

Magnetic properties of the sediments and suspended solids in the sea surface water at the Hiroshima bay station.

KAWAMURA, Noriko^{1*}

¹Japan Coast Guard Academy

Suspended solids (SS) in sea water are consisted of planktons and insoluble particles, and are an indicator of transparency. SS particles adsorb and incorporate metallic ions. Iron is a metallic ion, and an essential element for phytoplankton. It is supplied from river to sea as bivalent or trivalent ions, and exists as iron compounds as organic complexes in sea water. Aeolian dusts are consisted of SS, and also consists of iron compounds. They will deposit on seafloor, and be sediments as the climatic record. It is important to investigate the distribution and mode of iron compound in SS for the present and past environmental studies. This study aims to diagnose magnetic minerals in SS. Enough amount of SS sample for magnetic measurements are collected by magnetic separation from seawater at the Hiroshima bay station. 4 L of seawater is filtrated, and the particles above 0.45 μm in diameter are recovered for XRF analysis. The amount of magnetic particles in sea surface water shows relatively high values from April to July in the bay. The maximum value is found at the station, which is located near an iron works (the supply source). The particle is opaque minerals and looks like needle. The values of IRM imparted at 0.3 T and 2.5 T are not stable. It suggests that SS has strong anisotropy. Results of thermo-magnetometry indicate that magnetic carriers of SS samples are mainly magnetite, and goethite and hematite is also recognized. Magnetic minerals in the sediments at the station are magnetite, hematite, and greigite. It is implied that goethite present in the sea surface water and it may be dissolved on sea floor.

Keywords: Suspended solids, Iron compounds, Goethite