

Implications for formation process of hydrogenetic ferromanganese crusts based on in-situ exposure experiments at sea floor

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Ferromanganese crusts are chemical sedimentary rocks widely covering deep sea floors and rock outcrops. The crusts have an important role in marine material cycling of manganese, iron, trace metals and so on. From such a point, we conducted in-situ exposure experiments at sea floors. Hino (2015MS) reported that a deposition of micron-m size Fe-Mn particles on artificial substrates which had been deployed for 11 years at depth 918m in the Daini-Bayonaise Knoll in the Izu-Bonin arc, using electron microscopes with FE-SEM/EDS and TEM/ED/EDS. From more detailed investigation, he suggested that modern hydrogenetic crusts are formed by accumulating the particles. But the particles observed in Daini-Bayonaise are not always precipitated on other locations and water depths. To this end, we analyzed another artificial substrates from two different areas located in North West Pacific (Kaikata Seamount, Takuyo-Daigo seamount) by in-situ exposure experiments. We considered the formation process of crusts based on FE-SEM/EDS analyses. FE-SEM/EDS analyses indicates that these micro-scale Fe-Mn particles observed in Daini-Bayonaise Noll may ubiquitously precipitate on other locations.

Keywords: ferromanganese crust, hydrogenetic, kaikata seamount