Separation of magnetic subfabrics by high-field, low-temperature torque measurements *Poster*

Volkmar Schmidt[1] Ann M. Hirt[1] Pascal Rosselli[1]

The anisotropy of magnetic susceptibility (AMS) can serve as a good indicator of strain in deformed carbonate rocks with diamagnetic susceptibility (Owens and Rutter 1978; de Wall 2000). However, the magnetic fabric due to the diamagnetic carbonate minerals is usually very weak and interpretation of the AMS in these rocks is often complicated by the presence of paramagnetic and ferromagnetic phases which overprint the diamagnetic subfabric. For this reason contributions from ferromagnetic and paramagnetic minerals to the AMS should be separated for a reliable interpretation of the AMS. Ferromagnetic contributions to the AMS can be separated by high-field measurements, using a torque magnetometer (Martin-Hernandez and Hirt 2001). The remaining paramagnetic and diamagnetic contributions can be discriminated by their different temperature dependencies. The paramagnetic susceptibility increases as an inverse function of temperature, whereas the diamagnetic part remains constant. Altogether, AMS measurements at high fields and low temperatures allow for the discrimination of all three subfabrics.

Test measurements with the high-field torque magnetometer at liquid nitrogen temperature were performed. It is possible to keep the specimens at low temperature over the measurement period using a cryostat. The main problem is the suppression of mechanical disturbances during the measurement so that the sensitivity of the instrument is retained. The torque of paramagnetic minerals increases strongly at low temperature which results in an amplification of the paramagnetic subfabric. The quantitative separation of diamagnetic and paramagnetic subfabric is under investigation. The result is promising when there is a significant diamagnetic signal.

[1] Institute of Geophysics, ETH Zurich, 8093 Zurich, Switzerland

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