

# ARKAPRABHA GIRI

D.O.B. October 20, 1992  
Ph.D. Student, Dept. of Chemistry  
IISER Bhopal, Madhya Pradesh, India, 462066  
ORCID: 0000-0003-4356-2014  
Email: arkaprabha16@iiserb.ac.in  
Phone: (+91)7694023269



## EDUCATION

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**Doctor of Philosophy (Ph.D.)** *August 2016 - Present*

**Thesis title:** Porous organic polymers for water purification and heterogeneous catalysis  
**Institute:** Indian Institute of Science Education and Research Bhopal (IISERB), MP, India.  
**Course Work C.P.I.:** 9.33/10  
**Supervisor:** Dr. Abhijit Patra

**Master of Science (M.Sc.)** *2013 - 2015*

**Institute:** Vidyasagar University, West Bengal, India.  
**Department:** Chemistry and Chemical Technology (Specialization: Organic Chemistry)  
**Percentage:** 85.4%

**Bachelor of Science (B. Sc.)** *2010 - 2013*

**Institute:** Bajkul Milani Mahavidyalaya, Vidyasagar University, West Bengal, India.  
**Department:** Chemistry  
**Percentage:** 65.1%

**Higher Secondary Education (W.B.C.H.S.E.)** *2010*

**Institute:** Banamalichatta High School, West Bengal, India.  
**Percentage:** 84.8%

**Secondary Education (W.B.B.S.E.)** *2008*

**Institute:** Banamalichatta High School, West Bengal, India.  
**Percentage:** 88.5%

## RESEARCH EXPERIENCES

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- **Research Interests:**

Polymer Chemistry, Supramolecular Chemistry, Materials Chemistry, Spectroscopy, Nanotechnology.

- **Ph.D. Thesis:**

Design, synthesis and characterization of different types of supramolecular cavitands, macrocycles, cages and supramolecular host-based porous organic polymers (POPs) and their application in heterogeneous catalysis, molecular separation, storage and water purification.

- **Laboratory Instrumentation Skill:**

Advanced electron microscope techniques including high resolution transmission electron microscopy (HRTEM), High angle annular dark field imaging and scanning transmission electron microscopy (HAADF-STEM), energy dispersive X-Ray analysis (TEM-EDX, SEM-EDX), field emission scanning electron microscopy (FESEM), atomic force microscopy (AFM). Spectroscopic techniques including powder X-ray diffraction (PXRD), X-ray photoelectron spectroscopy (XPS), Raman spectroscopy, UV-vis spectroscopy, fluorescence spectroscopy, Fourier transform infrared spectroscopy (FT-IR). Thermal analysis (TGA/DSC), solid and solution-state nuclear magnetic resonance spectroscopy (NMR), surface area and pore size analysis (BET), cyclic voltammetry (CV).

- **Master's Project Work:**

*June 2014 - May 2015*

**Advisor:** Prof. Syed Sirajul Islam, Dept. of Chemistry, Vidyasagar University, WB, India.

**Project Work:** Isolation, purification of polysaccharides (derivatives of  $\beta$ -Glucos) from edible mushroom, *Termitomyces clypeatus* by gel permeation chromatography (GPC) and characterization through various spectroscopic techniques (e.g., NMR, GC-MS, UV-vis spectroscopy, etc.).

## PEER-REVIEWED PUBLICATIONS

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1. **A. Giri\***, A. Sahoo, T. K. Dutta and A. Patra\*, Cavitand and molecular cage-based porous organic polymers, *ACS Omega*, 2020, 5, 28413–28424 (**Invited mini-review article**).
2. M. W. Hussain, V. Bhardwaj, **A. Giri**, A. Chande\* and A. Patra\*, Multifunctional ionic porous frameworks for CO<sub>2</sub> conversion and combating microbes, *Chem. Sci.*, 2020, 11, 7910-7920.
3. S. Kundu, B. Sk, P. Pallavi, **A. Giri** and A. Patra\*, Molecular engineering approaches towards all-organic white light emitting materials, *Chem. Eur. J.*, 2019, 26, 5557-5582 (**Review article**).
4. **A. Giri**, M. W. Hussain, B. Sk and A. Patra\*, ‘Connecting the dots’: knitting *C*-phenylresorcin[4]arenes with aromatic linkers for task-specific porous organic polymers, *Chem. Mater.*, 2019, 31, 8440-8450.
5. M. W. Hussain, **A. Giri** and A. Patra\*, Organic nanocage: A promising testbed for catalytic CO<sub>2</sub> conversion, *Sustainable Energy Fuels*, 2019, 3, 2567-2571.
6. S. Bandyopadhyay, S. Kundu, **A. Giri** and A. Patra\*, A smart photosensitizer based on a red emitting solution processable porous polymer: generation of reactive oxygen species, *Chem. Commun.*, 2018, 54, 9123-9126 (Appeared as **inside front cover**).

## AWARDS & FELLOWSHIPS

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- Qualified Graduate Aptitude Test for Engineering (GATE) in 2016 (**AIR-375**).
- Qualified UGC-Junior Research Fellowship conducted by joint Council of Scientific and Industrial Research (CSIR)-University Grants Commission (UGC)-National Eligibility Test (NET) in June – 2017 (**AIR-49**).

- Best poster award in 4<sup>th</sup> national symposium on ‘Shaping the Energy Future: Challenges & Opportunities’ (SEFCO 2020), CSIR-Indian Institute of Petroleum, Dehradun (Jun. 2020).
- Best oral presentation award (3<sup>rd</sup> position): “Nanoporous catalyst for chemical fixation of CO<sub>2</sub>” on virtual national conference “Catalysis and Photocatalysis for Clean Energy (CPCE)” organized by NIT Jamshedpur (Oct. 2020).
- “Young Scientist Award (2020)” from Indian Chemical Society: 57<sup>th</sup> Annual Convention of Chemists (2020) and International Conference on Recent Trends in Chemical Sciences (RTCS-2020), Chemical Engineering & Green Chemistry Section (Dec. 2020).

## CONFERENCE/ WORKSHOP/ SEMINARS/ WEBINARS

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1. Oral presentation: 57<sup>th</sup> Annual Convention of Chemists (2020) and International Conference on Recent Trends in Chemical Sciences (RTCS-2020), Chemical Engineering & Green Chemistry Section: “Porous Organic Molecules to Porous Organic Polymers: Potential Catalysts for CO<sub>2</sub> Fixation” (Dec. 2020).
2. Attended a virtual conference: RSC *Chem. Sci.* sponsored “Chemsci 2020: Leaders in the field” organized by IISER Kolkata (Dec. 2020).
3. Oral presentation: “Multifunctional Porous Organic Polymers for Task-specific Applications” on NMR Workshop and Users' Meeting 2020 organized by IISc Bangalore (Oct. 2020).
4. Presented a virtual poster: “Multifunctional porous composites: A synergistic influence of ZnO and ionic frameworks for CO<sub>2</sub> conversion and combating microbes” on the international virtual conference ‘Cooperative phenomena in framework materials: Faraday Discussion’ organized by Royal Society of Chemistry (Oct. 2020).
5. Oral presentation: “Nanoporous catalyst for chemical fixation of CO<sub>2</sub>” on virtual national conference “Catalysis and Photocatalysis for Clean Energy (CPCE-2020)” organized by NIT Jamshedpur (Oct. 2020).
6. Presented a virtual poster: “The Marriage of macrocycle with porous organic polymer: Charge & size selective molecular separation” [Royal Society of Chemistry Porous Materials Group, #RSCPMGPoster (Twitter), #PMG18, Jul. 2020].
7. Attended a virtual conference: 1<sup>st</sup> International Conference on Recent Development in Organic and Applied Chemistry (RDOAC-2020, Jul. 2020), KIIT-DU, Odisha.
8. Participated in a webinar: Augmenting Writing Skills for Articulating Research (AWSAR, Jun. 2020) webinar on popular science writing, organized by DST, Govt. of India, VP in collaboration with University of Jammu.
9. Presented a virtual poster: “Resorcin[4]arene-based porous organic polymers for CO<sub>2</sub> fixation and micropollutant removal from water”, Shaping the Energy Future: Challenges & Opportunities (SEFCO 2020, 4<sup>th</sup> National Symposium, Jun. 2020), CSIR-Indian Institute of Petroleum, Dehradun.
10. Attended a virtual conference: Materials for Energy Harvesting and Catalysis, 2020 (May 2020, TIFR Mumbai and IISER Kolkata).

11. Attended a conference: National Conference on Advances in Chemical Engineering and Science (ACES 2020, Feb. 2020), IISER Bhopal.
12. Oral presentation: “Knitting the macrocycles for efficient CO<sub>2</sub> conversion and molecular separation”, InTeRaCTiONS 2020 (Feb. 2020), In-house Symposium, IISER Bhopal.
13. Presented a poster: “Resorcin[4]arene-based porous organic polymers for organocatalysis and molecular separation”, International conference on: Emerging trends in Chemistry, 2019 (Jul. 2019), IIT Indoor.
14. Attended a conference: Inter-Disciplinary Explorations in Chemistry (I-DEC 2018), IISER Bhopal (Dec. 2018).
15. Presented a poster: “Connecting the Dots”: Knitting the Macrocycles Through Task-Specific Linkers Leads to New Generation Porous Organic Frameworks”, 15<sup>th</sup> International Conference on Polymer Science and Technology, (SPSI-MACRO, Dec. 2018), IISER Pune and NCL Pune.
16. Attended a Conference: International Conference on Advances in Catalysis for Energy and Environment (CACEE-2018, Jan. 2018), TIFR Mumbai.
17. Attended a Conference: 23<sup>rd</sup> National Symposium in Chemistry (CRSI-NSC-23) organized by Chemical Research Society of India (CRSI), IISER Bhopal, 2018.
18. Attended a workshop on Synthetic and Materials Chemistry: 2<sup>nd</sup> IISERB-NTU 2018 (Nanyang Technological University, Singapore) symposium, IISER Bhopal.
19. Attended a conference: InTeRaCTiONS 2017, In-house Symposium, IISER Bhopal.

## **TEACHING EXPERIENCE & OTHER ACTIVITIES**

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- Teaching Assistant: Physical Chemistry Laboratory (2<sup>nd</sup> year BS) *Spring & Fall, 2018*  
Course Instructor: Dr. Amit Paul & Dr. Madhumita Mukherjee (IISER Bhopal)
- Teaching Assistant: General Chemistry (1<sup>st</sup> year BS) *Fall, 2017*  
Course Instructor: Dr. Joyanta Choudhury (IISER Bhopal)
- Writing popular science stories to bring the modern scientific inventions to the broader audience (e.g., Chemistry inside the “Molecular Flask” published by The Qrius Rhino).