

Challenges in microstratigraphy on the hydrogenetic ferromanganese crusts: Depositional processes and environments recorded as secular variations in microstructure, chemical and mineralogical compositions.

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We attempted to apply the method of Shima-Shima-gaku (lamina stratigraphy named by prof. S. Kawakami) on the secular variations in growth structure, chemical and mineralogical properties between the growth columns of the hydrogenetic ferromanganese deposit. The criteria for describing each bands or zones based on the macroscopic (=physical) properties are not always consistent with chronological correlations or may not match with mineral/chemical composition. Our microscopic characterization using optical microscope, XRF mapping, XRD, acid-leach, micro-focus X-ray CT proved a possibility of separating local and regional sources of each mineral particle or element which is closely associated the environments of deposition.

Keywords: marine manganese deposit, manganese crust, microstratigraphy, Shima-Shima-gaku