# 原始惑星系時代の磁場記録媒体としての衝撃溶融脈

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# Shock melt vein as alternative plaeomagnetic recorder against chondrules: the case study for chondrite and eucrite

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Dynamic shock remagnetization alters remanence vectors in meteorites, so that it makes extraterrestrial paleomagnetism complicated. Heavily shocked meteorites of shock stages S5 and S6 often contain a shock-induced melt veins (SMVs), which might have reset the remanence of an asteroidal thermal metamorphism at the time of hypervelocity collisions against a chondrite parent-body. We present micropaleomagnetic and petrologic studies of SMVs in L6S5 Tenham chondrite with c.a. 1mm thick black veins enclosing high-pressure minerals such as ringwoodite and majorite. Paleomagnetic data show that the high temperature stable components of SMVs formed a cluster even from different portions of SMV, whereas the stable remanence in surrounding matrix showed a scattered orientation under stereonet projection. Magnetic force microscopy observations at NIPR and backscattered electron images confirmed the stable remanence-carrying mineral in SMVs as framboidal or sinusoidal low-Nickel FeNi's (kamacite) in a coarse-grained taenite. Blocking diagram for low-Nickel kamacite and thermal demagnetization results suggested that the high temperature component (unblocking temperature = 270-600ºC) is a characteristic shock-induced thermal remanence that has newly been acquired during hypervelocity collision. The stability field of high-pressure minerals and blocking diagram revealed that SMV has not experienced the post-shock heating up to 270ºC since its formation. Therefore, the SMV's newly acquired remanence could have preserved an ancient magnetic field at the time of hypervelocity collisions (Sato and Nakamura 2010). Moreover, I present a latest result for SMVs in DHO007 eucrite originated from asteroid 4Vesta, to where now the Dawn spacecraft has approached.

**References**

Sato, Y. and Nakamura, N. Shock melt veins of Tenham chondrite as a possible paleomagnetic recorder: rock magnetism and high-pressure minerals. [Geochemistry, Geophysics and Geosystems, 11 (Q04Z16), (2010), 1-15]