharan, S.; Sawarkar, A.D.; Shakeel, A.; Anerao, P.; Mannina, G.; **Sharma, P.**; Pandey, A. 2023. Current research trends on emerging contaminants pharmaceutical and personal care products (PPCPs): A comprehensive review. *Sci. Total Environ.* 859: 160031.
28. Kumar, R.; Verma, A.; Rakib, M.R.J.; Gupta, P.K.; **Sharma, P.**; Garg, A.; Girard, P. Aminabhavi, T.M. 2023. Adsorptive behavior of micro(nano)plastics through biochar: Co-existence, consequences, and challenges in contaminated ecosystems. *Sci. Total Environ.* 856: 159097.
29. Al Nahian, S.; Rakib, M.R.J.; Kumar, R.; Haider, S.M.B.; **Sharma, P.** 2023. Distribution, characteristics, and risk assessments analysis of microplastics in sediments and surface water of Moheshkhali river channel, Bangladesh of Bay of Bengal. *Sci. Total Environ.* 855: 158892.
30. Ivy, N.; Mukherjee, T.; Bhattacharya, S.; Ghosh, A.; **Sharma, P.** 2023. Arsenic contamination in groundwater and subsequent transmission through food chain in Bangladesh: Public health perspectives and mitigation. *Environ. Geochem. Health* 45: 1261-1287.
31. Rakib, M.R.J.; Hossain, M.B.; Islam, M.S.; Hossain, I.; Rahman, M.M.; Kumar, R.; **Sharma, P.** 2022. Ecohydrological features and biodiversity status of estuaries in Bengal Delta, Bangladesh: A comprehensive review. *Front. Environ. Sci.* 10: 990099.
32. Sharma, A.; Maharana, P.; Sahoo, S.; **Sharma, P.** 2022. Environmental change and groundwater variability in South Bihar, India. *Groundw. Sustain. Dev.* 19: 100846.
33. Abhishek, K.; Shrivastava, A.; Vimal, V.; Gupta, A.K.; Bhujbal, S.K.; Biswas, J.K.; Singh, L.; Pandey, A.; **Sharma, P.**; Kumar, M. 2022. Biochar application for greenhouse gas mitigation, contaminants immobilization and soil fertility enhancement: A state-of-the-art review. *Sci. Total Environ.* 853: 158562.
34. Kumar, R.; **Sharma, P.**; Yang, W.; Shang, J.; Sillanpää, M.; Bhattacharya, P.; Vithanage, M.; Maity, J.P. 2022. State-of-the-art of progress on treatment of fluoride contaminated water: practical feasibility through transport studies and reusability of biochar-based materials. *Environ. Res.* 214(4):114043.
35. Yan, C.; Li, Y.; Chen, Q.; **Sharma, P.**; Li, B.; Shang, J. 2022. The influence of dissolved organic matter, kaolinite, and iron oxides on aggregation and transport of biochar colloids in aqueous and soil environments. *Chemosphere* 306: 135555.
36. Yan, C.; **Sharma, P.**; Chen, Q.; Li, B.; Shang, J. 2022. Coupled impact of proteins with different molecular weights and surface charges on TiO₂ mobility. *Environ. Sci. Nano* 9: 2773-2787.

37. Kumar, R.; Sinha, R.; Rakib, M.R.J.; Padha, S.; Bhattacharya, S.; Dhar, A.; **Sharma, P.** 2022. Microplastics pollution load in Sundarban delta of Bay of Bengal. *J. Hazard. Mater. Adv.* 7: 100099.
38. Sinha, R.; Kumar, R.; Abhishek, K.; Shang, J.; Bhattacharya, S.; Sengupta, S.; Kumar, N.; Singh, R.K.; 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. *Groundw. Sustain. Dev.* 18: 100796.
39. Sinha, R.; Kumar, R.; **Sharma, P.**; Kant, N.; Shang, J.; Aminabhavi, T.M. 2022. Removal of hexavalent chromium via biochar-based adsorbents: state of art, challenges and future perspectives. *J. Environ. Manage.* 317: 115356.
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 geoenvironmental infrastructure. *Biomass Convers. Biorefin.* doi: 10.1007/s13399-022-02795-5.
41. Al Nahian, 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. *Mar. Pollut. Bull.* 179: 113720.
42. 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. *Sci. Total Environ.* 836: 155619.
43. Shankar, U.; Das, S.B.; Kumar, V.; Kumar, N.; Kumar, R.; Singh, R.K.; **Sharma, P.** 2022. Studies on the structural, magnetic, and band gap engineering of novel Ag⁺ modified MgFe₂O₄ nanomaterials prepared by low-cost sol-gel method for multifunctional application. *J. Supercond. Nov. Magn.* 35: 1937-1960.
44. 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.
45. Kumar, R.; Singh, S.; Kumar, R.; **Sharma, P.** 2022. Groundwater quality characterization for safe drinking and irrigation water supply in Sheikhpura district of Bihar, India: A Geospatial Approach. *Front. Water: Environ. Water Quality* 4: 848018.
46. **Sharma, P.**; Verma, A.; Sharma, A.; Verma, P.; Bandyopadhyay, S. 2022. An integrated site selection criterion for aquifer storage and recovery. *J. Irrig. Drainage Eng.* 148(5): 04022009.
47. Sharma, P.K.; Kumar, R.; Singh, R.K.; **Sharma, P.**; Ghosh, A. 2022. Review on arsenic removal using biochar-based materials. *Groundw. Sustain. Dev.* 17: 100740.
48. Padha, S.; Kumar, R.; Dhar, A.; **Sharma, P.** 2022. Microplastics pollution in high altitude ecosystems: A review on source, extraction and distribution of microplastics in remote areas. *Environ. Res.* 207: 112232.
49. Zhao, K.; Tufail, S.; Arai, Y.; **Sharma, P.**; Zhang, Q.; Chen, Y.; Wang, X.; Shang, J. 2022. Effect of phytic acid and morphology on Fe (oxyhydr)oxide transport under saturated flow condition. *J. Hazard. Mater.* 424: 127659.
50. Verma, A.; **Sharma, P.** 2022. Aquifer storage and recovery feasibility study with flowing fluid electrical conductivity logging in unconfined shallow aquifers of South Bihar, India. *Front. Water: Water Resour. Manage.* 3: 802095.
51. Kumar, R.; Sinha, R.; Sharma, P.K.; Ivy, N.; Kumar, P.; Kant, N.; Jha, A.; Jha, P.K.; Gupta, P.K.; **Sharma, P.**; Singh, R.K.; Singh, R.P.; Ghosh, A.; Vara Prasad, P.V. 2021.

- Bioaccumulation of fluoride in plants and its microbially-assisted remediation: A review of biological processes and technological performance. *Processes* 9(12): 2154.
52. Kumar, R.; **Sharma, P.**; Verma, A.; Jha, P.K.; Singh, P.; Gupta, P.K.; Chandra, R.; Vara Prasad, P.V. 2021. Effect of physical characteristics and hydrodynamic conditions on transport and deposition of microplastics in riverine ecosystem. *Water* 13(19): 2710.
 53. Kumar, R.; Verma, A.; Shome, A.; Sinha, R.; Sinha, S.; Jha, P.K.; Kumar, R.; Kumar, P.; Trivedi, S.; Das, S.; **Sharma, P.**; Prasad, P.V.V. 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.
 54. Kumar, R.; Bhattacharya, S.; **Sharma, P.** 2021. Novel insights into adsorption of heavy metal ions using magnetic graphene composites. *J. Environ. Chem. Eng.* 9: 106212.
 55. 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. *Sci. Total Environ.* 782: 146695.
 56. Bandyopadhyay, S.; Sharma, A.; Sahoo, S.; Dhavala, K.K.; **Sharma, P.** 2021. Potential for aquifer storage and recovery (ASR) in South Bihar, India. *Sustainability* 13: 3502.
 57. Bhattacharya, S.; **Sharma, P.**; Mitra, S.; Mallick, I.; Ghosh, A. 2021. Arsenic uptake and bioaccumulation in plants: a review on remediation and socio-economic perspective in Southeast Asia. *Environ. Nanotech. Monitor. Manage.* 15: 100430.
 58. Kumar, R.; **Sharma, P.**; Bandyopadhyay, S. 2021. Evidence of microplastics in wetlands: extraction and quantification in freshwater and coastal ecosystems. *J. Water Process Eng.* 40: 101966.
 59. Kumar, R.; **Sharma, P.** 2021. Microplastics pollution pathways to groundwater in India. *Current Sci.* 120: 249.
 60. Mao, M.; Zheng, X.; Chen, C.; Zhao, K.; Yan, C.; **Sharma, P.**; Shang, J. 2020. Coupled effect of flow velocity and structural heterogeneity on transport and release of kaolinite colloids in saturated porous media. *Environ. Sci. Pollut. Res.* 27: 35065-35077.
 61. Kumar, R.; **Sharma, P.**; Aman, A.K.; Singh, R.K. 2020. Equilibrium sorption of fluoride on the activated alumina in aqueous solution. *Desalin. Water Treat.* 197: 224-236.
 62. Kumar, G.; **Sharma, P.**; Stobdan, T.; Angmo, P. 2019. Assessment of biomass, carbon stock and rhizospheric properties of Seabuckthorn shrub (*Hippophae rhamnoides* L.) in Spituk village of Leh district, Ladakh. *Annals of Arid Zone* 58: 91-98.
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 66. Chen, C.; Shang, J.; Zheng, X.; Zhao, K.; Yan, C.; **Sharma, P.**; Liu, K. 2018. Effect of physicochemical factors on transport and retention of graphene oxide in saturated media. *Environ. Pollut.* 236: 168-176.
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72. **Sharma, P.**; Tsang, C.F.; Kukkonen, I.T.; Niemi, A. 2016. Analysis of six-year fluid electric conductivity logs to evaluate the hydraulic structure of the deep drill hole at Outokumpu, Finland. *Int. J. Earth Sci.* 105: 1549-1562.
73. **Sharma, P.** 2015. Nanomaterials from food packaging and commercial products into ecological and soil environment. *Current Sci.* 109: 1223-1224.
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80. Goel, G.; **Sharma, P.**; Singh, R.; Setia, B. 2013. Optimal use of surface drains for enhancing ground water recharge. *Journal of Indian Water Resources Society* 33: 43-52.
81. Basirat, F.; Niemi, A.; Perroud, H.; Lofi, L.; Denchik, N.; Lods, G.; Pezard, P.; **Sharma, P.**; Fagerlund, F. 2013. Modeling gas transport in the shallow subsurface in the Maguelone field experiment. *Energy Procedia* 40: 337-345.
82. Poulsen T.G.; **Sharma, P.** 2011. Apparent porous media gas dispersion in response to rapid pressure fluctuations. *Soil Sci.* 176: 635-641.
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Book chapters

1. Bhattacharya, S.; **Sharma, P.** 2024. Cinchona plantation in the Eastern Himalayas and its potential in treatment of COVID-19 and related viral infections, *in* People and the Mountain Environments: The Interconnectedness for Sustainable Development in the Himalayas, edited by A. Borthakur, P. Singh Springer Nature, pp.
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