2006 Joint Assembly
Search Results

Cite abstracts as **Author(s) (2006), Title, *Eos Trans. AGU, 87*(36), Jt. Assem. Suppl., Abstract xxxxx-xx**

Your query was: **kletetschka**

HR: 0830h
AN: **GP41A-04**
TI: Bjurbole meteorite: An inefficient recorder of paleofields less than one micro Tesla
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AB: Magnetic field during the formation of the solar system is largely unknown. Localized and special condition to induce magnetic field more than micro-Tesla that were caused by solar wind or neighboring cosmic phenomena are conceivable, and these should not be ruled out. However, our measurements of AF demagnetization of Bjurbole meteorites support the empirical measurements made by Kletetschka et al., 2006. These measurements indicate that the lowest field that magnetic minerals, such as Fe, FeNi, a-Fe3O2, and Fe4O3, can record is near 1000 nano-Tesla. Measurements reveal an existence of an intrinsic remanent magnetization that these magnetic minerals hold in absence of external magnetic field. TRM (Thermal Remanent Magnetization) was insensitive to acquisition fields less than 1000 nano-Tesla. These intrinsic magnetizations can be viewed as "Background Magnetizations" (BM) characterizing specific multidomain minerals, and their implication may be significant for meteorite magnetic record. We report that paleofield analysis of extraterrestrial material, namely Bjurbole meteorite, may support BM existence. NRM of chondrules, metal grains, and matrix were measured and demagnetized by alternating field (AF) ranging between 2 and 240 mT. Then samples were saturated isothermally by magnetic field up to 2 T. A decay of NRM values due to AF demagnetization was normalized by Saturation Isothermal Remanent Magnetization (SIRM). We observed that the decay of the magnetization had stopped at around 10 mT, and fluctuated all the way up to highest demagnetization field of 240 mT. The fact that NRM values did not decrease in magnitude but fluctuated around constant value suggests that samples contain Viscous Remanent Magnetization (VRM) removed by 10 mT AF field and the remaining component could be interpreted such that the NRM

decay reached the intrinsic BM that can not be further demagnetized. The results suggest that the Bjurbole meteorite may have not preserved paleofield information or we need a different approach in order to extract any early solar system or proto-solar nebula information from these materials.
DE: 5109 Magnetic and electrical properties (0925)
DE: 1519 Magnetic mineralogy and petrology
SC: Geomagnetism and Paleomagnetism [GP]
MN: 2006 Joint Assembly

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