DR. POORNIMA G. HIREMATH

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Education

	Degree	Year	Institute	Specialization
1	Ph.D.	2013-2018	Siddaganga Institute of Technology	Chemical Engineering
2	M.Tech.	2005-2007	Siddaganga Institute of Technology	Chemical Engineering
3	B.E.	1999-2003	Dayananda Sagar College of Engineering	Chemical Engineering

Professional Experience

	Date (from-to)	Designation	Organization
1	2024 till date	Associate Professor	SIT, Tumkur
2	2007-2024	Assistant Professor	SIT, Tumkur
3	2004-2005	Business Consultant	Informatics (India) Limited, Bangalore, India

Positions held

(Please give details of any administrative posts, co Ordinator roles/ responsibilities held)

- NBA co-ordinator
- NAAC co-ordinator
- LAB Incharge (CASL, MTL, Process Simulation Lab, Computational methods, ACCL, etc.)
- Water and wastewater Management Cell
- RC coordinator
- BOS & BOE member
- DSEC member
- Timetable co-ordinator
- SIP co-ordinator
- ISO internal auditor

Affiliations of Professional organizations

- Institution of Engineers (India) – IEI
- Indian Institute of Chemical Engineers - IIChE

Awards and Honors

- Best oral presentation for “Batch and column studies for fluoride adsorption from aqueous solution using modified banana peel biochar”, INCEEE 23, NIT, WARANGAL
- Best poster presentation for "Application of modified biochar for fluoride removal from aqueous solution using response surface methodology", KSTA, Bangalore
- Second prize in an oral presentation on “Defluoridation Water Using Green Synthesized Cao Nanoparticles” At REACT 2K19, RV College of Engineering, Bangalore.
- Best oral paper awarded for paper entitled “Optimization and modelling of defluoridation of water using biological waste by RSM and ANN”, International Conference on Desalination (INDACON-2018), NIT, Trichy

Courses Taught

Undergraduate Courses

- Computer Applications and Modelling in Chemical Engineering
- Waste water treatment methods
- Mass Transfer – I & II
- Environmental Studies
- Industrial Pollution Control
- Process simulation
- Computational methods in Chemical Engineering
- Material Science
- Energy Technology
- Oils and Fats
- Universal Human Values
- Awareness to Computing Concepts

Research Guidance

Sl. no	Name of the Scholar	Title	Year of completion
1	K Appurva	Lithium extraction from RO reject using Deep Eutectic Solvents	Ongoing

Research Areas

- Environmental Remediation & water treatment
- Nanotechnology for environmental applications
- Process modeling, Simulation & Optimization

Sponsored Projects

Ongoing Projects:

1. Title: Faculty Development Program on Revolutionizing Education: AI Innovations in Engineering and Technology
   Funding Agency: FDP-VGST
   Amount: Rs. 3 lakhs
   Duration: 1 year
   Role: PI

Completed Projects:

1. Title: Defluoridation by Biosorption Technique for Safe Drinking Water, 2015
   Funding Agency: IEI R&D Grant-in-Aid Scheme
   Amount: ₹ 25,000
   Duration: 1 year
   Role: Doctoral student

2. Title: Water and Waste Water Management of MSM Enterprises
   Funding Agency: Karnataka Council for Technological Upgradation (KCTU), Bangalore & SSES, Tumkur
   Amount: Rs. 135.5 lakhs
   Duration: 2 years
   Role: Co-ordinator

3. Title: Development of a prototype adsorption unit for treatment of fluoride-contaminated water
   Funding Agency: RGS-F : VGST
   Amount: Rs. 3 lakhs
   Duration: 1 year
   Role: Principal Investigator

4. Title: Modelling of fluoride removal from aqueous solution using biological waste by response surface methodology: Adsorption Isotherm, Kinetics and Thermodynamics studies

Funding Agency: BRC, IIChE
Amount: Rs. 5000
Duration: 1 year
Role: Guide

5. Title: RSM Based Defluoridation of Water Using Nanoparticles
   Funding Agency: KSCST
   Amount: Rs. 7500
   Duration: 1 year
   Role: Guide

6. Title: $NiFe_2O4$-gC_3N_4 nanocomposite as a photocatalyst for effective degradation of organic pollutants
   Funding Agency: KSCST
   Amount: Rs. 5500
   Duration: 1 year
   Role: Guide

Publications

Journal Publications

[1] P. Binnal and P. G. Hiremath, "Application of liquid emulsion membrane technique for the removal of As(V) from aqueous solutions," *J. Inst. Eng. India Ser. E*, vol. 93, pp. 1–8, Aug. 2012.

[2] P. G. Hiremath, T. Theodore, and P. Binnal, "First report on biosorption of fluoride on the microalga *Spirulina platensis*: Batch studies," *Asian-American J. Chem.*, vol. 1, pp. 1–10, 2013.

[3] P. G. Hiremath and T. Theodore, "Zirconium-doped fungal sorbents: Preparation, characterization, adsorption isotherm, and kinetic and mathematical modelling study for removal of fluoride," *Adv. Chem.*, vol. 2016, Article ID 6848693, pp. 1–14, Jul. 2016. doi: 10.1155/2016/6848693.

[4] P. G. Hiremath and T. Theodore, "Isolation, screening, and identification of fungal organisms for biosorption of fluoride: Kinetic study and statistical optimization of biosorption parameters," *J. Biochem. Technol.*, vol. 7, no. 1, pp. 1069–1077, Nov. 2016.

[5] P. G. Hiremath and T. Theodore, "Modelling of fluoride sorption from aqueous solution using green algae impregnated with zirconium by response surface methodology," *Adsorpt. Sci. Technol.*, vol. 35, no. 1–2, pp. 194–217, 2017. doi: 10.1177/0263617416674014.

[6] P. G. Hiremath and T. Theodore, "Modelling of fluoride biosorption by calcium-doped algae using response surface methodology," *Indian Chem. Eng.*, vol. 60, no. 1, pp. 37–57, 2017. doi: 10.1080/00194506.2017.1281771.

[7] P. G. Hiremath and T. Theodore, "Biosorption of fluoride from synthetic and ground water using *Chlorella vulgaris* immobilized calcium alginate beads in an up-flow packed bed column," *Period. Polytech. Chem. Eng.*, May 2017. doi: 10.3311/PPch.10085.

[8] S. Pawar, P. G. Hiremath, and T. Theodore, "Synthesis of hydroxyapatite from avocado fruit peel and its application for hexavalent chromium removal from aqueous solutions - adsorption isotherms and kinetics study," *Rasayan J. Chem.*, vol. 12, no. 4, pp. 1964–1972, 2019.

[9] H. Phattepur and P. G. Hiremath, "Fabrication of Al_2O_3 supported TiO_2 membranes for photocatalytic applications," *Mater. Today Proc.*, vol. 65, no. 8, pp. 3694–3699, 2022. doi: 10.1016/j.matpr.2022.06.295.

[10] H. Phattepur, B. S. Gowrishankar, S. M. Shekhar, P. G. Hiremath, and S. Rajashekhara, "Facile cellulose acetate membrane fabrication using mesoporous TiO_2 nanoparticles: Synthesis, characterisation and its photocatalytic application," *J. Chem. Technol. Metall.*, vol. 57, no. 5, pp. 953–961, 2022.

[11] P. G. Hiremath, G. K. Prashanth, A. B. Kadli, S. Varghese, and V. V. Bhaskar, "Optimisation of defluoridation of water by zirconia nanoparticles using RSM," *Asian J. Water Environ. Pollut.*, vol. 19, no. 6, pp. 75–84, Nov. 2022.

[12] M. K. Shetty, K. V. Karthik, J. H. Patil, S. M. Shekhar, S. M. Desai, and P. G. Hiremath, "Sorption studies of Cr(VI) ions from synthetic wastewater using chitosan embedded in calcium alginate beads," *Mater. Today Proc.*, vol. 76, no. 1, pp. 1–7, 2023. doi: 10.1016/j.matpr.2022.07.438.

[13] P. G. Hiremath, H. Phattepur, O. S. Baradol, and K. Shreyas, "Application of response surface methodology for defluoridation of water using zirconia-activated carbon nanocomposite," *Indian Chem. Eng.*, vol. 65, no. 5, pp. 476–485, 2023. doi: 10.1080/00194506.2022.2144486.

[14] P. G. Hiremath, N. Ganganagappa, Udayabhanu, S. S. Suresh, S. Sajjan, and R. K. Nanjundappa, "Comparative study of defluoridation of water using green synthesized zirconia nanoparticles and zirconia–graphene oxide nanocomposite," *J. Inst. Eng. India Ser. E*, vol. 104, pp. 29–35, 2023. doi: 10.1007/s40034-022-00263-3.

[15] P. G. Hiremath, M. Chennabasappa, C. Mallik, and T. V., "Fluoride removal using tartaric acid-modified rice husk biochar: Comprehensive batch and column studies," *Sustain. Chem. One World*, vol. 2, Article 100005, 2024. doi: 10.1016/j.scowo.2024.100005.

[16] M. K. Shetty, J. H. Patil, S. M. Shekhar, P. G. Hiremath, M. R. Rajani, S. M. Desai, and K. Prashantha, "Immobilized chitosan as an efficient adsorbent for columnar adsorption of Cr(VI) from aqueous solution," *Int. J. Biol. Macromol.*, vol. 282, 2024.

[17] P. G. Hiremath, S. Rajashekhara, S. Sarkar, H. S. Kumar, and V. Thejashree, "Treatment of fluoride-contaminated water in a prototype adsorption unit using zirconium-activated carbon nanocomposites," *Indian Chem. Eng*., 1–14. https://doi.org/10.1080/00194506.2024.2418309 2024.

[18] J. H. Patil, R. Kusanur, P. G. Hiremath, A. H. Gadagi, P. G. Hegde, and U. B. Deshannavar, "Enhanced fluoride removal by modified water hyacinth: Response surface methodology and machine learning approach," *Biomass Convers. Biorefin.*, 2025. https://doi.org/10.1007/s13399-025-06543-3

[19] B. N. S. Bhavya, H. V. Jayaprakash, H. S. Lalithamba, P. G. Hiremath, S. K. H. M., and G. K. Prashanth, "Sustainable defluoridation of water: Fixed-bed adsorption column studies using zirconium doped sunflower seed husk as an adsorbent," *South East. Eur. J. Public Health*, vol. 26, no. S1, pp. 6114–6132, 2025.

Conference Proceedings

[1] "Lanthanum doped banana peel biochar: A novel approach for efficient fluoride removal from water," 1st Nat. Conf. Climate Resilience and Environmentally Sustainable Technologies (NITK-CREST), NIT Karnataka, Surathkal, Feb. 27–Mar. 1, 2025.

[2] "Engineered $NiFe_2O_4$/g-C_3N_4 nanocomposite for superior photocatalytic methylene blue dye degradation," 1st Nat. Conf. Climate Resilience and Environmentally Sustainable Technologies (NITK-CREST), NIT Karnataka, Surathkal, Feb. 27–Mar. 1, 2025.

[3] "Batch and column studies for fluoride adsorption from aqueous solution using modified banana peel biochar," 3rd Int. Conf. New Frontiers in Chemical, Energy and Environmental Engineering (INCEEE), NIT Warangal, Nov. 24–25, 2023.

[4] "Application of modified rice husk biochar for fluoride removal using RSM," 12th Nat. Conf. Sci. Technol. for Startups, Jul. 19, 2022.

[5] "Application of RSM for fluoride and nitrate removal using modified rice husk biochar from aqueous solution," 18th Annual Chem. Eng. Student Congress (SCHEMCON), Sep. 23–24, 2022.

[6] "Application of RSM for fluoride and nitrate removal from aqueous solution using tartaric acid modified rice husk biochar," Int. Conf. Applied Research in Engineering Sciences (ICARES), Nov. 24–25, 2022.

[7] "Defluoridation of water using pumice stones and granular activated carbon coated with zirconium oxide: Synthesis, column studies and regeneration," Int. Conf. Recent Developments in Mechanical Engineering (ICRDME), SIT Tumakuru, Jun. 24–25, 2022.

[8] "Equilibrium and kinetic studies of adsorption of fluoride onto zirconium oxide impregnated with activated carbon," 1st Int. Virtual Conf. Sustainable Water (ICSW), KPR Inst. of Eng. and Technol., Mar. 22–23, 2022.

[9] "Application of RSM for defluoridation of water using zirconia-activated carbon nanocomposite," Int. Conf. Advances in Chem. and Mater. Sciences (ACMS), Apr. 14–16, 2022.

[10] "Fluoride removal using tin oxide nanoparticles," Chemignite-2K19, MIT Manipal, Oct. 28, 2019.

[11] "Synthesis and characterization of ZrO_2 nanoparticles by *Ocimum tenuiflorum* (Tulasi) leaf extract using green method," NCRAETS-2K19, SIET Tumkur, Apr. 26–27, 2019.

[12] "Defluoridation of water using green synthesized CaO nanoparticles," REACT'19, RVCE Bengaluru, Mar. 29–30, 2019.

[13] "Comparative study of defluoridation of water using green synthesized MgO nanoparticles and MgO-GO nanocomposite," CHEMPLUS'19, IIT Madras, Mar. 15–19, 2019.

[14] "Optimization and modelling of defluoridation of water using biological waste by RSM and ANN," InDACON, NIT Tiruchirapalli, Apr. 20–21, 2018.

[15] "Use of response surface methodology for optimization of defluoridation of water using biological waste," Reflux 2018, IIT Guwahati, Mar. 16–18, 2018.

[16] "Fluoride removal using hydroxyapatite particles: Adsorption isotherm and kinetics studies," ALCHEMIST-2018, KLE Dr. M. S. Sheshgiri College of Engg. and Technol., Belagavi, Mar. 14, 2018.

[17] "Use of RSM for optimization of defluoridation of water using zirconia nanoparticles," Int. Conf. Energy and Environment: Global Challenges (ICEE), NIT Calicut, Mar. 9–10, 2018.

[18] "Defluoridation of water using chitosan," NCASSCB, DSCE Bangalore, Feb. 16–17, 2016.

[19] "Green synthesis of ZnO nanoparticles," NCASSCB, DSCE Bangalore, Feb. 16–17, 2016.

[20] "Optimisation of fluoride biosorption by calcium-doped *Chlorella protothecoides*," 6th ChEmference, IIT Hyderabad, Dec. 5–6, 2015.

[21] "Modeling of fluoride removal by *Chlorella vulgaris* using response surface methodology," Conf. on Utilization of Biodiversity, DSCE Bangalore, Sep. 25–26, 2015.

[22] "*Chlorella protothecoides* as a potential biosorbent for fluoride reduction in drinking water," Int. Conf. Recent Advances in Engg. Sciences, MSRIT Bangalore, Sep. 4–5, 2014.

[23] "Microbial biosorbents for removal of fluoride from drinking water," Int. Conf. Recent Advancements in Chem., Environ. and Energy Engg., SSN College of Engg., Feb. 27–28, 2014.

[24] "Biosorption of fluoride on non-living biomass of *Spirulina platensis*: Column studies," Nirma Univ. Int. Conf. Engg., Ahmedabad, Nov. 28–30, 2013.

Book Chapters

[1] P. G. Hiremath, S. Rajashekhara, P. Binnal, and T. Theodore, "Fluoride contamination in groundwater and its treatment," in *Management of Contaminants of Emerging Concern (CEC) in Environment*, P. Singh, C. M. Hussain, and S. Rajkhowa, Eds., Elsevier, pp. 249–272, 2021. ISBN: 978-0-12-822263-8.

[2] P. Binnal, S. Rajashekhara, and P. G. Hiremath, "Potential of pyrolysis biochar as an eco-friendly biosorbent for dye removal from industrial wastewaters," in *Textile Wastewater Treatment, Sustainable Textiles: Production Processing, Manufacturing and Chemistry*, Springer Nature, 2022.

Books

P. G. Hiremath and T. Theodore, *Defluoridation by Biosorption Technique for Safe Drinking Water*, LAP Lambert Academic Publishing, 2020. ISBN-13: 978-620-2-68048-6, ISBN-10: 6202680482.

Editor/ Reviewer of Journal

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Patents

- Biosorbent for Reducing Fluoride Content in an Aqueous Solution

Invited Lectures, talks and workshops organize

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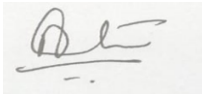
- Novel & Sustainable Membrane Technology
- Water standards, regulations and processes for industries
- ATAL FDP- Recent advances in management and processing of industrial and domestic waste
- Recent Advancements in Nanoparticles, Films and Membranes
- Analytical techniques for determining elemental constituents
- Recent advancements in characterization of water and wastewater



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