

# Curriculum Vitae

## SUBHRAJYOTI GHOSH



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## Academic Summary

**July 2019-Present:** Ph.D. in the Department of Chemistry Indian Institute of Technology Guwahati, India.

- Supervisor: **Dr. Shyam Prosad Biswas**
- Thesis title: “**Synthesis Characterizations and Applications of Aqua-Stable Metal-Organic Frameworks and its Composites for the Environmental Remediation and Bio-Molecule Sensing**”.

**2017-2019:** Master of Science in Chemistry from Ramakrishna Mission Residential College, Narendrapur, University of Calcutta, Kolkata, West Bengal, India.

- M.Sc thesis title: “Asymmetric Synthesis of Bioactive Natural Products”.
- Supervisor: Dr. Rajib K. Goswami
- CGPA: 8.96/10

**2011-2014:** Bachelor of Science (Honours) in Chemistry from Dinabandhu Andrews College, University of Calcutta, Kolkata, West Bengal, India.

- Percentage: 68.75% (1<sup>ST</sup> Rank in the College)

## Scholarships and Achievements

- Most Prestigious Ph.D. fellowship in India; Prime Minister's Research Fellowship (PMRF), in the session of January 2021.
- Ministry of Education, Govt. of India JRF/SRF Fellowship for PhD, July 2019 - December 2020.
- Study Scholarship of West Bengal; West Bengal Merit-cum Means Scholarship (2012-2019).
- All India Topper in NPTEL online course on "Pericyclic Reaction and Organic Photo Chemistry" Conducted by IIT Madras and the Ministry of HRD, Govt. of India.
- All India UGC- CSIR NET JRF rank 69, in the year of December 2019.

- All India UGC-CSIR NET LECTURESHIP rank 20, in the year of December 2018.
- All India GATE rank 782, with gate score of 537, in the year of 2019.
- Three times “Recommendation with Commendation” grades in all India PMRF reviews.

## Teaching Experience

- Teaching assistantship at IIT Guwahati: Inorganic Tutorial Courses for undergraduate students (July-Nov 2022 and 2023).
- Teaching assistantship at North Gauhati College (Nov 2020-till date) according to the norms of PMRF.
- Co-supervised two M.Sc. final year project students (2022 and 2023) on targeted bio-molecules and organo-toxin sensing.
- Co-supervised one M.Sc. summer intern (2022) on the synthesis, characterization, and application of hydrophobic MOF.
- Co-supervised one BTP student on review project report writing (2021).

## Research Interests

- Design and synthesis of aqua stable Metal-Organic Frameworks (MOFs) and Covalent-Organic Frameworks (COFs).
- Application of MOFs/COFs in gas/vapor/liquid adsorption.
- Application of biocompatible MOFs/COFs and their composites in fluorescence sensing of targeted bio-molecules and organo-toxin.
- Heterogeneous catalysis reactions by MOFs/COFs.
- Applications of superhydrophobic MOFs/COFs for oil-water separation, emulsion separation and hydrophobic pollutants separation.

## Scientific Achievements

- Total number of publications:
  - ✓ Published manuscript in peer-reviewed journals: **22** (**17** as 1<sup>st</sup> author)
  - ✓ Manuscript under revision: **02**
  - ✓ Manuscript under submission: **02**
  - ✓ Manuscript under preparation: **03**
- Research work presented in National and International conferences:
  - ✓ Poster presentations: **03**
  - ✓ Oral presentations: **02**

## List of Publications

### Published Manuscripts:

1. **S. Ghosh**, A. Rana, and S. Biswas, Metal–organic framework-based fluorescent sensors for the detection of pharmaceutically active compounds, *Chem. Mater.* 2024, **36**, 99–131. (IF: 10.5)
2. **S. Ghosh**, J. Krishnan, S. Hossain, A. Dhakshinamoorthy, and S. Biswas, MOF-fabric composites based on a multi-functional MOF as luminescent sensor for a neurotransmitter and an anti-cancer drug, *ACS Appl. Mater. Interfaces*, 2023, **15**, 26843–26851. (IF: 9.5)
3. **S Ghosh**, D Mal, S Mukherjee, and S Biswas, Sustainable fabrication of an eco-friendly, reusable Chitosan@Cotton@MOF composite sensor for 2,4-dichlorophenoxyacetic acid herbicide and nitroxoline antibiotic, *ACS Sustainable Chem. Eng.* 2023, **11**, 13179–13186. (IF: 8.4)
4. **S. Ghosh**, J. Krishnan, V. Karthik, A. Dhakshinamoorthy, and S. Biswas, Functionalized metal-organic framework for selective fluorometric detection of sodium dodecyl sulfate and Vitamin B<sub>12</sub> using MOF@Cotton composites and Lewis base-catalyzed condensation reaction, *Inorg. Chem.* 2023, **22**, 8605–8614. (IF: 5.4)
5. **S. Ghosh**, R. Lipin, A. Ngoipala, N. Ruser, D. M. Venturi, A. Rana, M. Vandichel, and S. Biswas, Hf-based MOF for rapid and selective sensing of a nerve agent simulant and an aminophenol: insights from experiments and theory, *Inorg. Chem.* 2023, **62**, 14632–14646. (IF: 5.4)
6. **S. Ghosh**, A. Rana, S. Kumar, C. Gogoi, S. Mukherjee, U. Manna, and S. Biswas, A self-cleaning hydrophobic MOF based composite for highly efficient and recyclable separation of oil from water and emulsion, *Mater. Chem. Front.*, 2022, **6**, 2051-2060. (IF: 8.683)
7. **S. Ghosh**, F. Steinke, A. Rana, and S. Biswas, A fluorescent zirconium organic framework displaying rapid and nanomolar level detection of Hg(II) and nitroantibiotics, *Inorg. Chem. Front.*, 2022, **9**, 859-869. (IF: 7.779)
8. **S. Ghosh**, N. Nagarjun, and S. Nandi, A. Dhakshinamoorthy, S. Biswas, Two birds with one arrow: functionalized Al(III) MOF acts as a fluorometric sensor of dopamine in bio-fluids and recyclable catalyst for Biginelli reaction, *J. Mater. Chem. C*, 2022, **10**, 6717-6727. (IF: 8.067)
9. A. Rana<sup>±</sup>, **S. Ghosh**<sup>±</sup>, and S. Biswas, An eco-friendly approach by nonfluorous self-cleaning metal-organic framework composite and membrane for oil-water separation, *Inorg. Chem. Front.*, 2023, **10**, 612-620. (IF: 7.779) (± = equal contribution).
10. **S. Ghosh**, A. Das, and S. Biswas, A functionalized UiO-66 MOF acting as a luminescent chemosensor for selective and sensitive turn-on detection of superoxide and acetylacetone, *Microporous Mesoporous Mater.*, 2021, **323**, 111251. (IF: 5.876)

11. **S. Ghosh**, and S. Biswas, Ultrafast and nanomolar level detection of H<sub>2</sub>S in aqueous medium using a functionalized UiO-66 metal-organic framework based fluorescent chemosensor, *Dalton Trans.*, 2021, **50**, 11631. (IF: 4.569)
12. **S. Ghosh**, and S. Biswas, A functionalized UiO-66 metal-organic framework acting as a fluorescent based selective sensor of hydrazine in aqueous medium, *Microporous Mesoporous Mater.*, 2021, **329**, 111552. (IF: 5.876)
13. **S. Ghosh**, N. Nagarjun, M. Alam, A. Dhakshinamoorthy and S. Biswas, Friedel-crafts alkylation reaction efficiently catalyzed by a di-amide functionalized Zr(IV) metal-organic framework, *Molecular Catalysis*, 2022, **517**, 112007. (IF: 4.6)
14. **S. Ghosh**, J. Krishnan, V. Karthik, A. Rana, A. Dhakshinamoorthy and S. Biswas, Friedlander condensation reaction catalysed by hafnium-based metal-organic framework, *Molecular Catalysis*, 2022, **533**, 112748. (IF: 4.6)
15. A. Das<sup>±</sup>, **S. Ghosh**<sup>±</sup>, L. Bourda, M. Sk, K. Banerjee, K. Van Hecke and S. Biswas, A Cd(II)-organic framework as a highly sensitive and rapid fluorometric sensor for ascorbic acid in aqueous medium *CrystEngComm*, 2022, **24**, 4723-4730. (IF: 3.756)
16. **S. Ghosh**, N. Nagarjun, M. Alam, A. Dhakshinamoorthy and S. Biswas, Nanomolar level fluorogenic detection of cyanide with an amide functionalized zirconium metal-organic framework and its application in real-world cyanide monitoring, *Eur. J. Inorg. Chem.*, 2022, **2022**, e202200110. (IF: 2.551)
17. **S. Ghosh**, F. Steinke, A. Rana, M. Alam and S. Biswas, A metal-organic framework with allyloxy functionalization for aqueous-phase fluorescence recognition of Pd(II) ion, *Eur. J. Inorg. Chem.*, 2021, 3846. (IF: 2.551)
18. S. Nandi, **S. Ghosh**, M. SK, and S. Biswas, Fluorogenic naked eye turn-on sensing of hypochlorous acid by a Zr-based metal organic framework, *New J. Chem.*, 2021, **45**, 14211. (IF: 3.925)
19. A. Rana, C. Gogoi, **S. Ghosh**, S. Nandi, S. Kumar, U. Manna and S. Biswas, Rapid recognition of fatal cyanide in water in a wide pH range by a trifluoroacetamido based metal-organic framework, *New J. Chem.*, 2021, **45**, 20193-20200. (IF: 3.925)
20. S. Mukherjee, **S. Ghosh**, and S. Biswas, A MOF chemosensor for highly sensitive and ultrafast detection of folic acid in biofriendly medium, paper Strips and real samples, *New J. Chem.*, 2021, **45**, 20193-20200. (IF: 3.925)
21. C. Gogoi, A. Rana, **S. Ghosh**, R. Fopase, L. M. Pandey and S. Biswas, Superhydrophobic self-cleaning composite of MOF with polypropylene fabric for efficient removal of oils from oil-water mixtures and emulsions, *ACS Appl. Nano Mater.*, 2022, **5**, 10003-10014. (IF: 6.14)

22. S. Mukherjee, **S. Ghosh**, and S. Biswas, Amine-rich porous MOF nanocrystals for the selective capture of carcinogenic anions and organo-pollutants from the waste water environment at neutral pH, *ACS Appl. Nano Mater.*, 2023, **6**, 22231-22240. (IF: 6.14)

### **Manuscripts Under Revision:**

1. **S. Ghosh**, A. Rana, A. Patel, D. Manna, and S. Biswas, Superhydrophobic nanosize metal-organic framework composites for the targeted removal of hydrophobic pharmaceuticals and outstanding bacterial anti-adhesion. (Revision Submitted)
2. **S. Ghosh**, S. Mukherjee, V. Karthik, P. Bera, A. Dhakshinamoorthy, and S. Biswas, Superhydrophobic nanosize metal-organic framework composites for the targeted removal of hydrophobic pharmaceuticals and outstanding bacterial anti-adhesion. (Revision Submitted)

### **Manuscripts Under Preparation:**

1. A. Rana, **S. Ghosh**, and S. Biswas, Amino-anchored porous-organic nanosphere for the detection of kynurenine and mitoxantrone from human body fluids and environmental water.
2. A. Rana, **S. Ghosh**, A. Patel, D. Manna, and S. Biswas, Biomedical and agricultural water remediation by stearyl amido functionalized superhydrophobic MOF.
3. **S. Ghosh**, S. Hossain and S. Biswas, An imidazole functionalized aqua-stable Metal-Organic Framework for the selective fluorogenic detection of herbicide DNOC and antibacterial agent furaltadone.

## **Conferences Attended**

### **Poster Presentation:**

1. CRSI-NSC-28: 28th National Symposium in Chemistry, Indian Institute of Technology Guwahati, 2022.
2. Research and Industrial Conclave, Indian Institute of Technology Guwahati, 2022.
3. Frontiers in Chemical Sciences, Indian Institute of Technology Guwahati, 2022.

### **Oral Presentation:**

1. North-East Research Conclave, Indian Institute of Technology Guwahati, 2022.
2. MTIC XIX – Modern Trends in Inorganic Chemistry, Banaras Hindu University, 2022.

## **Skill**

- **Softwares:** MS Office, ChemDraw, Origin, Mercury, Mestrenova, Gaussian-09, Diamond, Material Studio, Endnote.
- **Synthesis:** Organic synthesis, Solvothermal synthesis, Microwave synthesis, Single crystal of coordination polymer.

- **Instrumentations:** X-ray powder diffractometer/ Quantachrome iQ-MP gas sorption analyzer/ FT-IR spectrophotometer/ Thermogravimetric analyzer/ Malvern Zetasizer Nano ZS instrument/ UV-Vis spectrophotometer/ Fluoromax-4 spectrofluorometer/Edinburgh Instrument Life-Spec II instrument/ Fluorescence Microscope/ Water contact angle measurement.

## References

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## More Information



## Declaration

I hereby declare that all the details in the application are true, complete, and correct to the best of my knowledge and belief.

Place: Guwahati

Date: 14.01.2024

Yours' faithfully,  
SUBHRAJYOTI GHOSH