

Sharat SA

Fourth Year Student

Int. Master of Science (BS-MS)

IISER - Mohali, India

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🐦 @sharat_sa / Bluesky

Qualifications

2023 RESOLV-UEx Scholar

Competitive scholarship for international students to pursue a three month long project in Germany

2021 INSPIRE-SHE Scholar

Fellowship awarded to top 1% of high-school graduate students in India

2020 JEE Advanced Passed

Top 2% of all participating (1M+) students in national University entrance examination

Education

2025 Int. BS-MS (5 Year)

GPA 7.9

IISER-Mohali

Mohali – India

2020 AISSCE (Grade 12)

96% Marks

Saraswati Public School

Jagadhri – India

2018 AISSE (Grade 10)

94.4% Marks

Sacred Heart Convent

Jagadhri – India

About

Upcoming masters' student currently pursuing a chemistry major with a data science minor. My research interests resolve around experimental work in functional materials, particularly in energy systems and electrocatalysis - which I believe will be key to solving the looming environmental crisis. I also have limited proficiency in numeric computation.

Research Projects

May – July 2023 Understanding bimetallic OER catalysis

Supervisor: Dr Martin Rabe || 🌀 **Project Summary**

Max Planck Institute fr Eisenforschung, Dsseldorf - Germany

Designed a study on understanding fundamental surface phenomena in bimetallic Ni-Fe based catalysts for the oxygen evolution reaction (OER), wherein experiments were designed to probe the role of iron in surface enhancement during in-situ Raman spectroscopy. Worked with in-situ Raman spectroscopy, AFM-IR, voltammetric characterisation and XPS. Responsible for catalyst fabrication, characterisation and literature studies. Part of a larger study on surface phenomena in Ni-Fe based OER catalysts. *Active remote collaboration*

May – July 2022 Low-Temperature Charge Transport Study

Supervisor: Dr Naga Phani Aetukuri || 🌀 **Project Report**

Indian Institute of Science, Bangalore - India

Designed novel apparatus for measuring aqueous Organic Electrochemical Transistor (OECT) activity in evacuated environments at sub 200 K temperatures; employed towards understanding charge transfer processes in Organic Mixed Ionic-Electronic Conductors (OMIEC). Also fabricated and characterised OECT-based glucose sensors on interdigitated electrodes (IDE) and designed other experimental apparatus for their study.

Aug – Sep 2021 Simulating Li-Ion Batteries

Supervisor: Dr Akhil Garg || 🌀 **Project Certificate**

Indian Institute of Technology, Delhi - India

Modelled a simplified 2-D Li-ion Batteries in COMSOL Multiphysics® to calculate capacity loss based on SEI growth. Optimised parameters from literature survey.

Languages

Bilingual native proficiency in English and Hindi.

Work Experience

2023 President

Student Run Mess
IISER-Mohali – India

2023 Research Intern

GO Department
MPIE – Dsseldorf

2023 Managing Editor

Manthan Magazine
IISER-Mohali – India

2023 Member | Audit Committee

Student Run Mess
IISER-Mohali – India

2023 Research Intern

SSCU Department
IISc – Bangalore

2022 Junior Editor

Manthan Magazine
IISER-Mohali – India

Talks

Oct 2023 Anodes in OER

Presentation as part of a seminar delivery course

Nov 2022 Organic Electrochemical Transistors

Special talk organised by Curie (Chemistry) club at IISER Mohali

Tools & Techniques

Cyclic Voltammetry

IR, UV-Vis*, Spectrofluorimetry*

SERS, AFM-IR, XRD, XPS*

Atomic Absorption Spectroscopy*

Drop & Spin Casting

DSC & TGA*

COMSOL® Multi-physics

Fortran, Julia & Python for Numerical Computation and Analysis

Linux, L^AT_EX

** indicates techniques I am expecting to work with in the current semester as part of my practical coursework in Analytical Chemistry Lab*

Relevant courses

Electrochemistry

Molecular Spectroscopy

Analytical Chemistry*

Statistical Thermodynamics*

Quantum Chemistry

Adv. Inorganic Chemistry

Adv. Transition-Metal Chemistry

Nanomaterials

** indicates currently underway courses expected to be finished by summer '24*

Work in the Student Run Mess

The Student Run Mess is a massive project underway at my home institute, wherein our elected student body is running a low-cost mess serving over 2500 meals/day at Rs 43 (Roughly 0.5 Eur/USD). We are developing completely new and transparent softwares, management and financial protocols from the ground up, without any precedent or guidance. As President of this body, I lead this committee and am personally responsible for handling its finances and banking (transactions worth INR 33 Lakh or roughly USD 40000 each month).

Other Significant Achievements

2023 Started the Institute's newspaper, *Manthan Times*

2020 School Topper, Grade 12 Examination

2019 Helped set-up a city-wide Environment club

2017 Rank 4, National Cyber Olympiad by SOF Foundation

2013 Black Belt, Mixed Martial Arts (Age 11)

Other Interests

Literature, writing, journalism, activism for civil liberties & environment, cooking, gardening, physical fitness, print media, music, tinkering with computer hardware and software.

Last updated: January, 2024.