



Research Interests: Planetary Sciences, Cosmochemistry, Origin of the Solar System

Education

Degree	Institute/Board	CGPA/Percentage	Year
Bachelor of Science (Research)	Indian Institute of Science	7.8/10	2019-Present
Senior Secondary (Science & Math)	Central Board of Secondary Education	92%	2017-2019
Secondary	Central Board of Secondary Education	10/10	2017

Research Projects

• HED falls from India: Petrogenesis, bulk and in-situ compositions, and volatile depletion histories

Bachelor of Science (Research) Thesis Advisors:

Prof. Ramananda Chakrabarti

Dr. Dwijesh Ray

Prof. Mahesh Anand

July 2022 - Present

Indian Institute of Science (IISc, Bangalore)

Physical Research Laboratory (PRL, Ahmedabad)

The Open University (OU, Milton Keynes)

- Working on four HED fall (Lakangaon, Piplia Kalan, Lohawat, Vissannapeta) samples acquired from the Geological Survey of India (GSI).
- Acquired the ICP-MS data of these four samples along with the literature data of other HEDs for the bulk-rock trends, REE patterns, and HSE (Highly Siderophile Elements) concentrations at IISc.
- Will look at in situ REE patterns using LA-ICP-MS to look into positive and negative Ce anomalies in individual grains of pyroxenes and plagioclase. The in situ trace element concentrations will also help in characterizing the pristinity of these samples.
- Sm/Nd and Calcium isotopes would tell a story about vestan differentiation and its crustal evolution, respectively.
- Future work includes oxygen isotopic analyses and dating the zircon grains found in the Lakangaon eucrite.

• The Lakangaon eucrite: a unique, non-cumulate piece of rock from the Vesta

May 2022 - July 2022

Summer Research Project Advisor: Dr. Dwijesh Ray

Physical Research Laboratory (PRL), Ahmedabad

- Petrography and Petrogenesis of Lakangaon, an Indian Basaltic Eucrite derived from the HED Parent Body.
- Analysed the Lakangaon Eucrite using EPMA and ICP-MS.
- Studied mineral chemistry, accessory phases, whole-rock chemistry, and Rare-Earth Element (REE) patterns to understand the formation of this unusually Fe-rich basaltic eucrite on the surface of 4Vesta.
- Abstract accepted in MetMESS – 2022. [Link](#)

• Aqueous alteration in the CM parent bodies in the early Solar System

May 2021 - Oct 2021

Summer Research Project Advisor: Prof. Ramananda Chakrabarti

Centre for Earth Sciences (CEaS), IISc

- Analyzed the existing data of CM chondrites, their trace element concentration patterns and Ca isotopic composition.
- Studied Rare-Earth Elements (REE) patterns using data from existing studies of various CM1 AND CM2 chondrites.
- Compared mass spectrometric techniques and reference standards corresponding to a few of the publications on calcium isotopic ratio measurements.

Experience

Presented Abstract at MetMESS – 2022, titled “ The Lakangaon eucrite, a unique, non-cumulate piece of rock from the Vesta”.	24-25 November 2022
Research Internship at Physical Research Laboratory (PRL), under the guidance of Dr. Dwijesh Ray	May 2022 – July 2022
Attending Platinum Planetary Seminar Series (PPP-SS), conducted by Physical Research Laboratory (PRL), Ahmedabad	January 2022- present
Attending online 'Cosmic Explorations Speaker Series' (CESS) by Lunar and Planetary Institute (LPI)	March 2020 - present
Research Internship at Centre for Earth Sciences (CEaS), IISc Bangalore, under the guidance of Professor Ramananda Chakrabarti	May 2021 – October 2021
Attended two-day symposium on 'Meteoroids, Meteors and Meteorites: Messengers from Space' (MetMESS - 2021) by Physical Research Laboratory (PRL), Ahmedabad	29-30 November 2021
Attended two-day 'Lunar Science Workshop 2021' by Indian Space Research Organisation (ISRO)	6-7 September 2021

Technical Skills

- **Programming Languages:** C, C++, Python (including Machine Learning libraries), HTML, Git, LATEX
- **Scientific Software and Packages used:** MATLAB, OriginPro, SciDavis, Matplotlib, Numpy & Pandas
- **Characterization & Wet Lab:** ICP-MS, TIMS, EPMA

Key Courses Taken

- **Earth and Environmental Sciences:** Introduction to Earth System, Introduction to Basic Geology, Fundamentals of Climate Science, Experimental Methods in Environmental Chemistry, Design Principles in Environmental Engineering, Origin and Evolution of the Earth, Isotope Geochemistry, Introduction to Petrology, Introduction to Satellite Geodesy, Introduction to Chemical Oceanography, Geophysical Processes
- **CSE & Mathematics:** Algorithms & Programming, Analysis and Linear Algebra (I,II), Probability & Statistics
- **Physics & Engineering:** Introductory Physics- Mechanics, Oscillations and Waves; Electricity, Magnetism and Optics; Modern Physics, Introduction To Electrical And Electronics Engineering, Nanoscience and Device Fabrication, Intermediate Mechanics, Oscillations And Waves, Intermediate Electromagnetism And The Quantum Physics Of Radiation, Intermediate Thermal Physics And The Physics Of Materials, Mathematical Methods Of Physics
- **Others:** Introductory Biology (I,II,III), Basic Chemistry (Physics, Organic, Inorganic), Ways of Doing : Mapping Science - Society Relationship, Mapping India through the Folk Arts, Journalism for Scientists, Introduction to Governance

Positions of Responsibility

- **Co-Founder**, Investments & Learning, a Club under EntIISc* *Nov. 2021 - Present*
- **Coordinator**, Pravega** *Oct. 2020 – Sept. 2021*
- **Volunteer**, Notebook Drive*** *Nov. 2019 – Present*
- **Volunteer**, SFRI**** *July 2022 – Present*

Languages

- English, Hindi, & Marathi: Fluent
- Spanish & French: Beginner

* EntIISc is the Entrepreneurship and Innovation Cell of IISc.

** Pravega is the Annual Science, Tech. and Cultural Festival at IISc. Bangalore, organized by the Undergraduate students.

*** Non-profit organization in IISc, which is aimed at improving the quality of education in under-privileged schools in Bangalore

**** SFRI (Science for Rural India) is a community within IISc, working to improve science education in rural India.