Rock Magnetics Laboratory

Anisotropy of low field magnetic susceptibility (AMS)

- *Agico KLY-3S kappabridge*

This induction bridge operates at a field of 377 μT (tesla) and a frequency of 875 Hz. It is used to measure the anisotropy of magnetic susceptibility by measuring the susceptibility of a slowly spinning specimen and calculating the anisotropy from these measurements. This data can be used to study subtle rock fabrics that are too weak or ambiguous to study by conventional methods.

Susceptibility versus temperature (low field and high temperature)

- *Agico CS-3 furnace attachment (for the KLY-3 system)*

This attachment to the KLY-3 kappabridge is used to measure the susceptibility of a powdered sample at a range of temperatures. The data from this type of analysis can be used to identify dominant magnetic mineral phases that contribute to the bulk susceptibility.

Palaeomagnetic analysis

- *Agico JR-5 spinner magnetometer*
- *MM shielded thermal demagnetizer*

The magnetometer is used to measure extremely weak the remnant magnetizations of rock samples. The demagnetizer is used to heat samples in a zero field in order to 'strip out' magnetizations of the sample since the rock formed.

This equipment can be used to study tectonic deformation (translation, rotation and tilting) of terrains and tectonic plates by analyzing the change in the relative position of north. It can also have applications in dating rocks and stratigraphic analyses.

Rock magnetic sample collection and preparation

Portable petrol driven field drill

- Diamond tipped coring bits (water cooled)
- Core orientation cylinder with sun and magnetic compass attachments
- Water containers

The portable drill is used or collecting oriented cores in the field. This sampling method is useful for high-resolution or targeted sampling.

Precision lab based drilling rig

- Diamond tipped coring bits (water cooled)
- Water cooling system
- Drill table
- Reorientation tools (sprit level and protractor)

The drilling rig is for taking cores in the lab from oriented block samples collected in the field. Blocks are oriented in the field with a strike and dip mark. Then in the lab, they are bolted to a sturdy table and the pitch between the field horizontal and drill table horizontal recorded. This method is useful for collecting large volumes of material from a large area.

Enquiries

Anyone wishing to carryout rock magnetic analysis at Birmingham, or who would like to discuss the application of magnetic analyses, should contact Carl Stevenson (**c.t.stevenson@bham.ac.uk (mailto:c.t.stevenson@bham.ac.uk)**)

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