

Cultivation of marine micro organisms by the culture solution based on the artificial seawater and elemental analysis by PIXE

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Abstract

The elemental abundances in the marine micro organisms are very interesting because they have played the large role in the mass transfer in the ocean. By this research, it has checked that continuous cultivation of marine micro algae (*Nannochloropsis sp.*) by the culture solution based on the artificial seawater (ReefSalt, Seachem Laboratories) was possible like the conventional culture solution based on the filtration seawater. In the middle-scale cultivation by aeration cultivation of the algae, cultivation has been expanded to cell density sufficient as food of wheel animals (*Brachionus plicatilis*). In cultivation of the wheel animal, the resting egg was used and it succeeded in making it hatch and increase in the culture solution based on the artificial seawater. The target for PIXE analysis of these marine micro organisms were created and they were bombarded by a 2.9MeV proton beam from a NMCC cyclotron. The simultaneous determination of the main and trace elements in the organisms was carried out by PIXE analysis. The tendency with few amounts of element existence in the organisms cultivated by the culture solution based on the artificial seawater than that of by the culture solution based on the filtration seawater was seen. In research of the bioaccumulation, it is advantageous that there is little content of the elements.