National Electrostatics Corp.
7540 Graber Rd., P.O. Box 620310, Middleton, WI 53562-0310 USA

02/17

High Resolution RBS (HR RBS) Detection System

APPLICATIONS

NEC offers a High Resolution Rutherford Backscattering (HR RBS) detection system for the NEC RC43 ion beam analysis (IBA) target chamber system. The RC43 combines automated data acquisition with sample positioning and data analysis to provide capabilities for several MeV IBA techniques.

DESIGN

The HR RBS detection system is designed for an incoming He^+ beam of up to 500 keV. This is easily accomplished with high beam stability of ±40eV using the 1 MV, 1.7 MV and 2 MV tandem Pelletron® accelerators.

The system consists of an entrance aperture to define the scattering and solid angle, a single focusing 90° magnet to resolve the energy of each scattered ion, and a position sensitive micro channel plate detection system to count the ions as a function of position/energy.

Mounted on tracks, the system can easily be positioned at the 90° port or the 45° port of the RC43. The bellows allows angle variability of ± 5° at either port.

PERFORMANCE

The approximate energy resolution of the system is about 1 keV, compared to about 15 keV for a standard solid state detector. This is a factor of more than 10 times improvement in energy resolution and subsequently depth resolution.

The high resolution detector can be accurately positioned for small angle grazing measurements such as ERDA measurements of hydrogen concentrations in surface layers.

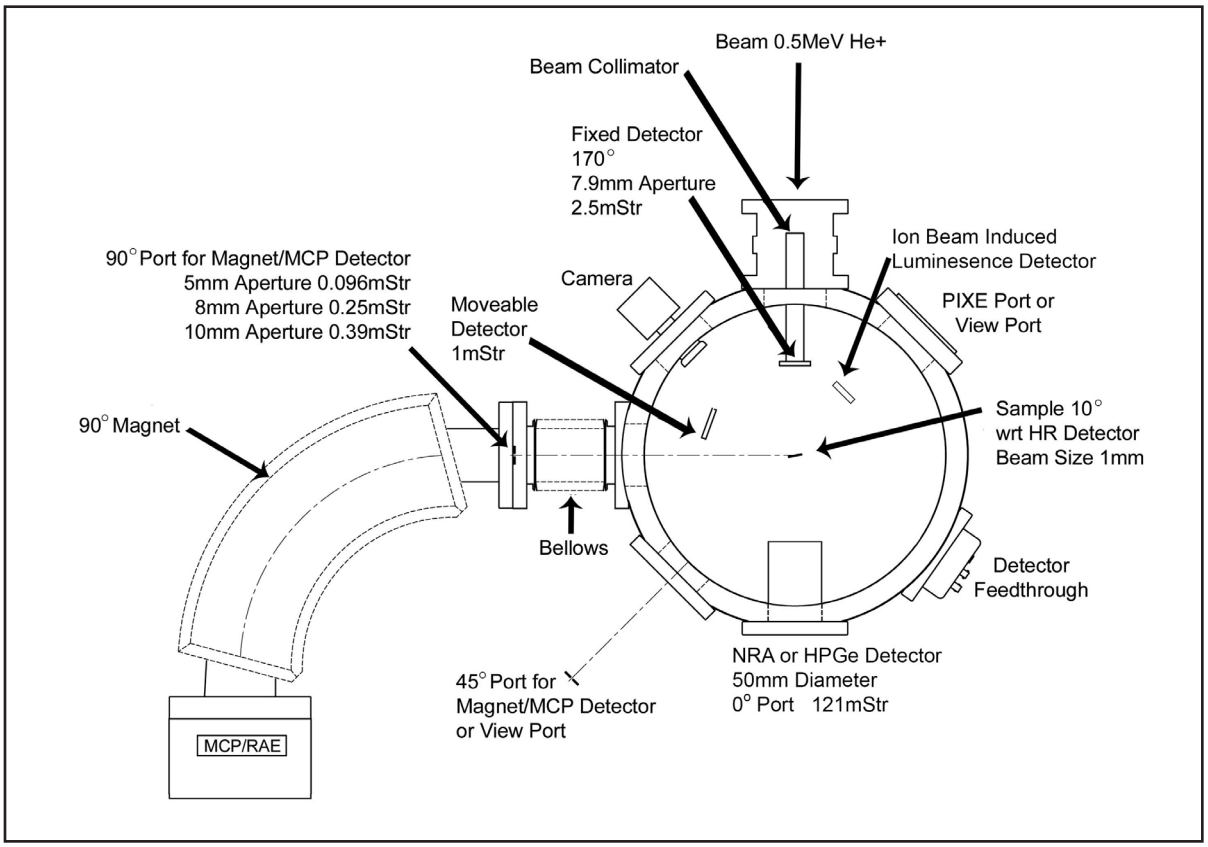
Although developed for use on NEC Model RC43 end stations, it can be configured to fit to other scattering chambers. The detector system is equipped with all necessary hardware and software for automated RBS data collection and analysis.

OPTIONS

The following sketch shows the HR RBS system attached to a RC43 endstation with optional detectors including detectors for RBS, ERDA, NRA, HPGe, PIXE, and Ion Beam Induced Luminesence. An in-air beam system is also optional.

TELEPHONE: 608-831-7600 ♦ **FAX**: 608-831-9591 ♦ **E-MAIL**: nec@pelletron.com ♦ **WEB-SITE**: http://www.pelletron.com

High Resolution RBS (HR RBS) Detection System



National Electrostatics Corp.

7540 Graber Rd., P.O. Box 620310, Middleton, WI 53562-0310 USA

TELEPHONE: 608-831-7600 ♦ **FAX**: 608-831-9591 ♦ **E-MAIL**: nec@pelletron.com ♦ **WEB-SITE**: http://www.pelletron.com