

# CURRICULUM VITAE

## Dr. Rupa Mukherjee

Assistant Professor  
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### **Educational Qualifications**

- Ph.D. in Chemistry from Physical Research Laboratory, Ahmedabad, India (Registered at Mohanlal Sukhadia University, Udaipur, India) (2018).
- M.Sc. in Chemistry, Department of Chemistry, IIT Roorkee, India (2012)
- B.Sc. in Chemistry, Jagannath Kishore College, The University of Burdwan, West Bengal, India (2010)

### **Professional Experience**

- Assistant Professor (July 2020 - present)  
Department of Chemistry, Rajendra College, Chapra, Bihar, India
- Assistant Professor (January 2018 - July 2020)  
Department of Chemistry, Rajendra College, Chapra, Bihar, India

### **Awards & Achievements**

- Qualified Graduate Aptitude Test in Engineering (**GATE**) conducted by Ministry of Human Resource Development (MHRD), Government of India (2012).
- Qualified Physical Research Laboratory Research Fellowship for PhD program (2013).
- Qualified National Eligibility Test (**NET**) conducted by the CSIR-UGC, Government of India (2013).
- Awarded **National Science Foundation (NSF) grant** for participating **IsoCamp-2016**, a short course on "Stable Isotope Biogeochemistry and Ecology" held in **University of Utah, USA** from 13-28 June, 2016.
- Awarded **Science and Engineering Research Board (SERB) Travel grant**, Government of India, to attend "**IsoCamp-2016**" summer school.
- Awarded "**AGU Student Travel Grant**" for participating "**AGU Fall Meeting-2017**" held in **New Orleans, USA**.
- Awarded **SOLAS Travel Grant** to participate in SOLAS Open Science Conference held in **Sapporo, Japan**, from April 21-25, 2019.

### **Paper Presented in International/National Conference**

- **Oral Presentation** during SOLAS Open Science Conference on "Limitation of iron on N<sub>2</sub> fixation in the Arabian Sea", Sapporo, Japan, April 21-25, 2019
- **Oral Presentation** during AGU Fall Meeting 2017 on "Sources and fate of sediment organic matter in Asia's largest brackish water lagoon and nearby mangrove ecosystem" held in New Orleans, USA.
- **Poster presentation** during National Space Science Symposium 2016 on "Particulate organic carbon concentration and its carbon isotopic composition in the Chilika Lake".
- **Poster presentation** during ASLO 2016 summer meeting on "Effect of anthropogenic and natural forcing on nitrogen biogeochemistry of India's largest coastal lagoon".

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## Summer School Attended

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- Participated in “**IsoCamp-2016**”, a short course on "Stable Isotope Biogeochemistry and Ecology" held in **University of Utah, USA** from 13-28 June, 2016.

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## Professional Activities

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- Member of American Geophysical Union (AGU), Washington, D. C., U.S.A

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## Research Interests

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- Ocean biogeochemistry
- Aquatic biogeochemistry
- Nitrogen and carbon cycle studies using stable isotopes of nitrogen and carbon

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## Research Experience

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### [1] Cruise Experiences:

- Participated in a cruise from February 16, 2015 to February 27, 2015 to measure the primary productivity using  $^{13}\text{C}$  and  $^{15}\text{N}$  labeling techniques in the coastal Arabian Sea.
- Participated in International Indian Ocean Expedition-II (IIOE2-EP12) from April 15, 2017 to May 3, 2017 to perform "Dust Stimulated Nitrogen Fixation in the Arabian Sea - an assessment of HNLC region hypothesis (DUSTNIF)" along with primary productivity measurement using  $^{13}\text{C}$  and  $^{15}\text{N}$  labeling techniques in the central Arabian Sea (<http://www.iioe-2.incois.gov.in/IIOE-2/EP12-1Info.jsp>).

### [2] Field Experiences:

- Completed sampling and experiments for three seasons (Summer, Monsoon, Winter; June 2015 to December 2016) to measure the assimilation rates of nitrate, ammonium and carbon along with  $\text{N}_2$  fixation rates in the Chilika lagoon, east coast of India using isotope tracer technique.
- Sampling and measurement of  $\delta^{15}\text{N}$  and  $\delta^{13}\text{C}$  of particulate organic matter and sediment organic matter along with DIC concentration,  $\delta^{13}\text{C}_{\text{DIC}}$  during three seasons in the water column of Chilika.
- Post-monsoon experiments to understand N and C cycling in World's largest mangrove ecosystem (Sundarban, India) and anthropogenically influenced Hooghly estuary.

### [3] Laboratory for Low Temperature Astrochemistry, Physical Research Laboratory:

Molecules studied - Methyl acetate, Propargyl alcohol, and Carbon disulphide

### [4] Summer project Student at IISER-Kolkata, West Bengal, India: [2 months]

“Calorimetric Studies of Multiple Iron(III) Binding FbpA using Ammonium Ferric Citrate as Metal Source using isothermal titration calorimetry (ITC)”.

### [5] Masters Project at Indian Institute of Technology Roorkee, India: [4 months]

“Synthesis and Functionalization of  $\text{A}_3$  corroles and their Cu (III) Complexes.”

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## Research Skills

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- Experienced in operating instruments like:
  - I. Delta V plus and MAT 253 Isotope Ratio Mass Spectrometer (IRMS)
  - II. Elemental analyzer
  - III. Gas bench,
  - IV. Kiel carbonate device
  - V. Laser ablation spectrometer
  - VI. UV-VIS spectrometer
  - VII. Column Chromatography

- **Software Skills: Origin, Chemdraw, Omnic, Sigma plot, Coral draw, Surfer, Ocean Data View etc.**

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#### List of Published Work/ Under Review/ Under Preparation

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- **R Mukherjee**, P R Muduli, S K Barik, S Kumar (2019), Sources and transformations of organic matter in sediments of Asia's largest brackish water lagoon (Chilika, India) and nearby mangrove ecosystem, *Environmental Earth Sciences*, 78:332, <https://doi.org/10.1007/s12665-019-8329-6>.
- Dutta M.K., S. Kumar, **R. Mukherjee**, A. Acharya, P. Sanyal, R. Bhusan and S. K. Mukhopadhyay (2019), Diurnal carbon dynamics in a mangrove-dominated tropical estuary (Sundarbans, India), *Estuarine Coastal and Shelf Sciences*, 229, 106426.
- M K Dutta, S Kumar, **R Mukherjee** (2019), The post-monsoon carbon biogeochemistry of the Hooghly–Sundarbans estuarine system under different levels of anthropogenic impacts, *Biogeosciences*, 16, 289-307, <https://doi.org/10.5194/bg-16-289-201>
- **R Mukherjee**, S. Kumar and P. R. Muduli, (2018), Spatial variation of nitrogen uptake rates in the largest brackish water lagoon of Asia (Chilika, India), *Estuarine, coastal and Shelf Sciences*, <https://doi.org/10.1016/j.ecss.2018.01.012>.
- B Sivaraman, **R Mukherjee** et al., (2014), Benzene Formation on Interstellar Icy Mantles containing Propargyl Alcohol, *The Astrophysical Journal*, 2015, 798:72 (4pp).
- B Sivaraman, **R Mukherjee**, K P Subramanian, S B Banerjee, (2014), Electron Impact Dissociation of Amorphous cis-Methylacetate Ice Analogs, *Chemical Physics Letters*, 609, 167-171
- D Chatterjee, B Paul and **R Mukherjee**, (2013), Oxidation of thiocyanate with H<sub>2</sub>O<sub>2</sub> catalyzed by [RuIII(edta)(H<sub>2</sub>O)]<sup>-</sup>, *Dalton Trans.*, 42, 10056-10060
- Dutta M.K., S. Kumar, **R. Mukherjee**, N. Sharma, R. Bhushan, P. Sanyal, M. Paul and S. K. Mukhopadhyay Carbon biogeochemistry of two contrasting tropical estuarine ecosystems during premonsoon [**In review: Estuarine Coastal and Shelf Sciences**]
- **R Mukherjee**, S. Kumar, and P. R. Muduli: Dissolved inorganic carbon (DIC) and particulate organic carbon (POC) dynamics in the Chilika lagoon (**to be submitted to Marine Chemistry**).
- **R Mukherjee**, S. Kumar and P. R. Muduli, Seasonal variation in nitrogen uptake rates in the Chilika lagoon and source characterization of particulate organic matter using δ<sup>15</sup>N. [**Under Preparation**]
- **R Mukherjee**, M. Dutta and S. Kumar, Nitrogen and carbon assimilation rates in two contrasting estuarine ecosystems of India (Hooghly estuary and Sundarbans mangrove). [**Under Preparation**]
- **R Mukherjee**, S. Kumar and P. R. Muduli, Primary productivity in the Chilika lagoon using <sup>13</sup>C technique. [**Under Preparation**]
- **R Mukherjee**, A Singh, A Patel, K Kumar, S Kumar, N Rastogi, Limitation of iron on N<sub>2</sub> fixation in the Arabian Sea. [**Under Preparation**]

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#### Teaching Experience

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Teaching at Rajendra College (January 2018 – present)

- Physical Chemistry
- Inorganic Chemistry