Institut für Angewandte Geowissenschaften

Student work / Working student (HIWI, 40 h/month)

Temperature-dependent magnetic susceptibility and microstructure of magnetic domains of pyrrhotite

Background

Impact structures on Earth often show complex magnetic anomalies associated with the changes of physical and chemical behavior of magnetic minerals including grain size reduction, melting as well as a post-impact thermal recrystallization. Therefore, for a correct interpretation of the rock demagnetization, it is important to distinguish the different sources contributing to the bulk magnetic anomaly. Pyrrhotite is a most abundant magnetic mineral in impacted terrestrial rocks as well as in some other solar system bodies. However, its magnetic behavior is not enough understood.

Goal

To reveal the relationship between the thermomagnetic behavior and magnetic domain microstructure of pyrrhotite. For this purpose, the approach recently used in the study of cohenite inclusions in Morasko meteorite will be applied [Reznik *et al*, J.Mag.Mat.& Magnetism, 2016].

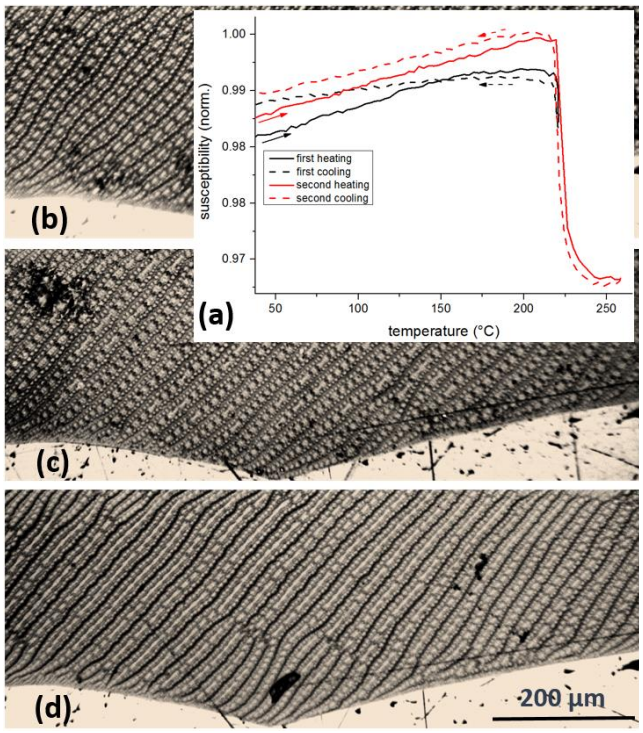

Fig. 1. Magnetic properties of cohenite. (a) Magnetic susceptibility as a function of temperature measured in two successive heating-cooling cycles (black and red curves). (b,c,d) Magnetic domain structures revealed by Bitter pattern method before (b) and after (c, d) two successive susceptibility measurements shown in (a).

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