

18 Years Dedicated to IBA at LAMFI–USP

M. H. Tabacniks

Institute of Physics, University of São Paulo, Brasil. Rua do Matão, travessa R, 187, 05508-090, São Paulo, SP.

LAMFI-USP (Laboratório de Análise de Materiais por Feixes Iônicos) is a multi-user facility dedicated to the development and application of ion beam techniques for the analysis of bulk materials and thin films. LAMFI-USP is the result of a joint effort of several research groups from the University of São Paulo, which, in 1992 acquired a 5SDH, 1.7MV pelletron accelerator to fulfill their needs in PIXE and RBS analysis. Presently LAMFI has three ion sources, an Alphasource, a SNICS II, and a MALDI source at the zero degree line. The two regular beam lines and dedicated vacuum chambers are used for the analysis of all kind of materials using common IBA methods. An optimized external beam line, still under development, offers PIXE and RBS analysis in open air, mostly used for arteometry and archaeology investigations. The MALDI-TOF line at zero degree is used to accelerate and to analyze ultra heavy molecules. Insulin molecules with ~60000 amu have already been successfully accelerated and analyzed.

LAMFI-USP started its activities in March 1992 with all available machine time allocated to the final users. In 1996 LAMFI was disassembled and moved to its final installations. In 1997, LAMFI and its activities were evaluated by an international committee with the special participation of Prof. J. Meyer, Dr. J. Baglin and Dr. J. Biersack. The committee concluded that LAMFI was in an ideal position to make positive contributions to the Brazilian scientific and engineering communities and to the University of São Paulo. Nowadays almost 3500 samples/yr are analyzed at LAMFI with an effective on-target-beam-time of about 1000 h/yr. In the 2004-2009 period, LAMFI has been used by over 60 researchers (or their students) from 15 different research institutes. In the last 5 years, IBA results were used in more than 75 Ms and PhD thesis and in more than 150 peer reviewed papers.