Complementary study of some magnetic properties of selected well known meteorites

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Abstract: In the Allende carbonaceous chondrite, very low magnetic susceptibility (κ) reflects lack of magnetic material. Natural remanent magnetization (NRM; of very low intensity) of the meteorite is probably of viscous, secondary origin, acquired in the terrestrial conditions. It does not carry the thermoremanent magnetization (TRM) from the time of its origin. The El Hammami, (stone-olivine-bronzite (H5) chondrite), the Ghubara (L5 hyperstene chondrite) and the Gold basin (stone L4 olivine-hyperstene chondrite) contain kamacite, probably also taenite (with plessite) as the dominant carriers of magnetism. They have very near values of κ, but intensity of NRM and induced anhysteretic remanent magnetization (ARM) are different. The results have shown that these differences are due to different grain size of FeNi alloys. The origin of RM of these chondrites has not been proven. The Canyon Diablo (iron meteorite, partly oxidized in the terrestrial conditions), the Nantan (iron meteorite) and the Sichote Alin (iron meteorite) have relatively high κ which reflects high content of kamacite of high portion of Fe in this mineral. In the Canyon Diablo the RM is partly carried by secondary relatively stable portion of Fe oxides (probably hematite), except of FeNi alloys. This meteorite has the most stable RM, but dominantly of the secondary origin, which was acquired in the terrestrial conditions. The realized laboratory work has not determined the type and origin of RM of the Nantan and the Sichote Alin meteorites.

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