Dr. Ashish Kapoor

Professor,
Department of Chemical Engineering,
Harcourt Butler Technical University, Kanpur, Uttar Pradesh 208002, India

Email: ashishk@hbtu.ac.in; ashishkapoorchem@gmail.com
Google Scholar: https://scholar.google.com/citations?user=XyttLrsAAAAJ&hl=en
Orcid: https://orcid.org/0000-0002-4686-394X
Web of Science ResearcherID: ABE-8197-2021

EDUCATION

PhD in Chemical and Biomolecular Engineering
University of Illinois at Urbana-Champaign (UIUC), USA 2011

- Advisor: Professor Paul J. A. Kenis

B.Tech and M.Tech in Chemical Engineering
Indian Institute of Technology (IIT), Madras, India 2004

- Advisors: Professor Guhan Jayaraman and Professor R. Ravi

RESEARCH INTERESTS

- Microfluidics
- Lab-on-a-chip chemical sensors for water quality monitoring, food safety testing and biomedical applications
- Water treatment
- Membrane technology
- Modeling and simulation

PUBLICATIONS

1. Venkatesh Prabhu Murugesan, Shreyasi Ghosh, Aditi Tulshyan, Abbas Ansar Ahmed, Balasubramanian Sivasamy, Ashish Kapoor, Selvam Karuppasamy, Modeling and multi-objective optimization of parameters in fabrication and performance analysis of polyvinylidene fluoride spiral-wound membrane modules. Polymer Bulletin, 2022. https://doi.org/10.1007/s00289-022-04361-5.

2. Adithya Sridhar, Vijay Vaishampayan, P Senthil Kumar, Muthamilselvi Ponnuchamy, Ashish Kapoor, Extraction techniques in food industry: Insights into process parameters and their optimization, Food and Chemical Toxicology, 2022, 166, 113207. https://doi.org/10.1016/j.fct.2022.113207.

3. Manjula Rajagopal, Muthamilselvi Ponnuchamy, Ashish Kapoor, Water management for irrigation scheduling by computing evapotranspiration using ANFIS modelling, Desalination and Water Treatment. 2022, 251, 123-133. https://doi.org/10.5004/dwt.2022.28290.

4. E. Poonguzhali, Fathima Aadilah Mohamed Ali, Ashish Kapoor, S. Prabhakar, Performance of membrane assisted solvent extraction with homologous solvents for the removal and recovery of phenol. Desalination and Water Treatment. 2022, 251, 64-78. https://doi.org/10.5004/dwt.2022.28117.

5. P Rajasulochana, Yaswanth Ganesan, P Senthil Kumar, S Mahalaxmi, Fahira Tasneem, Muthamilselvi Ponnuchamy, Ashish Kapoor, Paper-based microfluidic colorimetric sensor on a 3D printed support for quantitative detection of nitrite in aquatic environments. Environmental Research. 2022, 208, 112745. https://doi.org/10.1016/j.envres.2022.112745.

6. Venkatesh Prabhu M, Balasubramanian S, Ashish Kapoor, Ketki Joshi, Keya Joshi, Nasrin Shariffa, Studies on the feasibility of bisphenol-A removal and its kinetics using Pseudomonas aeruginosa in both flask and an inverse fluidized bed reactor. Chemical Engineering Communications, 2021. https://doi.org/10.1080/00986445.2021.2012462.

7. Adithya Sridhar, Ashish Kapoor, Ponnusamy Senthil Kumar, Muthamilselvi Ponnuchamy, Balasubramanian Sivasamy, Dai-Viet Nguyen Vo. Lab-on-a-chip technologies for food safety, processing, and packaging applications: a review. Environmental Chemistry Letters, 2022, 20, 901–927. https://doi.org/10.1007/s10311-021-01342-4.

8. E Kavitha, E Poonguzhali, D Nanditha, Ashish Kapoor, G Arthanareeswaran, S Prabhakar, Current status and future prospects of membrane separation processes for value recovery from wastewater. Chemosphere, 2022, Volume 291, Part 2, March 2022, 132690. https://doi.org/10.1016/j.chemosphere.2021.132690.

9. Adithya Sridhar, Muthamilselvi Ponnuchamy, Ponnusamy Senthil Kumar, Ashish Kapoor, Leilei Xiao, Progress in the production of hydrogen energy from food waste: A bibliometric analysis. International Journal of Hydrogen Energy, In press. https://doi.org/10.1016/j.ijhydene.2021.09.258.

10. Adithya Sridhar, Muthamilselvi Ponnuchamy, Ashish Kapoor, Sivaraman Prabhakar. Valorization of food waste as adsorbents for toxic dye removal from contaminated waters: A review. Journal of Hazardous Materials, 2022, Volume 424, Part B, 127432. https://doi.org/10.1016/j.jhazmat.2021.127432.

11. Adithya Sridhar, Deepa Kannan, Ashish Kapoor, Sivaraman Prabhakar, Extraction and detection methods of microplastics in food and marine systems: A critical review. Chemosphere, 2022, 286, Part 1, 131653. https://doi.org/10.1016/j.chemosphere.2021.131653.

12. Amina Othmani, Sara Magdouli, P Senthil Kumar, Ashish Kapoor, Padmanaban Velayudhaperumal Chellam, Ömür Gökkuş. Agricultural waste materials for adsorptive removal of phenols, chromium (VI) and cadmium (II) from wastewater: A review. Environmental Research. 2022, 204, Part A, 111916. https://doi.org/10.1016/j.envres.2021.111916.

13. Pamula Sri Sruthi, Sivasamy Balasubramanian, Ponnusamy Senthil Kumar, Ashish Kapoor, Muthamilselvi Ponnuchamy, Meenu Mariam Jacob, Sivaraman Prabhakar. Eco-friendly pH detecting paper-based analytical device: towards process intensification. Analytica Chimica Acta. 2021, 1182, 338953. https://doi.org/10.1016/j.aca.2021.338953.

14. Adithya Sridhar, Ashish Kapoor, Ponnusamy Senthil Kumar, Muthamilselvi Ponnuchamy, Sivasamy Balasubramanian, Sivaraman Prabhakar, Conversion of food waste to energy: A focus on sustainability and life cycle assessment. Fuel, 2021, 302, 121069. https://doi.org/10.1016/j.fuel.2021.121069.

15. Adithya Sridhar, Muthamilselvi Ponnuchamy, Ponnusamy Senthil Kumar, Ashish Kapoor, Dai-Viet N Vo, Sivaraman Prabhakar. Techniques and modeling of polyphenol extraction from food: a review. Environmental Chemistry Letters, 2021, 19, 3409–3443. https://doi.org/10.1007/s10311-021-01217-8.

16. Muthamilselvi Ponnuchamy, Ashish Kapoor, Ponnusamy Senthil Kumar, Dai-Viet N Vo, Akash Balakrishnan, Meenu Mariam Jacob, Prabhakar Sivaraman. Sustainable adsorbents for the removal of pesticides from water: a review. Environmental Chemistry Letters, 2021, 19, 2425–2463. https://doi.org/10.1007/s10311-021-01183-1.

17. P Rajasulochana, S Fahira Tasneem, Ashish Kapoor, Monit Kumar Chandan. A Glimpse on Possible Detection Tools and Vaccines for Mitigation and Management of COVID-19. Journal of Physics: Conference Series 2021, 1979, 012012. https://doi.org/10.1088/1742-6596/1979/1/012012.

18. Suresh Krishnan, Ashish Kapoor, D Venkatesan, K Sofiya, S Balasubramanian. Process design scheme on the feasibility of 1-decanol as a solvent in liquid-liquid extraction to recover anhydrous citric acid from water. Journal of Physics: Conference Series, 2021, 1979, 012007. https://doi.org/10.1088/1742-6596/1979/1/012007.

19. E Poonguzhali, Ashish Kapoor, P Senthil Kumar, S Prabhakar. Effective separation of toxic phenol from aquatic system using membrane assisted solvent extraction system. Desalination and Water Treatment, 2021, 221, 316-327. https://doi.org/10.5004/dwt.2021.27037.

20. Sivasamy Balasubramanian, Aditya Udayabhanu, Ponnusamy Senthil Kumar, Ponnuchamy Muthamilselvi, Chidhambaram Eswari, Aalekhya Vasantavada, Shreyas Kanetkar, Ashish Kapoor, Digital colorimetric analysis for estimation of iron in water with smartphone-assisted microfluidic paper-based analytical devices. International Journal of Environmental Analytical Chemistry, 2021, 1-8. https://doi.org/10.1080/03067319.2021.1893711.

21. Nanditha Dayanandan, Ashish Kapoor, Prabhakar Sivaraman. Studies on membrane distillation towards mitigating thermal pollution. Chemical Papers, 2021, 75, 2819–2833. https://doi.org/10.1007/s11696-021-01525-x.

22. Adithya Sridhar, Muthamilselvi Ponnuchamy, Ponnusamy Senthil Kumar and Ashish Kapoor, Food preservation techniques and nanotechnology for increased shelf life of fruits, vegetables, beverages and spices: a review, Environmental Chemistry Letters, 2021, 19, 1715–1735. https://doi.org/10.1007/s10311-020-01126-2.

23. Oinam Robita Chanu, Ashish Kapoor, Varshini Karthik, Digital image analysis for microfluidic paper based pH sensor platform, Materials Today: Proceedings, 2021, 40, Supplement 1, S64-S68. https://doi.org/10.1016/j.matpr.2020.03.503.

24. R Muthukumar, Kapoor A, S Balasubramanian, Vijay Vaishampayan, Mihul Gabhane, Detection of adulteration in sunflower oil using paper-based microfluidic lab-on-a-chip devices. Materials Today: Proceedings, 2021, 34, Part 2, 496-501. https://doi.org/10.1016/j.matpr.2020.03.099.

25. Sivasamy Balasubramanian, Suresh Krishnan, Magesh Kumar M, Krishna Srihari B, Arkadyuti Chakraborty, Arunachaleshwar K, Sambath P, Ashish Kapoor, Three dimensional computational studies on steady-state flow field around a microsphere under laminar flow, AIP Conference Proceedings, 2020, 2277(1), 050001. https://doi.org/10.1063/5.0025555.

26. Meenu Mariam Jacob, Muthamilselvi Ponnuchamy, Ashish Kapoor, Prabhakar Sivaraman, Bagasse based biochar for the adsorptive removal of chlorpyrifos from contaminated water, Journal of Environmental Chemical Engineering, 2020, 8(4), 103904. https://doi.org/10.1016/j.jece.2020.103904.

27. Muthamilselvi Ponnuchamy, Ashish Kapoor, Balamurugan Pakkirisamy, Prabhakar Sivaraman and Karthikeyan Ramasamy, Optimization, equilibrium, kinetic and thermodynamic studies on adsorptive remediation of phenol onto natural guava leaf powder. Environmental Science and Pollution Research, 2020, 27, 20576–20597. https://doi.org/10.1007/s11356-019-07145-z.

28. Arun Kumar Govindarajalu, Muthamilselvi Ponnuchamy, Balasubramanian Sivasamy, M Venkatesh Prabhu, Ashish Kapoor, A cellulosic paper-based sensor for detection of starch contamination in milk. Bulletin of Materials Science, 2019, 42(6), 255. https://doi.org/10.1007/s12034-019-1958-2.

29. Rajesh Ghosh, Vijay Vaishampayan, Arpita Mahapatra, Richa Malhotra, Sivasamy Balasubramanian, Ashish Kapoor, Enhancement of limit of detection by inducing coffee-ring effect in water quality monitoring microfluidic paper-based devices, Desalination and Water Treatment, 2019, 156, 316-322. https://doi.org/10.5004/dwt.2019.23715.

30. Sivasamy Balasubramanian, Ashish Kapoor, B Krishna Srihari, Transient simulation of liquid-liquid slug flow in a T-shaped process unit, AIP Conference Proceedings, 2019, 2112 (1), 020143. https://doi.org/10.1063/1.5112328.

31. K Sofiya, E Poonguzhali, Ashish Kapoor, Philip Delfino, S Prabhakar, Separation of carboxylic acids from aqueous solutions using hollow fiber membrane contactors, Journal of Membrane Science and Research, 2019, 5, 233-239. https://dx.doi.org/10.22079/jmsr.2018.88804.1199.

32. Mihul Gabhane and Ashish Kapoor, Simulation of ethanol production process using Aspen plus and optimization based on response surface methodology, Research Journal of Chemistry and Environment, 2019, 23(4), 81-89.

33. P Muthamilselvi, R Karthikeyan, Ashish Kapoor, S Prabhakar, Continuous fixed-bed studies for adsorptive remediation of phenol by garlic peel powder, International Journal of Industrial Chemistry, 2018, 9(4), 379-390. https://doi.org/10.1007/s40090-018-0166-z.

34. Nanditha Dayanandan, Ashish Kapoor, Sofiya Karunanithi, Prabhakar Sivaraman, Studies on the influence of coagulation bath composition on the preparation of PVDF membranes, Desalination and Water Treatment, 2018, 122, 365-372. https://doi.org/10.5004/dwt.2018.23107.

35. Shitanshu Devrani, Rahul Kumar Tiwari, Rajat Sharma, Mathur P Rajesh, Ashish Kapoor, Characterization of the drag reducing nature of long-chain polymer-water solutions through atomization, International Journal of Polymer Analysis and Characterization, 2018, 23(5), 430-434. https://doi.org/10.1080/1023666X.2018.1469069.

36. Arun Kumar G, Ashish Kapoor, S Balasubramanian, E Kavitha, S Parbhakar, Development of paper based lab-on-a-chip device for sensing applications, Journal of Mines, Metals and Fuels, 2018, Special Issue 2018 Part II, 177-182.

37. Kaushal Kothari, B Neeraj, CK Kavya Sravanthi, V Ganesh, Ashish Kapoor, Conversion of non-biodegradable waste to fuel oil by pyrolysis, Journal of Mines, Metals and Fuels, 2018, Special Issue 2018 Part II, 148-152.

38. Ashish Kapoor, Sivasamy Balasubramanian, Vijay Vaishampayan, Rajesh Ghosh, Lab-on-a-chip: a potential tool for enhancing teaching-learning in developing countries using paper microfluidics, International Conference on Transforming Engineering Education (ICTEE), IEEE Xplore, 2017, 1-7. DOI: 10.1109/ICTEED.2017.8586151.

39. Shitanshu Devrani, Rajat Sharma, MP Rajesh, Ashish Kapoor, Exploring viscoelastic characteristics of polymer-water solutions by viscometric analysis, Asian Journal of Chemistry, 2017, 29(9), 1953-1958. https://doi.org/10.14233/ajchem.2017.20646.

40. Matthew B Byrne, Yuki Kimura, Ashish Kapoor, Yuan He, Kewin S Mattam, Katherine M Hasan, Luke N Olson, Fei Wang, Paul JA Kenis, Christopher V Rao, Oscillatory behavior of neutrophils under opposing chemoattractant gradients supports a winner-take-all mechanism, PLoS One, 2014, 9(1), e85726/1-e85726/11. https://doi.org/10.1371/journal.pone.0085726.

41. Yuan He, Dong Li, Sara L Cook, Mee-Sup Yoon, Ashish Kapoor, Christopher V Rao, Paul JA Kenis, Jie Chen, Fei Wang, Mammalian target of rapamycin and Rictor control neutrophil chemotaxis by regulating Rac/Cdc42 activity and the actin cytoskeleton, Molecular Biology of the Cell, 2013, 24 (21), 3369-3380. https://doi.org/10.1091/mbc.e13-07-0405.

42. Ashish Kapoor, Jieqian Zhang, Jerrod A Henderson, Paul JA Kenis. Protein immobilization using microfluidics: a lab-on-a-chip experiment, The Chemical Educator, 2012, 17, 157-162. DOI: 10.1007/s00897122436.

43. Yuan He, Ashish Kapoor, Sara Cook, Shubai Liu, Yang Xiang, Christopher V Rao, Paul J A Kenis, Fei Wang, The non-receptor tyrosine kinase Lyn controls neutrophil adhesion by recruiting the CrkL-C3G complex to and activating Rap1 at the leading edge, Journal of Cell Science, 2011, 124, 2153-2164. https://doi.org/10.1242/jcs.078535.

44. Ashish Kapoor, Evelyn HG Caporali, Paul JA Kenis, Matthew C Stewart, Microtopographically patterned surfaces promote the alignment of tenocytes and extracellular collagen, Acta Biomaterialia, 2010, 6, 2580-2589. https://doi.org/10.1016/j.actbio.2009.12.047.

BOOK CHAPTERS

1. Akash Balakrishnan, Muthamilselvi Ponnuchamy, Ashish Kapoor, Prabhakar Sivaraman, Emerging contaminants in wastewater and associated treatment technologies. In: P Chakraborty, D Snow (eds) Legacy and Emerging Contaminants in Water and Wastewater (Part of the Emerging Contaminants and Associated Treatment Technologies book series) Springer, Cham, 2022, pp. 231-261. https://doi.org/10.1007/978-3-030-95443-7_11.

2. Ritvik B Panicker, Ashish Kapoor, Kannan Deepa, Prabhakar Sivaraman, Triboelectric nanogenerators. In: Inamuddin, Mohd Imran Ahamed, Rajender Boddula, Tariq Altalhi (eds) Nanogenerators: Basic Concepts, Design Strategies, and Applications. CRC Press, Boca Raton, 2022. https://doi.org/10.1201/9781003187615-7.

3. Ashish Kapoor, Muthamilselvi Ponnuchamy, Sivaraman Prabhakar. Reverse osmosis desalination. In: Inamuddin, Anish Khan (eds) Sustainable Materials and Systems for Water Desalination. Advances in Science, Technology & Innovation (IEREK Interdisciplinary Series for Sustainable Development). Springer, Cham, 2021, pp 79-100. https://doi.org/10.1007/978-3-030-72873-1_6.

4. Joel Joseph, Muthamilselvi Ponnuchamy, Ashish Kapoor, Prabhakar Sivaraman, 2021. Applications of biofuel cells. In: Inamuddin, Mohd Imran Ahamed, Rajender Boddula, Mashallah Rezakazemi (eds) Biofuel Cells: Materials and Challenges. Scrivener Publishing, pp.465-482. https://doi.org/10.1002/9781119725008.ch17.

5. Ashish Kapoor, Elangovan Poonguzhali, Nanditha Dayanandan, Sivaraman Prabhakar, Applications of membrane contactors for water treatment. In: Inamuddin, Mohd Imran Ahamed, Rajender Boddula, Tauseef Ahmad Rangreez (eds) Applied Water Science I: Fundamentals and Applications. Scrivener Publishing, 2021, pp 361-381. https://doi.org/10.1002/9781119725237.ch13.

6. Ashish Kapoor, Sivaraman Prabhakar, Immunoassays applications. In: Inamuddin, Rajender Boddula, Abdullah M. Asiri (eds) Green Sustainable Process for Chemical and Environmental Engineering and Science. Elsevier, 2021, pp 161-173. https://doi.org/10.1016/B978-0-12-821883-9.00008-4.

7. Ashish Kapoor, Sivasamy Balasubramanian, Edward Kavitha, Elangovan Poonguzhali, Sivaraman Prabhakar, Role of membranes in wastewater treatment. In: Inamuddin, Ahamed M.I., Lichtfouse E. (eds) Water Pollution and Remediation: Photocatalysis. Environmental Chemistry for a Sustainable World. Springer, 2021, 57, pp 247-281. https://doi.org/10.1007/978-3-030-54723-3_8.

8. Ashish Kapoor, Sivasamy Balasubramanian, Ponnuchamy Muthamilselvi, Vijay Vaishampayan, Sivaraman Prabhakar, Lab-on-a-chip devices for water quality monitoring. In: Inamuddin, Asiri A. (eds) Nanosensor Technologies for Environmental Monitoring. Nanotechnology in the Life Sciences. Springer, 2020, pp 455-469. https://doi.org/10.1007/978-3-030-45116-5_15.

9. Ashish Kapoor, Sivaraman Prabhakar, Approaches towards scale control in desalination. In: Saji V, Meroufel A, Sorour A (eds) Corrosion and Fouling Control in Desalination Industry. Springer, 2020, pp 285-305. https://doi.org/10.1007/978-3-030-34284-5_14.

PROJECT GRANTS

- Pilot plant demonstration of nitrate removal for provision of safe drinking water at domestic household and community level using chitosan derivative, Funding agency: DST-WTI, (2017-2020), INR 31.78 lakhs (Co-Principal Investigator).
- Technology development for energy production and purification of aqueous and non-aqueous solvents through membrane processes, Funding agency: SRM Institute of Science and Technology, under Selective Excellence Initiative Program (2016-2018), INR 4.5 lakhs (Principal Investigator).

PATENT

- Process for manufacturing paper based lab-on-a-chip (Patent granted: 31 December, 2021) Patent No. 385831

PROFESSIONAL AFFILIATIONS

- Indian Desalination Association (InDA) (Membership number: LM 411)
- Institute of Engineers (India) (IEI) (Membership number: M-1658152)
- International Association of Engineers (IAENG) (Membership number: 297362)