

Resume

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Present Affiliation: Assistant Professor,
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Previous Affiliation: Worked as Executive Engineer,
Public Health Engineering Directorate,
Government of West Bengal, India
(From March, 2005 to January, 2019)

Educational Qualifications:

Sl. No.	Degree Obtained	Specialization	Name of the University/Institute	Year of Passing	Percent
(i)	Ph.D.	Civil Engineering (Environmental Engineering)	Indian Institute of Technology Kharagpur	2018	
(ii)	ME	Civil Engineering (Environmental Engineering)	Jadavpur University	2004	82
(iii)	BE	Civil Engineering	Jadavpur University	2001	72.1
(iv)	Higher Secondary	Pure Science (addl.-Biology)	WBCHSE	1997	81.7
(v)	Secondary	General (addl.-Biology)	WBBSE	1995	79.3

Achievements: Gate Score: All India Rank-**18** (2004)
Rank 1 (State Engineering services examination of Public Service Commission, West Bengal) in Public Health Engineering Department

Publications and Patent:

A. Patent

Title of the invention: Application of Sequential Batch Type Reactor (SBTR) for Using in Adsorptive Removal of Pollutant from Drinking Water for Continuous Operation, (**Patent Application Number 201831035015**) (2018).

B. Publications

Number of International Journal Paper: 15

Number of International Book Chapter: 1

Number of International Conference Paper: 2

Google scholar citation: 162

International Journal Paper

1. **Ghosal, P.S.**, Javaregowda, A., Gupta, A.K., Singh, D.P., A novel framework of multivariate modeling of water distribution network through 3^3 factorial design and artificial neural network (2018). Journal of Environmental Science and Health, Part A (Accepted). **[Impact Factor: 1.561]**
2. **Ghosal, P.S.**, Gupta, A.K., Thermodynamics of Fluoride Adsorption on Aluminum/Olivine Composite (AOC): Influence of Temperature on Isotherm, Kinetics, and Adsorption Mechanism (2018). Water, Air, & Soil Pollution, 229 (11), 344. **[Impact Factor: 1.769]**
3. Debnath, D., Gupta, A.K., **Ghosal, P.S.**, Recent advances in the development of tailored functional materials for the treatment of pesticides in aqueous media: A review (2018). Journal of Industrial and Engineering Chemistry, 70, 51-69. **[Impact Factor: 4.841]**
4. **Ghosal, P.S.**, Gupta, A.K., Bi-objective optimization through Pareto frontier analysis and artificial neural network for adsorptive removal of fluoride by a novel Al/olivine composite (2018). Journal of Environmental Engineering 144 (12), 04018126. **[Impact Factor: 1.541]**
5. **Ghosal, P.S.**, Gupta, A.K., Sorptive equilibrium profile of fluoride onto aluminum olivine $[(\text{Fe}_x\text{Mg}_{1-x})_2\text{SiO}_4]$ composite (AOC): Physicochemical insights and isotherm modeling by non-linear least squares regression and a novel neural-network-based method (2018). Journal of Environmental Science and Health, Part A, 1-13. **[Impact Factor: 1.561]**
6. **Ghosal, P.S.**, Kattil, K.V., Yadav, M.K., Gupta, A.K., Adsorptive removal of arsenic by novel iron/olivine composite: Insights into preparation and adsorption process by response surface methodology and artificial neural network (2018). Journal of Environmental Management, 209, pp. 176-187. **[Impact Factor: 4.005]**

7. **Ghosal, P.S.**, Gupta, A.K., Modeling adsorption isotherm for defluoridation by calcined Ca-Al-(NO₃)-LDH: A state of the art technique (2018). Journal of Environmental Engineering, DOI:10.1061/(ASCE)EE. 1943-7870. 0001316. **[Impact Factor: 1.541]**
8. Yadav, M.K., Gupta, A.K., **Ghosal, P.S.**, Mukherjee, A., pH mediated facile preparation of hydrotalcite based adsorbent for enhanced arsenite and arsenate removal: Insights on physicochemical properties and adsorption mechanism (2017). Journal of Molecular Liquids, 240, pp. 240-252. **[Impact Factor: 4.513]**
9. **Ghosal, P.S.**, Gupta, A.K., Development of a generalized adsorption isotherm model at solid-liquid interface: A novel approach (2017). Journal of Molecular Liquids, 240, pp. 240-252. **[Impact Factor: 4.513]**
10. **Ghosal, P.S.**, Gupta, A.K., Determination of thermodynamic parameters from Langmuir isotherm constant-revisited (2017), Journal of Molecular Liquids, 225, pp. 137-146. **[Impact Factor: 4.513]**
11. Gupta, A.K., **Ghosal, P.S.**, Shrivastava, S.K., Modeling and optimization of defluoridation by calcined Ca-Al-(NO₃)-LDH using response surface methodology and artificial neural network combined with experimental design (2017), Journal of Hazardous, Toxic, and Radioactive Waste (ASCE's), J. Hazard. Toxic Radioact. Waste, 21(3): 04016024-1:9. DOI:10.1061/(ASCE)HZ.2153-5515.0000343.
12. **Ghosal, P.S.**, Gupta, A.K., Enhanced efficiency of ANN using non-linear regression for modeling adsorptive removal of fluoride by calcined Ca-Al-(NO₃)-LDH (2016), Journal of Molecular Liquids, 222, pp. 564-570. **[Impact Factor: 4.513]**
13. **Ghosal, P.S.**, Gupta, A.K., Sulaiman, A., Multivariate optimization of process parameters in the synthesis of calcined Ca-Al-(NO₃) LDH for defluoridation using 3×3 factorial, central composite and Box-Behnken design (2016), Journal of Environmental Science and Health - Part A Toxic/Hazardous Substances and Environmental Engineering, 51 (1), pp. 86-96. **[Impact Factor: 1.561]**
14. **Ghosal, P.S.**, Gupta, A.K., An insight into thermodynamics of adsorptive removal of fluoride by calcined Ca-Al-(NO₃) layered double hydroxide (2015), RSC Advances, 5 (128), pp. 105889-105900. **[Impact Factor 2.936]**
15. **Ghosal, P.S.**, Gupta, A.K., Ayoob, S., Effect of formation pH, molar ratio and calcination temperature on the synthesis of an anionic clay based adsorbent targeting defluoridation (2015), Applied Clay Science, 116-117, pp. 120-128. **[Impact Factor: 3.641]**

Book Chapter

1. Ashok K. Gupta, **Partha S. Ghosal** and Brajesh K. Dubey; 2017, Hybrid Nanoadsorbents for Drinking Water Treatment: A Critical Review, Hybrid Nanomaterials: Advances in Energy, Environment, and Polymer Nanocomposites, Scrivener Publishing, Wiley. 199–239.

International Conference papers

1. A. Sengupta, A. K. Gupta, **P. S. Ghosal**, 2014, Water Losses Variations with Consumption Pattern in Asian Cities, The 4th Water Loss Asia 2014, Kuala Lumpur, Malaysia.
2. M.K. Yadav, A.K. Gupta, **P.S. Ghosal**, A. Mukherjee, I. S. Chauhan, 2018, Adsorptive removal of arsenic by calcined Mg-Fe-(CO₃) LDH: An artificial neural network model, 7th International Congress & Exhibition on Arsenic in the Environment (As2018), Beijing, China

Research contribution:

The research contribution mostly focused on the fundamental and applied research in the field of environmental engineering, such as various theoretical developments on environmental modeling, optimization and mathematical formulations, geogenic pollutant scavenging, field-based projects in water and wastewater treatment, etc. Some specific highlights are given below:

- (i) Development of novel formulation for estimation of the thermodynamic parameters, identifying the erroneous and ambiguous age-old procedure.
- (ii) Development of a novel generalized adsorption model identifying the limitation associated with the popular existing models and the associate discrepancy in their use.
- (iii) Development of a model decision tool based on neural network and Pareto frontier method for identification of the overall optimized operating condition of the various factor in the adsorption system.
- (iv) The development of some novel efficient adsorbents for Fluoride and Arsenic removal.
- (v) Identification of suitable multivariate techniques to describe the preparation or adsorption process of the adsorbents and the development of novel approaches for enhancement of performance level of the optimization techniques for experimental data in the related field.
- (vi) Development of novel reactor model for the continuous studies (Patent approved for filing in India)
- (vii) Multivariate optimization of the influential parameters of simplistic synthesis processes targeting pollutant removal, which can help in understanding the interactive effect of process variables on the

physicochemical properties and sorptive potential of the adsorbent and attaining the overall optima of the system.

- (viii) Identification of pH as an important parameter for the co-precipitation method, which substantially influences the properties of the layered double hydroxides.

This research highlights are listed in the published book chapter, patent (filed) and in 15 publications in the international journal of high repute from the publishing houses of Elsevier, Tailor and Francis, American Society of Civil Engineers, Royal Society of Chemistry, etc. (Google Scholar citation: more than 160, h index: 7)

Several field-based technical projects were also handled (as a research scholar), and the outcome of the project has been implemented/adapted in different parts of the country.

Industrial experience:

- a. **Recent Past:** Worked as Executive Engineer, Planning and Design Division-I, Public Health Engineering Directorate, Preparation of DPR of many Piped water Supply System, as follows:
- i. Mega Surface Water Supply Project for Birbhum District, West Bengal
 - ii. Big Sub-Surface based Water Supply Scheme in Birbhum District, West Bengal
 - iii. Water Supply Scheme for AIIMS, Kalyani, West Bengal
 - iv. Several Groundwater Based Water Supply Project
 - v. Technical Vetting of Several Water Supply Scheme
 - vi. hospital liquid waste management with advanced treatment system of several hospitals in Kolkata

- b. **Years of Experience:** 13 years 11 months

c. **Nature of Work:**

In my industrial experience in the diversified field of environmental engineering, mostly in the water sector, the following work had been conducted:

- Preparation of detailed project report on different water supply systems, wastewater treatment system, etc. The scheme preparation comprises of the feasibility of the system, identification of sources, technology selection, designing of various treatment facilities, structural design and detailing, estimation of different components, etc.
- Preparation of various structural design and drawing of different facilities of water supply system, like overhead reservoir, clear water reservoir of various capacities, pump house, etc., which have been used as departmental drawings and constructed in all over West Bengal.
- Preparation of Public Health Engineering Schedule and Guidelines.

- Design and construction of water supply scheme from the surface, sub-surface and groundwater as well as some non-conventional scheme, such as drinking water supply system from the water from abandoned open cast pit of a coal mine.
- Design and construction of many facilities of water supply system, such as radial collector well, infiltration gallery, water treatment plant, overhead reservoir, clear water reservoir, etc.
- Design and laying of pipe network of raw water, clear water, and distribution main of different places of the state.
- During the fieldwork, preparation of the scheme, inviting tender, design the facilities and execution of the work, operation, and maintenance of many water supply schemes, preparation of the rejuvenation/improvement of those schemes.
- Presently, working preparation of DPR on hospital liquid waste management with advanced treatment system of several hospitals in Kolkata.

During Ph.D., many technical projects on water and wastewater treatment, groundwater modeling, mine effluent management, city planning projects, etc. were framed. Among them:

- Design for Chromium Effluent Treatment plant (ETP) in Saruabil Chromite Mines of Sukinda valley
- Technical assistance for remediation of Hexavalent Chromium from mine effluent and surface runoff in south Kaliapani mines
- Preparation of Conceptual Plan for Sewage Treatment Plant at Bolani Township, at Bolani Ores Mines.
- Study of Water Seepages from Cold Rolling Mill Complex at Bara
- In city planning project, the master plan of Korba and IISCO, Burnpur, etc.

Apart from the academic and research details stated in a specified place, I have attended as a speaker in many short-term courses in IIT Kharagpur.