

## Geochemical characteristics of the nuclei of ferromanganese nodules in the Minamitorishima EEZ

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Ferromanganese nodules are polymetallic concretion mainly composed of Mn- and Fe-oxyhydroxides with significant concentrations of valuable metals such as Ni, Cu and Co [1, 2]. The nodules can be found on deep-sea sediments worldwide, and their dense distribution has recently been discovered in the Japanese exclusive economic zone (EEZ) around Minamitorishima Island [3, 4].

It is well known that almost all ferromanganese nodules have nuclei, which clearly indicates that growth of a nodule generally starts on nucleus surface. Characterizing the nuclei of the nodules can, thus, provide important information on the conditions for the growth initiation of the nodules. Previous study [5] revealed that the nuclei of the nodules in the Minamitorishima EEZ can be classified into four types (nucleus I ~ IV), and that the majority of the nuclei is consolidated pelagic clay (nucleus I). However, detailed chemical characteristics of the nucleus I, as well as those of the other types of nuclei, have not yet been fully understood.

Here, we performed major and trace element analysis of the nuclei (especially of the nucleus I) in order to reveal their chemical features. In the presentation, we will show the results of the chemical characterization of the nuclei and then will discuss the origin of the nuclei of ferromanganese nodules in the Minamitorishima EEZ.

### References

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