

THE JNC'S MICRO ION BEAM EXCLUSIVELY FOR MINERAL AND GEOLOGICAL SCIENCES: STATUS AND PROSPECT

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In the research for geological disposal of radioactive waste, it is necessary to understand the migration behavior of trace radionuclides in rocks. Thus the JNC has introduced the Micro Ion Beam (MIB) system of multiple measurement capability having three measurement lines: PIXE (Particle Induced X-ray Emission), RBS (Rutherford Back-Scattering Pectroscopy), and ERDA (Elastic Recoil Detection Analysis). The ion source can produce a proton beam for PIXE, and a He beam for RBS and ERDA. These beams are accelerated by 1MeV tandem accelerator and are focused by the slits and magnetic lenses in vacuum chamber of which pressure is maintained below 10^{-4} Pa. The PIXE system uses a Si (Li) detector with nominal resolution 142eV at 5.9KeV; and the RBS and ERDA, a Ge detector. All measured spectra are recorded by computer from multi channel analyzer. The beam current is set at 5 to 20 nA for each measurement. The total charge is determined by integrating the target current. In this presentation we will mainly discuss the PIXE for mineral sciences.