

Comparative analysis of microbial community on hydrogenetic ferro-manganese crusts from North-West Pacific Ocean

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Ferro-manganese crust (Mn crusts) is rock covered with iron and manganese oxides, and present on the boundary layer between hydrosphere and lithosphere. Mn crusts grow with sedimentation of these oxides from seawater. Growth rate is 1-10 mm/Myr, estimated by radiometric dating and magnetic stratigraphy (Usui and Someya, 1997). Mn crust is widely distributed on outcrop of seamount and sea plateau with slow sedimentation rate.

Mn crust contains several metals (ex. Cu, Co, Ni, Pt and Rare Earth Element etc. Hein, 2000). Considering content of rare metals and rare earth element, and abundance of Mn crust on seafloor, it is expected to use of Mn crust as a resource.

Our knowledge about microbes on surface and inside of Mn crust is limited. We analyzed the microbial community on the surface of Mn crust from Takuyo-Daigo Seamount at the depth of 2991 m. We show that high abundance of microbes and highly diversified microbial community on the surface of Mn crust and microbial community on Mn crust is different from that of sediment or seawater (Nitahara et al., 2011). However, it is not clear that these characteristics are general between Mn crust on different area or different depth. So we collected and analyzed Mn crust from several seamounts including Takuyo-Daigo seamount using 16S rRNA gene phylogeny.

We compared microbial communities of Mn crust from Takuyo-Daigo seamount and Ryusei seamount, there is a little difference. Comparative analysis between Mn crust, sediment and seawater from Takuyo-Daigo seamount and Ryusei seamount shows that microbial community composition of Mn crust and sediment are similar, while that of seawater is different from that of Mn crust and seawater.

In this presentation, in addition to Takuyo-Daigo seamount and Ryusei seamount, we will discuss about comparative analysis including Mn crust from Daito Ridge and Ogasawara sea plateau.

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