

PROTTI ROY

GRADUATE STUDENT

*THE PLANETARY EXPLORATION GROUP
DEPARTMENT OF EARTH AND ENVIRONMENTAL SCIENCES
B24D TROWBRIDGE HALL
UNIVERSITY OF IOWA
IOWA CITY, IA 52242
IOWA, UNITED STATES
+1(319) 936 6804
protiti-roy@uiowa.edu*

RESEARCH INTERESTS

My primary interest includes hyperspectral study of minerals by analyzing CRISM data using ENVI with CAT and inspecting the Martian surface using JMARS and HiRISE images.

EDUCATION

Ph.D. in Geoscience | University of Iowa, Iowa city, Iowa, United States

AUGUST 2023 – CURRENT

Graduate student working with Dr. Valerie Payré in the Planetary Exploration Group on hyperspectral study of minerals in high thermal inertia regions of Valles Marineris, Mars.

M.Sc. Tech (Applied Geology) | Indian Institute of Technology (Indian School of Mines)

Dhanbad, Jharkhand, India

JULY 2018 – JUNE 2021

CGPA: 7.97/10

THESIS: Multispectral study of the Ramgarh Crater and its surroundings for mineral exploration.

B.Sc. (Honours in Geology) | Asutosh College, University of Calcutta

JULY 2014 – JUNE 2017

First Class Honours in Geology with additional coursework in Chemistry and Mathematics.

PUBLICATIONS

- ✚ **P. Roy**, D. Dasgupta, and A. Kundu, "Contrasting groundwater level within two adjacent regions of Mars," presented at the 7th National Conference on Rock Deformation and Structures (RDS VII), Department of Geology, Banaras Hindu University, Varanasi, India, October 2022, pp. 77 of 92.
- ✚ **P. Roy**, D. Dasgupta, and A. Kundu, "Contrasting mineralogy on contemporaneous and adjacent Martian terrains- A CRISM insight," presented at the 4th Indian Planetary Science Conference, Indian Planetary Science Association, Physical Research Laboratory, Ahmedabad, India, March 2023, pp. 67 of 162.

- ✚ S. Kolay, S. Basu, **P. Roy**, D. Dasgupta, and A. Kundu, "A preliminary investigation of the thermal-contraction polygons along the Martian equatorial region," presented at the 4th Indian Planetary Science Conference, Indian Planetary Science Association, Physical Research Laboratory, Ahmedabad, India, March 2023, pp. 68 of 162.
- ✚ **P. Roy**, D. Dasgupta, and A. Kundu, "Endogenic and Exogenic causes behind contrasting surface mineralogy of two adjacent regions of Mars"- Submitted for review at ICARUS.

PROFESSIONAL MEMBERSHIPS

Lifetime member of **Structural Geology and Tectonic Studies Group India (SGTSGI)** affiliated with the International Union of Geological Sciences (IUGS).

SUMMER RESEARCH INTERNSHIP

CSIR-CIMFR (Central Institute of Mining and Fuel Research), Dhanbad, Jharkhand, India

Summer Research Project on "Study of gas Desorption/Adsorption characteristics of Coal Core samples for evaluation of Coal Bed Methane Resource Potential and techniques for production"

- ✚ Studied CBM potentiality of major coal deposits in India.
- ✚ Determination of in-situ gas content of coal by direct method, indirect method, Kim's Method using Bulk Density logs.
- ✚ Extraction of Coal Bed Methane involving drilling, coring, completion, casing, and cementing.
- ✚ Documented stages of production in CBM wells.

RESEARCH EXPERIENCES

Planetary Geology and Image Analysis Laboratory, Asutosh College

Assisting in Research in an ISRO funded project

- ✚ Hyperspectral study of Thaumasia Minor and East Coprates Planum of Martian surface.
- ✚ Understanding the cause and extent of mineralogical contrast of study area.
- ✚ CRISM data and analysis through ENVI, CAT, JMARS and ArcGIS.

Indian Institute of Technology (Indian School of Mines) Dhanbad

Masters Researcher

- ✚ Acquired data from multiple sources and prepared to a usable format.
- ✚ Identified regional geochemistry from multi-spectral data.
- ✚ Devised band ratios and band combinations for geochemical study.
- ✚ Conducted confirmatory tests regarding presence of hydrothermal alterations.
- ✚ Confirmed the impact origin of Ramgarh Crater.
- ✚ Provided insight to the background of onset of hydrothermal alterations.

FIELD EXPERIENCES

Conference Fieldwork (RDS-VII; BHU: 3 days)

Understanding of deformation processes and evolution history of complex structures along the Son-Narmada North, Son-Narmada South and Markundi Faults, Sonbhadra, Uttar Pradesh, India

M.Sc. compulsory fieldwork 1 (December 2018; 10 days)

- ✦ Analysis of Topography, Drainage, Geological setting of Ara-Dumerbera Village, Kuju, Ramgarh, India.
- ✦ Lithological mapping, pace compassing method, lithologs of Barakar Fm.

M.Sc. compulsory fieldwork 2 (December 2019; 7 days)

- ✦ Structural mapping in the Chotanagpur Gneissic Complex, in and around Dhanbad, Jharkhand, India.
- ✦ Identification of deformation structures, deformation episodes and lithology along a superposed folded terrain

B.Sc. Part 3 Fieldwork (November 2016; 2 weeks)

- ✦ Geological fieldwork and mine visits in Ghatsila, Jharkhand and Joda, Orissa, India.
- ✦ Open and underground mine visit, ore emplacement, mining methods.

B.Sc. Part 2 Fieldwork (December 2015; 10 days)

Structural Geology fieldwork at Galudih, Jharkhand, India in the deformed Proterozoic mobile belt of Ghatsila-Galudih-Tentuldanga:

- Detailed structural mapping of an outcrop.
- Field study and identification of multiple generations of superposed folds.

B.Sc. Part 1 Fieldwork (February 2015; 1 week)

- ✦ Geological fieldwork in the Precambrian Metamorphic terrains of Maithon, Jharkhand, India. Introduction to field techniques, mapping.
- ✦ Rock hand specimen study, mineral identification.

AWARDS AND ACHIEVEMENTS

- ✦ Gold Medal in 10th SOF-National Science Olympiad, 2007.
- ✦ Gold Medal in 15th SOF-National Science Olympiad, 2012.
- ✦ Secured International Rank 2187, State Rank 125 (West Bengal, Andaman and Nicobar) in finals of 15th SOF-National Science Olympiad, 2012.
- ✦ Certificate of Merit in MaRRS International Spelling Bee School Championship, June 2009.
- ✦ Certificate of Participation in Science Project for “The International School Awards Programme” organized by British Council, 2013.
- ✦ Secured First Position in GRIDNITE event in Prithvi, 2019, IIT Kharagpur.
- ✦ Awarded Certificate of Social Service for creating awareness and raising funds for the care of the elderly in HelpAge India, 2009.

- ✚ 2 Gold, 1 Silver, and 2 Bronze medals in drawing during diploma course (2009-2016) under Academy of Music and Fine Arts, Kolkata, India.
- ✚ Gold Trophy in Shiromoni Part-II Examination organized by Academy of Music and Fine Arts, Kolkata, India.

ACTIVITIES

- ✚ Campus Ambassador at Prithvi, 2019; An annual Geological and Geophysical symposium of the Department of Geology and Geophysics, IIT Kharagpur.
- ✚ Fund raiser at HelpAge, India (2009): a leading NGO dedicated towards caring of disadvantageous and elderly senior citizens.

TRAINING AND WEBINARS

- ✚ Geological Survey of India Training Institute, Hyderabad:
 - e-Training on “Fundamentals of Igneous Petrology” (27 July-29 July’ 2020).
 - e-Training on “Fundamentals of Mapping Techniques Granite-Greenstone Terrain” (27 July-29 July’ 2020).
 - e-Training on “Basics of Geographical Information System and its Applications” (11 Feb-13 Feb’ 2021)
- ✚ Attended a webinar on “Martian Geology: Enigmas and Recent Insights” organized by Department of Geology, Asutosh College; September 2020.
- ✚ Attended GEOCHRON 2020: An Online Lecture Series organized by Geological Institute, Presidency University, Kolkata, India.
- ✚ Attended “GMAP Planetary Geologic Mapping Winter School” (30 Jan 2023 – 3 Feb 2023) organized by GMAP Winter School.

SKILLS AND INTERESTS

- ✚ **Certified Courses:** GIS, Mapping and Spatial Analysis, Specialization (4 Courses): University of Toronto; Introduction to Programming with MATLAB, Course: Vanderbilt University.
- ✚ **Software:** JMARS, ENVI, CAT, ArcGIS, Python, ArcPy, Corel Draw, Microsoft Word, Microsoft Excel, Microsoft Powerpoint, R Studio (basics), QGIS (basics), Hysplit (basics), SeaDAS (basics), McIDAS (basics), MeteoInfo (basics).
- ✚ **Laboratory:** Petrological Microscopy, Ore Microscopy, Micropaleontological Microscopy, Scanning Electron Microscopy (SEM), Raman Spectroscopy, Electron Probe Microanalysis (EPMA).
- ✚ **Languages:** English (TOEFL iBT 109/120), Hindi, Bengali.
- ✚ **Interests:** Acrylic Painting, Sketching, Travelling, Reading, Cooking.