Magnetostratigraphy and environmental magnetism of ferromanganese crust using scanning SQUID microscopy

*小田 啓邦[1]、臼井 朗[2]、山本 裕二[2]、伊藤 孝[3]、河合 淳[4]
*Hirokuni Oda[1], Akira Usui[2], Yuhji Yamamoto[2], Takashi Ito[3], Jun Kawai[4]

1. 産業技術総合研究所地質情報研究部門、2. 高知大学、3. 茨城大学、4. 金沢工業大学
1. Institute of Geology and Geoinformation, Geological Survey of Japan, AIST, 2. Kochi University, 3. Ibaraki University, 4. Kanazawa Institute of Technology

Ferromanganese crusts are chemical sedimentary rock composed mainly of iron-manganese oxide. Because the ferromanganese crusts grow very slowly on the sea floor at rates of 3-10 mm/Ma, longterm deep-sea environmental changes can be reconstructed from the ferromanganese crusts. Thus, it is important to provide reliable age model for the crusts. A new technology, scanning SQUID (superconducting quantum interference device) microscope (SSM) has been used for paleomagnetism (e.g. Weiss et al., 2000, 2007; Gattacceca et al., 2006; Fu et al., 2014). SSM enable to obtain magnetic image at a scale of ~0.1 mm by measuring vertical component of magnetic field over geological thin sections. Oda et al.(2011) applied SSM on a ferromanganese crust sample from Shotoku Seamount in the northwestern Pacific and successfully developed age model based on magnetostratigraphy. Recently, Geological Survey of Japan (GSJ), AIST has developed an SSM in collaboration with Kanazawa Institute of Technology (Kawai et al., 2016; Oda et al., 2016). Using the SSM, Noguchi et al (2017) successfully applied the same technique on ferromanganese crust from the Takuyo Daigo Seamount and confirmed that the age model based on magnetostratigraphy is consistent with that based on 10Be/9Be. In addition, they are successful in producing a map of environmental magnetic parameters and suggested an increase in higher coercivity minerals after ~3Ma. In the presentation, environmental magnetic mapping will be conducted together with the magnetostratigraphy for ferromanganese crust samples from Hanzawa Seamount, Ryukyu trench and the Shotoku Seamount.

キーワード：鉄マンガンクラスト、走査型SQUID顕微鏡、古地磁気層序、環境岩石磁気、年代モデル
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