PIXE analysis of fluoride and trace elements in shark teeth

S.Sakurai, S.Onodera, Y.Horii[1], K.Sera[2], S.Goto[3] and C.Takahashi[3]

Department of Environmental Science
School of Information Studies, Otsuma Women's University
2-7-1 Karakida, Tama, Tokyo 206-8540, Japan

[1]Hachijo Branch, Tokyo Metropolitan Center for Agriculture,
Forestry and Fisheries on Izu islands
4222 Mitsune, Hachijo-machi, Tokyo 100-1511, Japan

[2]Cyclotron Research Center, Iwate Medical University
348-58 Tomegamori, Takizawa, Iwate 020-0173, Japan

[3]Takizawa Institute, Japan Radioisotope Association
348-1 Tomegamori, Takizawa, Iwate 020-0173, Japan

Abstract

We have measured the concentration of fluoride and other elements simultaneously in shark teeth using PIXE. 17 samples taken from 10 species of shark. As a result, 18 elements were detected. Particularly, Ca, Cl, Mg, Na, P, Sr, Zn, and F showed high concentrations. There is a high statistical correlation between Ca and P in shark teeth. However, there is a low statistical correlation between Ca and F. Judging from shark teeth is composed of Apatite, it is possible to consent to the fact. We have 100 samples of Shark teeth and are planning on reporting the findings of a study with larger samples in the near future.