



Pressure demagnetization of martian meteorites and ordinary chondrites

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In order to bring constraints on the shock demagnetization processes that have affected the Martian crust, we conducted experiments of pressure demagnetization on Martian meteorites. We use a non-magnetic pressure cell, so that the remanent magnetization of the sample in the cell can be measured directly in a cryogenic magnetometer under hydrostatic pressure up to 1.5 GPa. We studied the isothermal remanent magnetization of three types of Martian meteorites: a pyrrhotite-bearing shergottite (NWA 1068), a magnetite-bearing nakhlite (NWA 998) and a titanomagnetite-bearing shergottite (Los Angeles). The samples lose up to 30% of their magnetization at 1.2 GPa. We show that the resistance to pressure demagnetization is not directly related to coercivity of remanence, but closely controlled by mineralogy. For instance, NWA 998 that has the lowest coercivity of the three meteorites is also the more resistant to pressure demagnetization. We will also present pressure demagnetization results on H, L and LL ordinary chondrites samples and discuss the implications for their paleomagnetic record.