

Magnetic field response by magnetotactic bacteria *Magnetospirillum magnetotacticum* MS-1 for understanding a natural magnetic characteristic formed at early stage of sediment formation

*Kohei Masaoka¹, Yusei Kataoka¹, Yuki Morono², Naotaka Tomioka², Goichiro Uramoto¹, Nana Yoshikane¹, Yuhji Yamamoto¹

1. Kochi University, 2. Kochi Institute for Core Sample Research, Japan Agency for Marine-Earth Science and Technology

Variation of the past geomagnetic field is recorded in marine sediments as a fossil magnetization, called natural remanent magnetization (NRM). NRM of the sediment has long been thought to be caused by detrital and aeolian magnetic grains. Recently, interests are growing on the contribution of biogenic magnetic grains originated from magnetotactic bacteria to the NRM observed in sediments. To investigate characteristics of NRM carried by biogenic magnetic grains, we cultured magnetotactic bacteria *Magnetospirillum magnetotacticum* MS-1 (hereafter MS-1) and conducted remanent magnetization measurements by simulating an early process of sediment formation. MS-1 was placed in magnetic field and its orientation was observed even for dead cells and well-matched to the theoretical model prediction. Comparison of the observation in this study and NRM in natural sediments indicated that NRM carried by magnetotactic bacteria is the result of initial imprinting by natural magnetic field during sedimentation and following disturbance such by bioturbation, diagenesis and so on.