Multiple magnetic fabrics revealed by anisotropy of partial anhysteretic remanent magnetization in the Goyo granite, NE Japan

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We present examples of composite magnetic fabric (AMS and partial AARM) in the Goyo granite. AMS is anisotropy of magnetic susceptibility and AARM is anisotropy of anhysteretic remanent magnetization. AMS has been used in numerous studies to determine the fabric of igneous rocks. In contrast to AMS, which gathers the contribution from whole rock-forming minerals (silicates and magnetite), AARM isolates the fabric contribution of ferromagnetic minerals only (e.g. magnetite). Since remanent coercivity in magnetite is grain-size-dependent, we measured AARM in three coercivity windows (partial AARM) to characterize fabrics of different size of magnetite: (a) 0-3 mT for multi-domain, (b) 3-15 mT for pseude-single-domain, (c) 15-60 mT for single-domain. In the Goyo granite, partial AARM and AMS show different magnetic fabrics. It is argued that this composite magnetic fabric represents discrete kinematic events during evolution of granite body, since silicates and different size fraction of magnetite in granitoid may grow or recrystalize at distinct episode.