

IODP 第320次航海によりルイビル海山列から得られた火山岩類の岩石磁気 Rock magnetism of the volcanic materials recovered from Louisville Seamounts during IODP Expedition 330

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Integrated Ocean Drilling Program (IODP) Expedition 330 recovered volcanic materials from seamounts along the northwestern part of the Louisville hotspot track (50-74 Ma). The recovered materials include basalts which are considered to be erupted under subaerial or shallow submarine conditions. We have been trying absolute paleointensity measurements on them, and we in parallel have studied rock magnetic properties to assess the paleointensity results. In the present study we mainly focus on thermomagnetic properties.

Thermomagnetic analyses using a magnetic balance (Natsuhara Giken NMB-89) in vacuum condition have been made on 57 rock chips from Site U1372, 28 chips from Site U1373, 140 chips from Site U1374, 44 chips from Site U1376, and 19 chips from Site U1377 (288 chips in total). The resultant curves can be classified into the five types (A, B, C, D, and E).

Type A: almost reversible thermomagnetic curves observed in 38 specimens. They show a single phase of Ti-poor titanomagnetite with T_c (Curie temperature) higher than ~ 500 degC.

Type B: almost reversible thermomagnetic curves recognized in 18 specimens. The difference from type A curves is existence of Ti-rich titanomagnetite phases with T_c lower than ~ 500 degC, in addition to the high T_c ($> \sim 500$ degC) phase.

Type C: somewhat irreversible thermomagnetic curves found in 49 specimens. They show a single phase of Ti-poor titanomagnetite with T_c higher than ~ 500 degC, however, cooling curves result in reduction in induced magnetization relative to heating curves in most cases. At ~ 50 degC, amount of the reduction is about 20-60 percent.

Type D: irreversible thermomagnetic curves seen in 50 specimens. They are usually characterized by two phases of titanomagnetite, one with moderate Ti content ($T_c \sim 150-300$ degC) and the other with low Ti content ($T_c > \sim 450$ degC). Cooling curves outweigh heating curves in most cases.

Type E: irreversible thermomagnetic curves occurred in 133 specimens. They exhibit relatively low T_c ($\sim 200-300$ degC) components followed by bumps of high T_c ($\sim 400-500$ degC) in heating curves. The bumps are considered to originate from inversion of titanomaghemite. Cooling curves outweigh heating curves in most cases.

Some of the selected specimens will be analyzed using scanning electron microprobe and other instruments. We will report these results together with the thermomagnetic ones.