

Studying removal processes of aqueous U, Th and metals using aquatic macrophytes by means of PIXE

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RESUMO

The Buenos Aires heavy ion nuclear microprobe facility MiP (Microhaz de iones Pesados) has been in operation for fourteen years. It is one of the experimental lines of the Tandem 20UD Pelletron accelerator and comprises an Oxford Microbeams Ltd. (Oxfordshire, UK) OM55 triplet of magnetic quadrupoles. It was originally set up for micro-PIXE (micro-particle induced X-Ray emission) [i, ii] elemental analysis and micromachining [iii].

During this seminar I am going to develop some ideas about the use of heavy ions (C, O and S) on PIXE (i.e. effect of projectile on sample damage) and to show the recent work we performed in our group, mostly applied to bioremediation and biomonitoring strategies using a 50-MeV $^{16}\text{O}^{5+}$ beam.

In this sense, we carried out removal processes of aqueous U, Th and metals by employing aquatic macrophytes [iv, v]; all the parameters of the bioremediation process, bioconcentration factors (BCFs) in roots and leaves and translocation factors (TFs), were achieved by microPIXE quantification.

[i] Stoliar, P. et al., Appl. Radiat. Isot. **2004**, 61, 771–774.

[ii] Muscio, J. et al., AIP Conf. Proc. **2007**, 947, 491–492.

[iii] Nesprías, F. et al., NIM B **2013**, 300, 68–73.

[iv] de la Fournière, E.M. et al, NIM B, 2019, in press.

[v] de la Fournière, E.M. et al, Bol. Soc. Argent. Bot. 2019, 54, 263–275.