

CURRICULUM VITAE

Shamik CHOWDHURY, Ph.D.

Assistant Professor (Grade II)
School of Environmental Science and Engineering
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Indian Institute of Technology Kharagpur
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EDUCATION

2017 **Ph.D. in Environmental Engineering**
National University of Singapore (NUS), Singapore
2011 **M.Tech. in Biotechnology** (GOLD MEDALIST)
National Institute of Technology Durgapur (NITD), India
2009 **B.Tech. in Biotechnology**
West Bengal University of Technology (WBUT), India

PROFESSIONAL EXPERIENCE

03/2019–Present **Assistant Professor**, School of Environmental Science and Engineering,
Indian Institute of Technology Kharagpur (IIT Kgp)
01/2019–02/2019 **Research Fellow**, Department of Civil & Environmental Eng., NUS
06/2017–12/2018 **Research Fellow**, Centre for Advanced 2D Materials, NUS
01/2017–05/2017 **Research Associate**, Centre for Advanced 2D Materials, NUS

HONORS AND AWARDS

2016 Green Talents Award, Federal Ministry of Education and Research, Germany
2015 Research Project of the Year Award, IChemE Singapore
2015 Sustainable Technology Award, IChemE Singapore
2013 President's Graduate Fellowship, NUS
2011 Institute Gold Medal, NITD

RESEARCH GRANTS

2019–2020 **Principal Investigator (PI)**, "Novel mixed-dimensional photocatalysts for elimination of common pharmaceuticals for elimination of common pharmaceuticals and personal care products from wastewater treatment plant effluents," Sponsored Research & Industrial Consultancy, IIT Kgp (₹ 23 Lacs)

SELECTED JOURNAL PUBLICATIONS

Reviews

1. **Chowdhury, S., & Balasubramanian, R.** (2017). "Three-dimensional graphene-based macrostructures for sustainable energy applications and climate change mitigation." *Progress in Materials Science*, 90, 224–275. DOI: [10.1016/j.pmatsci.2017.07.001](https://doi.org/10.1016/j.pmatsci.2017.07.001).

2. Balasubramanian, R., & **Chowdhury, S.** (2015). "Recent advances and progress in the development of graphene-based adsorbents for CO₂ capture." *Journal of Materials Chemistry A*, 3, 21968–21989. DOI: [10.1039/C5TA04822B](https://doi.org/10.1039/C5TA04822B).
3. **Chowdhury, S.**, & Balasubramanian, R. (2014). "Graphene/semiconductor nanocomposites (GSNs) for heterogeneous photocatalytic decolorization of wastewaters contaminated with synthetic dyes: A review." *Applied Catalysis B: Environmental*, 160–161, 307–324. DOI: [10.1016/j.apcatb.2014.05.035](https://doi.org/10.1016/j.apcatb.2014.05.035).
4. **Chowdhury, S.**, & Balasubramanian, R. (2014). "Recent advances in the use of graphene-family nanoadsorbents for removal of toxic pollutants from wastewater." *Advances in Colloid and Interface Science*, 204, 35–56. DOI: [10.1016/j.cis.2013.12.005](https://doi.org/10.1016/j.cis.2013.12.005).

Research Articles

5. Jiang, Y., **Chowdhury, S.**, & Balasubramanian, R. (2019). "Nitrogen and sulfur codoped graphene aerogels as absorbents and visible light-active photocatalysts for environmental remediation applications." *Environmental Pollution*, 534, 574–585. DOI: [10.1016/j.envpol.2019.04.132](https://doi.org/10.1016/j.envpol.2019.04.132).
6. Jiang, Y., **Chowdhury, S.**, & Balasubramanian, R. (2019). "New insights into the role of nitrogen-bonding configurations in enhancing the photocatalytic activity of nitrogen-doped graphene aerogels." *Journal of Colloid and Interface Science*, 534, 574–585. DOI: [10.1016/j.jcis.2018.09.064](https://doi.org/10.1016/j.jcis.2018.09.064).
7. **Chowdhury, S.**, Jiang, Y., Muthukaruppan, S., & Balasubramanian, R. (2018). "Effect of boron doping level on the photocatalytic activity of graphene aerogels." *Carbon*, 128, 237–248. DOI: [10.1016/j.carbon.2017.11.089](https://doi.org/10.1016/j.carbon.2017.11.089).
8. Jiang, Y., **Chowdhury, S.**, & Balasubramanian, R. (2017). "Nitrogen-doped graphene hydrogels as potential adsorbents and photocatalysts for environmental remediation." *Chemical Engineering Journal*, 327, 751–763. DOI: [10.1016/j.cej.2017.06.156](https://doi.org/10.1016/j.cej.2017.06.156).
9. **Chowdhury, S.**, & Balasubramanian, R. (2016). "Holey graphene frameworks for highly selective post-combustion carbon capture." *Scientific Reports*, 6, 21537. DOI: [10.1038/srep21537](https://doi.org/10.1038/srep21537).
10. **Chowdhury, S.**, & Balasubramanian, R. (2016). "Highly efficient, rapid and selective CO₂ capture by thermally treated graphene nanosheets." *Journal of CO₂ Utilization*, 13, 50–60. DOI: [10.1016/j.jcou.2015.12.001](https://doi.org/10.1016/j.jcou.2015.12.001).
11. **Chowdhury, S.**, & Balasubramanian, R. (2016). "Three-dimensional graphene-based porous adsorbents for postcombustion CO₂ capture." *Industrial & Engineering Chemistry Research*, 55, 7906–7916. DOI: [10.1021/acs.iecr.5b04052](https://doi.org/10.1021/acs.iecr.5b04052).
12. **Chowdhury, S.**, Parshetti, G. K., & Balasubramanian, R. (2015). "Post-combustion CO₂ capture using mesoporous TiO₂/graphene oxide nanocomposites." *Chemical Engineering Journal*, 263, 374–384. DOI: [10.1016/j.cej.2014.11.037](https://doi.org/10.1016/j.cej.2014.11.037).
13. Parshetti, G. K., **Chowdhury, S.**, & Balasubramanian, R. (2015). "Biomass derived low-cost microporous adsorbents for efficient CO₂ capture." *Fuel*, 148, 246–254. DOI: [10.1016/j.fuel.2015.01.032](https://doi.org/10.1016/j.fuel.2015.01.032).
14. Parshetti, G. K., **Chowdhury, S.**, & Balasubramanian, R. (2014). "Hydrothermal conversion of urban food waste to chars for removal of textile dyes from contaminated waters." *Bioresource Technology*, 161, 310–319. DOI: [10.1016/j.biortech.2014.03.087](https://doi.org/10.1016/j.biortech.2014.03.087).
15. Parshetti, G. K., **Chowdhury, S.**, & Balasubramanian, R. (2014). "Plant derived porous graphene nanosheets for efficient CO₂ capture." *RSC Advances*, 4, 44634–44643. DOI: [10.1039/C4RA05522E](https://doi.org/10.1039/C4RA05522E).
16. Sinha, K., **Chowdhury, S.**, Das Saha, P., & S. Datta. (2013). "Modeling of microwave-assisted extraction of natural dye from seeds of *Bixa orellana* (Annatto) using response

- surface methodology (RSM) and artificial neural network (ANN)." *Industrial Crops and Products*, 41, 165–171. DOI: [10.1016/j.indcrop.2012.04.004](https://doi.org/10.1016/j.indcrop.2012.04.004).
17. Chakraborty, S., **Chowdhury, S.**, & Das Saha, P. (2013). "Artificial neural network (ANN) modeling of dynamic adsorption of crystal violet from aqueous solution using citric-acid-modified rice (*Oryza sativa*) straw as adsorbent." *Clean Technologies and Environmental Policy*, 15, 225–264. DOI: [10.1007/s10098-012-0503-4](https://doi.org/10.1007/s10098-012-0503-4).
 18. **Chowdhury, S.**, & Das Saha, P. (2013). "Artificial neural network (ANN) modeling of adsorption of methylene blue by NaOH-modified rice husk in a fixed-bed column system." *Environmental Science and Pollution Research*, 20, 1050–1058. DOI: [10.1007/s11356-012-0912-2](https://doi.org/10.1007/s11356-012-0912-2).
 19. **Chowdhury, S.**, Chakraborty, S., & Das Saha, P. (2013). "Response surface optimization of a dynamic dye adsorption process: A case study of crystal violet adsorption onto NaOH-modified rice husk." *Environmental Science and Pollution Research*, 20, 1698–1705. DOI: [10.1007/s11356-012-0989-7](https://doi.org/10.1007/s11356-012-0989-7).
 20. **Chowdhury, S.**, & Das Saha, P. (2013). "Adsorption of malachite green from aqueous solution by NaOH-modified rice husk: Fixed-bed column studies." *Environmental Progress and Sustainable Energy*, 32, 633–639. DOI: [10.1007/s10098-012-0503-4](https://doi.org/10.1007/s10098-012-0503-4).
 21. **Chowdhury, S.**, Chakraborty, S., & Das Saha, P. (2013). "Removal of crystal violet from aqueous solution by adsorption onto eggshells: Equilibrium, kinetics thermodynamics and artificial neural network modeling." *Waste and Biomass Valorization*, 4, 655–664. DOI: [10.1007/s12649-012-9139-1](https://doi.org/10.1007/s12649-012-9139-1).
 22. Das Saha, P., Chakraborty, S., & **Chowdhury, S.** (2012). "Batch and continuous (fixed-bed column) biosorption of crystal violet by *Atrocarpus heterophyllus* (jackfruit) leaf powder." *Colloids and Surfaces B: Biointerfaces*, 92, 262–270. DOI: [10.1016/j.colsurfb.2011.11.057](https://doi.org/10.1016/j.colsurfb.2011.11.057).
 23. **Chowdhury, S.**, & Das, P. (2012). "Utilization of a domestic waste – eggshells for removal of hazardous malachite green from aqueous solutions." *Environmental Progress and Sustainable Energy*, 31, 415–425. DOI: [10.1002/ep.10564](https://doi.org/10.1002/ep.10564).
 24. **Chowdhury, S.**, Mishra, R., Kushwaha, P., & Saha, P. (2012). "Removal of safranin from aqueous solutions by NaOH-treated rice husk: Thermodynamics, kinetics and isosteric heat of adsorption." *Asia-Pacific Journal of Chemical Engineering*, 7, 236–249. DOI: [10.1002/apj.525](https://doi.org/10.1002/apj.525).
 25. **Chowdhury, S.**, Mishra, R., Saha, P., & Kushwaha, P. (2011). "Adsorption thermodynamics, kinetics and isosteric heat of adsorption of malachite green onto chemically modified rice husk." *Desalination*, 265, 159–168. DOI: [10.1016/j.desal.2010.07.047](https://doi.org/10.1016/j.desal.2010.07.047).
 26. Chakraborty, S., **Chowdhury, S.**, & Das Saha, P. (2011). "Adsorption of crystal violet from aqueous solution onto NaOH-modified rice husk." *Carbohydrate Polymers*, 86, 1533–1541. DOI: [10.1016/j.carbpol.2011.06.058](https://doi.org/10.1016/j.carbpol.2011.06.058).
 27. **Chowdhury, S.**, Chakraborty, S., & Saha, P. (2011). "Biosorption of basic green 4 from aqueous solution by *Ananas comosus* (pineapple) leaf powder." *Colloids and Surfaces B: Biointerfaces*, 84, 520–527. DOI: [10.1016/j.colsurfb.2011.02.009](https://doi.org/10.1016/j.colsurfb.2011.02.009).
 28. **Chowdhury, S.**, & Das Saha, P. (2011). "Biosorption kinetics, thermodynamics and isosteric heat of sorption of Cu(II) onto *Tamarindus indica* seed powder." *Colloids and Surfaces B: Biointerfaces*, 88, 697–705. DOI: [10.1016/j.colsurfb.2011.08.003](https://doi.org/10.1016/j.colsurfb.2011.08.003).
 29. **Chowdhury, S.**, & Saha, P. (2011). "Adsorption thermodynamics and kinetics of malachite green onto Ca(OH)₂-treated fly ash." *Journal of Environmental Engineering*, 137, 388–397. DOI: [10.1061/\(ASCE\)EE.1943-7870.0000334](https://doi.org/10.1061/(ASCE)EE.1943-7870.0000334).
 30. **Chowdhury, S.**, & Saha, P. (2010). "Sea shell powder as a new adsorbent to remove basic green 4 (malachite green) from aqueous solutions: Equilibrium, kinetic and thermodynamic studies." *Chemical Engineering Journal*, 164, 168–177. DOI: [10.1016/j.cej.2010.08.050](https://doi.org/10.1016/j.cej.2010.08.050).
 31. Saha, P., **Chowdhury, S.**, Gupta, S., & Kumar, I. (2010). "Insight into adsorption equilibrium, kinetics and thermodynamics of malachite green onto clayey soil of Indian origin." *Chemical Engineering Journal*, 165, 874–882. DOI: [10.1016/j.cej.2010.10.048](https://doi.org/10.1016/j.cej.2010.10.048).

BOOK

1. Balasubramanian, R., & **Chowdhury, S.** (Eds.). *Graphene-Based 3D Macrostructures for Clean Energy and Environmental Applications*. Royal Society of Chemistry (Under preparation).

BOOK CHAPTERS

1. **Chowdhury, S.**, Pan, S., & Balasubramanian, R. (2019). "Date palm based activated carbon for the efficient removal of organic dyes from aqueous environment." In Mu. Naushad, E. Lichtfouse (Ed.), *Sustainable Agriculture Reviews 34: Date Palm for Food, Medicine and the Environment* (pp. 247–263). Cham, Switzerland: Springer. DOI: [10.1007/978-3-030-11345-2_12](https://doi.org/10.1007/978-3-030-11345-2_12).
2. **Chowdhury, S.**, Pan, S., Balasubramanian, R., & Das, P. (2019). "Three-dimensional graphene-based macroscopic assemblies as superabsorbents for oils and organic solvents." In Mu. Naushad (Ed.), *A New Generation Material Graphene: Applications in Water Technology* (pp. 43–68). Cham, Switzerland: Springer. DOI: [10.1007/978-3-319-75484-0_3](https://doi.org/10.1007/978-3-319-75484-0_3).
3. **Chowdhury, S.**, Balasubramanian, R., & Das, P. (2015). "Novel carbon-based nanoadsorbents for removal of synthetic textile dyes from wastewaters." In S. K. Sharma (Ed.), *Green Chemistry for Dyes Removal from Wastewater: Research Trends and Applications* (pp. 35–82). Hoboken, USA: John Wiley & Sons, Inc. DOI: [10.1002/9781118721001.ch2](https://doi.org/10.1002/9781118721001.ch2).
4. **Chowdhury, S.**, & Balasubramanian, R. (2014). "Graphene and related nanomaterials for environmental remediation." In B. T. Edwards (Ed.), *Graphene: Mechanical Properties, Potential Applications and Electrochemical Performance* (pp. 149–217). Hauppauge, USA: Nova Science Publishers, Inc.
5. Saha, P., & **Chowdhury, S.** (2011). "Insight into adsorption thermodynamics." In M. Tadashi (Ed.), *Thermodynamics* (pp. 349–364). Rijeka, Croatia: InTech. DOI: [10.5772/13474](https://doi.org/10.5772/13474).

REFERRED CONFERENCE PAPER

1. **Chowdhury, S.**, Misra, R., Kushwaha, P., & Saha, P. (2010). "Study of the adsorption isotherms for removal of safranin from aqueous solutions using treated rice husk by linear and non-linear methods." In *Chemeca 2010: Engineering at the Edge* (pp. 2057–2066). Barton, Australia: Engineers Australia.

INVITED PRESENTATIONS

- 10/2018 "Decarbonizing Energy and the Graphene Revolution", Department of Chemical Engineering, *Indian Institute of Technology Kanpur*, India

RESEARCH PERSONNEL SUPERVISED/CO-SUPERVISED**Doctoral Candidate(s)**

- 2019–Present Chinmayee DAS, "Synthesis, characterization and evaluation of novel three dimensional graphene-based macroscale photocatalysts for elimination of pharmaceutical and personal care products", IIT Kgp
- 2019–Present Naseeba PARVEEN, "Occurrence and fate of disinfection by-products in drinking water", IIT Kgp

Master's Student(s)

- 2019–2020 Rajneesh VERMA, "Heteroatom doped graphene-based macroscopic assemblies as high-performance electrodes for microbial fuel cells", IIT Kgp

2019–2020 Saikrishna VENNA, "Waste-derived carbonaceous electrodes for high-performance supercapacitors", NIT Warangal

RESEARCH PERSONNEL MENTORED

Doctoral Candidate(s)

2015–2019 Yiqun JIANG, "Synthesis, characterization and evaluation of novel three dimensional graphene-based macrostructures for environmental remediation applications", NUS

Undergraduate Final Year Project Student(s)

2017–2018 Anqi TANG, "Alkaline earth metal doped double vacancy graphene for hydrogen storage: A first principles study", NUS

2017–2018 Xiao Hui CHEE, "Nitrogen and sulfur codoped graphene aerogels for enhanced visible light induced photocatalytic degradation of organic pollutants and photoconversion of CO₂", NUS

2016–2017 Gao Yan TONG, "Superoleophobic and fire-resistant nitrogen and sulfur codoped graphene hydrogels as superabsorbents for oil recovery", NUS

2016–2017 Solai MUTHUKARUPPAN, "Boron doped graphene aerogels for enhanced visible light responsive photodegradation of organic contaminants", NUS

2010–2011 Madhurima MONDAL, "Removal of dyes from aqueous solutions using eggshells as adsorbents", NITD

TEACHING EXPERIENCE

2019–Present **Co-Lecturer**, "Engineering Drawing and Computer Graphics" (undergraduate), IIT Kgp

2019–Present **Co-Lecturer**, "Environmental Science" (undergraduate), IIT Kgp

2018–2019 **Graduate Tutor**, "Global Environmental Issues" (undergraduate), School of Continuing and Lifelong Education, NUS

2014–2016 **Teaching Assistant**, "Global Environmental Issues" (undergraduate), Faculty of Engineering, NUS

JOURNAL REFEREE

(a total of 251 manuscripts for 66 journals)

ACS Omega (1)

ACS Sustainable Chemistry & Engineering (2)

Arabian Journal of Chemistry (1)

Arabian Journal for Science and Engineering (2)

Bioremediation Journal (3)

Bioresource Technology (5)

3Biotech (1)

Canadian Journal of Chemical Engineering (1)

Carbohydrate Polymers (8)

Carbon (1)

Chemical Engineering Communications (1)

Chemical Engineering Journal (14)

Chemical Engineering Research and Design (3)

Chemical Engineering and Technology (1)

Chemistry and Ecology (2)

Chemosphere (1)
Clean Soil Air Water (3)
Clean Technologies and Environmental Policy (6)
Colloids and Surfaces B: Biointerfaces (1)
Desalination (1)
Desalination and Water Treatment (34)
Ecological Engineering (2)
Ecotoxicology and Environmental Safety (5)
Egyptian Journal of Basic and Applied Sciences (1)
Environmental Forensics (2)
Environmental Progress and Sustainable Energy (22)
Environmental Science and Pollution Research (5)
Environmental Science: Water Research & Technology (2)
Environmental Technology (2)
Environmental Technology & Innovation (1)
Fullerenes, Nanotubes and Carbon Nanostructures (1)
Industrial Crops and Products (3)
Industrial & Engineering Chemistry Research (3)
Inorganic and Nano-Metal Chemistry (1)
International Journal of Chemical Engineering (1)
International Journal of Energy and Water Resources (1)
International Journal of Food Engineering (1)
Journal of Alloys and Compounds (2)
Journal of Cereal Science (1)
Journal of Chemistry (1)
Journal of Colloid and Interface Science (11)
Journal of Environmental Chemical Engineering (22)
Journal of Environmental Management (9)
Journal of Environmental Quality (1)
Journal of Hazardous Materials (10)
Journal of Hydrology (1)
Journal of Industrial and Engineering Chemistry (1)
Journal of Surfactants and Detergents (1)
Journal of the Taiwan Institute of Chemical Engineers (4)
Journal of Taibah University of Science (4)
Journal of Water Process Engineering (2)
Korean Journal of Chemical Engineering (7)
Microchemical Journal (1)
Microporous and Mesoporous Materials (1)
Physical Chemistry Chemical Physics (1)
Process Safety and Environmental Protection (3)
Research on Chemical Intermediates (1)
Research Journal of Textile and Apparel (1)
Reviews of Environmental Contamination and Toxicology (1)
RSC Advances (6)
Scientific Reports (1)
Separation and Purification Technology (1)
Separation Science and Technology (8)
Toxicology and Environmental Chemistry (2)
Toxin Reviews (1)
Waste and Biomass Valorization (1)

PROFESSIONAL MEMBERSHIPS

2012–Present	Life Associate Member, The Institution of Engineers (India)
2012–Present	Life Member, The Indian Science Congress Association
2012–Present	Life Member, The Biotech Research Society (India)
2012–Present	Life Member, Society for Biotechnologists (India)
2012–Present	Life Member, Institute of Science, Education and Culture (India)
2012–Present	Life Member, Forum of Scientists, Engineers & Technologists (India)