

R004-12

C会場 : 11/6 AM2 (10:45-12:30)

12:00~12:15

岩石・古地磁気研究のための計測機器の最新動向

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Latest developments in instrumentation for rock- and paleo-magnetic research

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Mag-Instruments is a young company developing state-of-the-art solutions for magnetic measurements by combining expertise in geophysics, robotics, and mechatronics. Here we will introduce our latest developments oriented towards research in paleo-, rock and environmental magnetism: the Triaxe 2.0 for fully integrated full-vector magnetic measurements during thermal demagnetization and a new generation of ultra-sensitive spinning magnetometers (USM).

The Triaxe 2.0 is a three-in-one tabletop device combining a three-axis vibrating-sample magnetometer (VSM) with a dynamic range of 1×10^{-8} - 0.1 Am^2 , thermal demagnetization up to 800°C and 3D Helmholtz coils to impart thermomagnetic remanence in homogenous fields up to 1.7 mT. Precise feedback control of sample temperature and feed-forward control of the applied magnetic field together with automatic measurement sequences facilitate user-friendly, rapid paleomagnetic measurements and make the Triaxe particularly useful for absolute paleointensity experiments. Apart from explaining the instruments capabilities we will present experimental data to demonstrate applications in paleomagnetism.

We will also report on current developments bringing together spinning magnetometry and state-of-the-art sensing technologies to deliver a low-maintenance, affordable alternative for SQUID based cryogenic rock magnetometers. Our Ultra-sensitive Spinner Magnetometer (USM) will bring the ultra-low level magnetic measurements with sensitivity levels $< 1 \times 10^{-12} \text{ Am}^2$ into regular laboratories, which previously could not afford instrumentation at this sensitivity level.