

The Tandem Accelerator of the Department of Interaction of Radiation with Matter at the Bariloche Atomic Centre

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The first laboratory in Argentina dedicated to Research and Development based on Ion Beam Accelerators was created in 1960 by Prof. Wolfgang Meckbach. It is located at the Bariloche Atomic Centre and depends on the National Atomic Energy Commission.

Today, the main experimental facility of the “Department of Interaction of Radiation with Matter” (DIRM) of this Centre is a 1.7 MV Tandem accelerator with two ion sources and several associated beamlines. It has a chamber for Cold Target Recoil Ion Momentum Spectroscopy (COLTRIMS), a NEC RC43 end-station dedicated to material analysis and ion implantation, with techniques such as PIXE [1], RBS, ERDA, NRA and channeling capabilities, all of them able to perform with micro-beam focusing, and soon a Wavelength Dispersive X-Ray Spectroscopy (WDS) facility will be incorporated.

These facilities are routinely employed for the compositional and structural characterization of samples. Research fields include geology, mineralogy, biology, medicine, environmental science, archaeology, forensic science, nanotechnology, and others.

In this communication we will present the main technical and operational details of the accelerator, as well as the facilities just mentioned. Finally, operation and maintenance issues that may be of interest to the community of operators of similar equipment will be described.

References

[1] PIXE facility at Centro Atómico Bariloche, S. Limandri, C. Olivares, L. Rodriguez, G. Bernardi, S. Suárez, Nucl. Instr. and Methods in Phys. Res. B, Volume 318 (A) 47-50, 2014.