

Distribution Pattern Analysis of Selenium and other minor elements in deep seawater and salts using chemical-concentration and micro PIXEs

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Summary

A simultaneous multielemental analytical method, Particle Induced X-ray Emission (PIXE) spectrometry, was successfully applied for distribution pattern analysis of minor elements in deep seawater and salts. Chemical - concentration PIXE spectrometry of deep seawater showed Cr, Fe, Ni, Cu, Zn, Se, Mo, Pb, and Bi. A commercially available salt showed K, Ca, Ti, Cr, Mn, Fe, Ni, Cu, Zn, Se, Br, Sr, and Pb. Of these elements, K, Ca, Sr, and Ti may come from insoluble components included in salts. The abundance of these elements varied depending on the commercial products. The difference of the abundance could be utilized for quality management of salts.

In the present PIXE technique, complexation of DBDTC and heavy metals was used for collecting them in deep seawater and salts. Se and Mo found in deep seawater form anionic species along with As and V, while the latter was not found.