Urvi Mukherjee

K-1404, Purva Highlands, Off Kanakapura Road, Bangalore 560062 Phone (M): +91 82962 33434 Email: <u>um20ms191@iiserkol.ac.in</u>; <u>mukherjeeurvi@gmail.com</u> Nationality: USA and Overseas Citizen of India (OCI)



EDUCATION

BS-MS (Chemistry, 2020-25)	: Indian Institute of Science Education and Research (IISER), $% \left(\mathcal{A}_{1}^{(1)}\right) =\left(A$
	Kolkata, India
	[CGPA: 9.28/10.00 after Year 4; Department rank: 1/47 ¹]
	[Pre-majors: Physics, Chemistry, Biology]
I.S.C. (XII: 2018 – 2020)	: Little Flower School, Jamshedpur, India – 95.00%
	[English, Physics, Chemistry, Math, Computer Science]
I.C.S.E. (X: 2010 – 2018)	: Sherwood High School, Bangalore, India – 95.00%
	[Eng, Sci, Math, Comp App, Hist, Civics & Geog, French]

Prior schooling in Singapore and France.

MASTER'S THESIS

Ro-vibrational dynamics in strong magnetic fields (working title; work in progress)

RESEARCH INTERNSHIPS

- Department of Chemistry, University of British Columbia, Vancouver, Canada (May 2024 - Aug 2024; 3 months; on the MITACS Globalink scholarship):
 "Spectroscopy and manipulation of cold atoms, molecules and particles" (under Dr. Takamasa Momose; completion certificate in Appendix) As part of the ALPHA collaboration studying matter-antimatter asymmetry, this project involved creating hydrogen atoms using electric and microwave discharge and characterizing this pulsed hydrogen atomic source with a Lyman-α laser source.
 Technical/experimental experience gained:
 - Working with nozzles
 - Working with microwave cavities
- Department of Molecular Physics, Fritz-Haber Institute of MPG, Berlin, Germany (May 2023 - July 2023; 2 months; on the DAAD WISE Scholarship):

¹ Official letter can be produced on request

"Spectroscopy of ultra-cold lanthanide molecules" (under Dr. Giacomo Valtolina; completion certificate in Appendix)

The project involved characterizing and setting up a 626 nm spectroscopy laser, integrating it to the main ultra cold experiment and observing spectroscopic signals.

- Technical/experimental experience gained:
 - Working with optical components (photodiode, lens, polarizers, beam cubes, fiber coupling, acousto-optic modulators, etc.) on optical tables
 - Working with PID servo-loops, using electronic components
- Department of Inorganic & Physical Chemistry, Indian Institute of Science, Bangalore, India (May 2022 - July 2022; 2 months):

"Synthesis and structural characterization of copper-terpyridine-nucleic acid constituent ternary complexes" (under Dr. M. Nethaji; completion certificate in Appendix).

The project involved synthesizing the ternary complexes and characterizing the same with single crystal X-ray diffraction studies.

- Technical/experimental experience gained:
 - Bruker Single-Crystal XRD, data collection and reduction
 - Synthetic methods Reflux, Solid state crystallization techniques
- Software experience gained:
 - WinGX (Crystallography structure solution)
 - Mercury (3D structure visualization)

TEACHING EXPERIENCE

- > Teaching assistant in third year elective course, Chemical Kinetics (Autumn 2024)
 - Tutorial sessions (1 per week) for class of 23 students
 - Conducting of quizzes and grading of all exams
- > Teaching assistant in the first year core course, Elements of Chemistry-II (Spring 2024)
 - Tutorial sessions (1 per week) for one section with 25 students
 - Conducted quizzes and graded all exams

ACADEMIC AWARDS

- Awarded the MITACS Globalink Research Internship scholarship in 2024 for research project at the University of British Columbia, Vancouver
- Awarded the DAAD WISE scholarship in 2023 for research internship at the Fritz Haber Institute of the Max Planck Society, Berlin
- Awarded the MITACS Globalink Research Internship in 2023 for research project at the University of Toronto (Unable to attend the internship as I chose the FHI project)

ADDITIONAL PROJECT WORK

Department of Chemical Sciences, IISER Kolkata:

"The effect of magnetic field on the orientation of molecular reaction collision dynamics" (under

- Dr. Sangita Sen)
- Software experience gained: LONDON (simulation of molecular systems in magnetic fields)

COMPETENCIES

- Software: Python; Java (BlueJ); WinGX (Crystallography structure solution); Mercury (3D structure visualization); LONDON
- Languages known: English and Bengali (proficient), Hindi and Korean (intermediate), French and Kannada (basic)

ONLINE COURSE

CS50's Introduction to Artificial Intelligence with Python offered by Harvard School of Engineering and Applied Sciences on the edX platform (7 weeks)

EXTRA - CURRICULAR ACTIVITIES

- Playing the Violin (Western Classical) for 12+ years. Performed as first violin in chamber orchestra
- Member of school band and choir at Sherwood High
- Member of the organizing committee for Quanta The Science Fest in high school.
- Volunteer activity: Taught English and Math on weekends to elementary school students of under resourced families (2014-16)
- Interested in origami, yoga, solving puzzles, and learning new languages

APPENDIX



THE UNIVERSITY OF BRITISH COLUMBIA

Department of Chemistry, 2036 Mail Mall, Vancouver, B.C. V6T 1Z1, Canada www.chem.ubc.ca

Takamasa Momose Tel: (604) 822-5401, Fax: (604) 822-2847; e-mail: momose@chem.ubc.ca

August 9th, 2024

To Whom It May Concern:

This letter is to certify that Ms. Urvi Mukherjee stayed in my laboratory at the Department of Chemistry, The University of British Columbia, Vancouver, CANADA, from May 20th, 2024 to August 9th, 2024, as an MITACS internship student, where she performed advanced experiments on the creation of high density hydrogen atoms and laser spectroscopy of hydrogen atoms for the ALPHA/HAICU collaboration. She did an outstanding job during her stay and contributed significantly to the progress of our research.

Sincerely Yours

mone

Takamasa Momose, Professor The University of British Columbia





Fritz-Haber-Institut der MPG Faradayweg 4-6 14195 Berlin

To Whom It May Concern

Prof. Dr. Gerard Meijer Director Department of Molecular Physics Phone: +49 30 8413-5602 Fax: +49 30 8413-5601 E-Mail: meijer@fhi-berlin.mpg de

Manuela Misch Secretary Phone +49 30 8413 5600 E-Mail misch@fhi-berlin.mpg.de

Our reference. GM/MM Your reference

Berlin, 2023-07-20

Internship at the Fritz-Haber-Institute

We hereby confirm that Ms. **Urvi Mukherjee**, Indian Institute of Science Education and Research Kolkata, India, has completed an internship at the Fritz Haber Institute of the Max Planck Society in the Department of Molecular Physics as part of the DAAD program "Working Internships in Science and Engineering (WISE)". The internship took place from May 22 to July 21, 2023 in the the group "Molecular Quantum Matter" under the supervision of Dr. Giacomo Valtolina.

Prof. Dr. Gerard Meijer

CALL,

Ďr. Giacomo Valtolina

Fritz-Haber-Institut der MPG

Faradayweg 4-6 14195 Berlin Deutschland Tel. +49 30 8413-30 Fax +49 30 8413-3155 www.fhi-berlin.mpg.de

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INDIAN INSTITUTE OF SCIENCE

Dr. M.NETHAJI,Ph.D Chief Research Scientist Inorganic& Physical Chemistry Indian Institute of Science Bangalore 560 012, INDIA



Bangalore.

This is to certify that Ms. Urvi Mukherjee, BS-MS Degree from IISER Kolkata, worked under my supervision during her internship period from 30th May to 22-July- 2022. She carried out her project on "Synthesis and structural characterization of copperterpyridine-nucleic acid constituent ternary complexes", wherein the work involved synthesizing the ternary complexes of copper-terpyridine-nucleic acid constituents and characterizing the same with single crystal X-ray diffraction studies.

During the stay in my lab, she was able to get good results by synthesizing ternary copper complexes and elucidating structure from the crystals formed. It is expected that she might get a co-authorship in a good journal of repute for the work she has carried out.

Technical/Experimental experience:

- Bruker Single-Crystal XRD, data collection and reduction.
- Synthetic methods Reflux, Solid state crystallization techniques.

Software Experience:

- WinGX (Crystallography structure solution)
- Mercury (3D structure visualization)
- Python (Data plotting)

Ms. Urvi Mukherjee is an uncommonly talented student and has the acumen to understand the depth of the subject. She puts across her views very confidently and takes part in active discussions. I was thoroughly impressed by her commitment to the project. She was social, jovial and got along pleasantly in a group. It will be an asset to have her in any Institution and I am sure she will be able to come up as a very good researcher.

(DR.M.NETHAJI)



Dr. M. NETHAJI, M.Sc., M.D. Chief Research Scientist Dept. of Inorganic & Physical Chemistry Indian Institute of Science Bangalore - 560 012