

Rock Magnetic and Paleomagnetic Study of Sediment Core (SIR-1PC) From the Southern Ocean

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Recently, relative paleointensity stratigraphy based on detrital remanent magnetization (DRM) has been recognized to be comparable to the oxygen isotope stratigraphy. A piston core of 984 cm long (KH01-3 SIR-1PC; S54-44.25, E140-02.20, 3358 m water depth) was collected from the Southern Ocean basin between Antarctica and Australia during the R/V Hakuho-Maru cruise in 2001. We will present high quality data from the ocean where paleomagnetic and rock magnetic data have been not well documented.

Natural remanent magnetization (NRM) and rock magnetic parameters (low-field mass-specific susceptibility, anhysteretic remanent magnetization (ARM), and isothermal remanent magnetizations at 0.3T and at saturation (SIRM)) were measured. All rock magnetic parameters varied synchronously along the depth, showing good correlation with the peaks of L^* (color spectrum) curve. These facts suggest that rock-magnetic parameters are corresponding with the change in lithofacies. On the other hand, $S(-0.3T)$ value was more than 0.97, which suggests relative homogeneity of magnetic minerals throughout the core. The Verwey transition which is a good evidence for the presence of magnetite was not found with a low-temperature magnetic measurement. The color spectrum a^* was positive (reddish tint) for the whole core. These strongly suggest that magnetic minerals are dominated by maghemite.

The relative paleointensity calculated by dividing the NRM intensity of u-channel samples after AF demagnetization at 20 mT by that of ARM (20mT). The relative paleointensity variations were compared with the Sint-800 paleointensity stack (Guyodo and Valet, 1999). The comparison seems to be generally good but we need further consideration in details.