P142-P002 **Room: Poster Session Hall** **Time: May 17**

Estimate of the magnetic field of Mars based on the magnetic characteristics of the Yamato 000593 nakhlite

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Yamato 000593, a nakhlite, were analyzed in terms of its magnetic record, magnetomineralogy, and phase composition. The natural remanent magnetization (NRM: 3.55-6.07x10-5 Am2/kg) was thermally demagnetized at ~320C, and it was unstable against alternating field demagnetization. Based on analyses of thermomagnetic curves, the temperature dependence of hysteresis parameters, and microscopic observations, the magnetic minerals mainly consist of titanomagnetite (0.68 wt% of the sample, including ~5% Fe2TiO4) of less than 100 mm in size, associated with minor amounts of monoclinic pyrrhotite (less than 0.069 wt% of the sample) and goethite. Thermal demagnetization of NRM at ~320C is not explained by the thermomagnetic curve data, as a pyrrhotite Curie point is missing. Large magnetite grains show exsolution texture with ilmenite laths, and are cut by silicate veins that formed along cracks. Numerous single-domain (SD) and pseudo-single-domain (PSD) magnetite grains are scattered in the mesostasis and adjacent olivine grains. Moderate coercive forces of HC = 6.8 mT and HRC = 31.1 mT suggest that Yamato 000593 is fundamentally able to carry a stable NRM; however, NRM was found to be unstable. Accordingly, the meteorite was possibly crystallized at 1.3 Ga under an extremely weak or absent magnetic field, or was demagnetized by impact shock that was loaded before 12 Ma (ejection age) on Mars. This finding differs from the results of previous paleomagnetic studies of SNC (Shergottites, nakhlites, chassignites, and orthopyroxenite) Martian meteorites. The significant dipole magnetic field resulting from the molten metallic core might have been absent during the Amazonian Epoch (after 1.8 Ga) on Mars.