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Capacity Building Workshop on Rock Magnetism in Earth Science (RMES-2026)

Applications and Advances in Palaeo-, Rock,
and Environmental Magnetism

February 2-4, 2026

Birbal Sahni Institute of Palaeosciences, Lucknow

Palaeomagnetism Laboratory



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ABOUT THE INSTITUTE

Professor Birbal Sahni, FRS, established the Institute in the year 1946 for the development of science of Palaeobotany visualizing its potential to understand the origin and evolution of plant life and to use the knowledge of fossil plants in resolving various geologic problems, including exploration of fossil fuels. The Institute is named after him as the Birbal Sahni Institute of Palaeobotany (BSIP). Mandate of BSIP has been expanded recently to widen the scope of palaeobotanical researches by combining it with other areas of Palaeosciences, and creating modern laboratory facilities to achieve this. The institute, now renamed as Birbal Sahni Institute of Palaeosciences, and is presently functioning as an autonomous research organization under the Department of Science and Technology (DST), Ministry of Science and Technology, Government of India.

ABOUT THE PALAEOMAGNETISM LABORATORY

Palaeomagnetism is a key research area in geophysics at BSIP, with the laboratory established in 2016. Started with a Bartington Susceptibility meter MS-2B (UK), the laboratory now hosts a range of advanced magnetic instruments viz., JR-6 Spinner Magnetometer (AGICO), IM-10-30 Impulse Magnetizer (ASC Scientific), D2000 AF Demagnetizer (ASC Scientific), TD-48 Thermal Specimen Demagnetizer (ASC Scientific), MFK2-FA Kappabridge (AGICO) along with the Bartington Susceptibility Sensors for high-resolution long sediment core scanning and in situ profile susceptibility measurements for fast and reliable information. The laboratory also hosts a field Pomeroy Rock Drill equipment, Dual Blade Rock Saw, Laboratory Lapidary Core Drill equipment for standard sample preparation for palaeo-, rock magnetic study purposes. The laboratory at present becomes a national facility and presently the applications extends to a wide dimensions and to name a few, the dataset generated is being used for paleoclimate research, continental drift and polar wander path, magnetostratigraphy, archaeomagnetism, environmental magnetic pollution studies, palaeoseismology and astrobiology related research etc. The laboratory facilitates M.Sc. students for their summer training and dissertation courses apart from scholars pursuing for their doctoral research etc.

ABOUT THE WORKSHOP

Palaeomagnetism is important for its utility in solving geologic problems, and has provided some of the first independent evidence for the theory of plate tectonics in the 1960's. There is, however, little awareness of palaeomagnetism and its uses and benefits amongst the Indian students in earth science. Palaeomagnetism is a truly multi-faceted field as it bears upon all the natural sciences; it provides excellent possibilities for contributing to teaching in schools with links to physics (magnetism), chemistry (composition of magnetic materials), mathematics (trigonometry and vector calculus), geography (plate tectonics), and biology (magnetotactic bacteria). At its heart, palaeomagnetism is a geoscience discipline, incorporating geophysics, geology and physical geography.

Palaeomagnetism is the study of the record of the Earth's ancient magnetic field preserved in rocks, sediments and archaeological materials. It is based on the principle that certain magnetic minerals within these materials record the direction and strength of the Earth's magnetic field at the time of their formation. By analysing these preserved records, scientists can reconstruct the movements of tectonic plates, study the Earth's magnetic field reversal events, and gain insights into past climates. Rock magnetism is the study of the magnetic properties of rocks and it includes the study of magnetic minerals. Environmental magnetism is an important application of rock magnetism to understand the palaeoclimate and palaeoenvironment on Earth.

Anisotropy of Magnetic Susceptibility (AMS) is an important technique which depicts preferred orientation of magnetic minerals in a rock or unconsolidated sediments. Magnetic anisotropy constitutes a powerful approach to solving a wide range of geological and geophysical problems. Magnetic fabrics provide key information on palaeocurrent directions and depositional regimes in sedimentary rocks, emplacement mechanisms in igneous rocks, and strain distributions in tectonized settings, even when other geological indicators are scarce.

The main focus of the ensuing workshop would be to understand the basic concepts and fundamentals of rock magnetism from field sampling, laboratory sample preparation and analysis in the laboratory. There will be lectures on theoretical aspects as well as a demonstration of the state-of-art instrumentation that will provide key skills and the latest knowledge on the above research area to the participants.

NEED FOR TRAINING

Rock magnetism unlocks a broad range of applications in palaeomagnetism, archaeomagnetism, biogeomagnetism, environmental magnetism, and planetary magnetism. Magnetic properties studies on natural materials bring new insights on iron-bearing minerals and their response to physical, chemical and environmental changes. During the last few decades, there have been great development including the database, new approaches and techniques demanding the updating of knowledge in this field.

TARGET AUDIENCE

Postgraduate students, research scholars, postdocs and faculties working in the field of geology/geophysics/earth and environmental sciences who are interested to update/enhance their skills about the recent advances in this research field, are the main target audience of this 3 days residential workshop.

COURSE CONTENTS

The workshop will focus on basics of rock magnetism, palaeomagnetism, magnetic reversals, magnetic mineral characterization using magnetic proxies: in soils and sediments and its implications. Data analysis and interpretations of environmental magnetic parameters, anisotropy of magnetic susceptibility and data acquisition. Rock/Sediment/Soil sampling field surveys, laboratory measurements and invited talks on various branches of rock magnetism and their applications in geosciences.

METHOD OF INSTRUCTION

Instruction methods involve both lectures and hands-on training/practice of sophisticated magnetic instruments. Medium of instruction will be in English.

RESOURCE PERSONS

Subject experts mainly Scientists/Professors of BSIP and other University/Institute will deliver the workshop content. Research Associates, SRF, JRF will mentor the hands-on sessions.

SELECTION CRITERIA

Depending upon the number of applicants, the selection cut-off will be decided by workshop convenor. However, preference will be given to the candidates with minimum 60% or equivalent in their qualifying exam.

Minimum Education Qualification	Master's Degree in Geology/Geophysics/Earth & Environmental Sciences and any equivalent/allied field. Currently pursuing M.Sc. (4 th Semester)/Ph.D. program are also eligible.
Nationality	Indian
Duration	02-04 February 2026 (Three Days)
Venue	Birbal Sahni Institute of Palaeosciences, 53 University Road, Lucknow, Uttar Pradesh
Last Date for Applying	31 December 2025, 6 PM
Number of Seats	30
Registration Fee	Rs. 3500/- for Ph.D., Postdocs, Faculty; Rs. 2000/- for M.Sc. Students
Food	Refreshments and working lunch will be provided to all the participants during the workshop
TA & Accommodation Charges	No Travelling Allowance will be provided. Accommodation will be provided in private guest house on twin sharing basis.
Course Coordinators	Convenor: Dr. Mohammad Arif, Scientist 'D' (Mob: 7652015189) Co-Convenor: Dr. Binita Phartiyal, Scientist 'F' (Mob: 9411856391) Email: palaeomag@bsip.res.in

CERTIFICATION

A certificate will be issued to the participants after the successful completion of the workshop.