

The IFUSP facilities for material modification induced by ion beams

T. F. Silva, N. Added, M. D. L. Barbosa, A. Delgado, M. A. Rizzuto, and M. H. Tabacniks

Instituto de Física da Universidade de São Paulo – Rua do matão, travessa r, 187.

The Instituto de Física da Universidade de São Paulo (IFUSP) is developing its facilities for material modification studies. For that purpose, some modifications have been made in our implanters in order to achieve a general improvement of these machines.

Two ion implanters were received as donation from Hahn-Meitner Institut (HMI), in Germany. The biggest one, has 400 kV maximum nominal acceleration voltage, a 90° selector magnet with 1.5-m long and five distinct experimental lines (one at 0° , two at $\pm 17^\circ$ and the other two at $\pm 30^\circ$). The smallest one, has 70 kV maximum nominal acceleration voltage, a 19° selector magnet with 0.3-m long and a single experimental line.

The first implanter, commissioned in 2009, was used to test a gas stripper designed to be installed in one of its experimental lines to enable Accelerator Mass Spectrometry (AMS) measurements.

The second implanter, commissioned in 2008, has been undergoing many improvements. Some examples that can be given are: the reduction of the vacuum pressure in the irradiation chamber, improvements in the control and security systems, and in the optical and sweeping systems.

In this work, the status of the IFUSP ion implanters will be presented. We will analyze the conceptual design for the experimental lines of the 400 kV implanter, and the improvements performed in the 70 kV implanter will be shown. Some characterization measurements of the smallest implanter are also expounded.