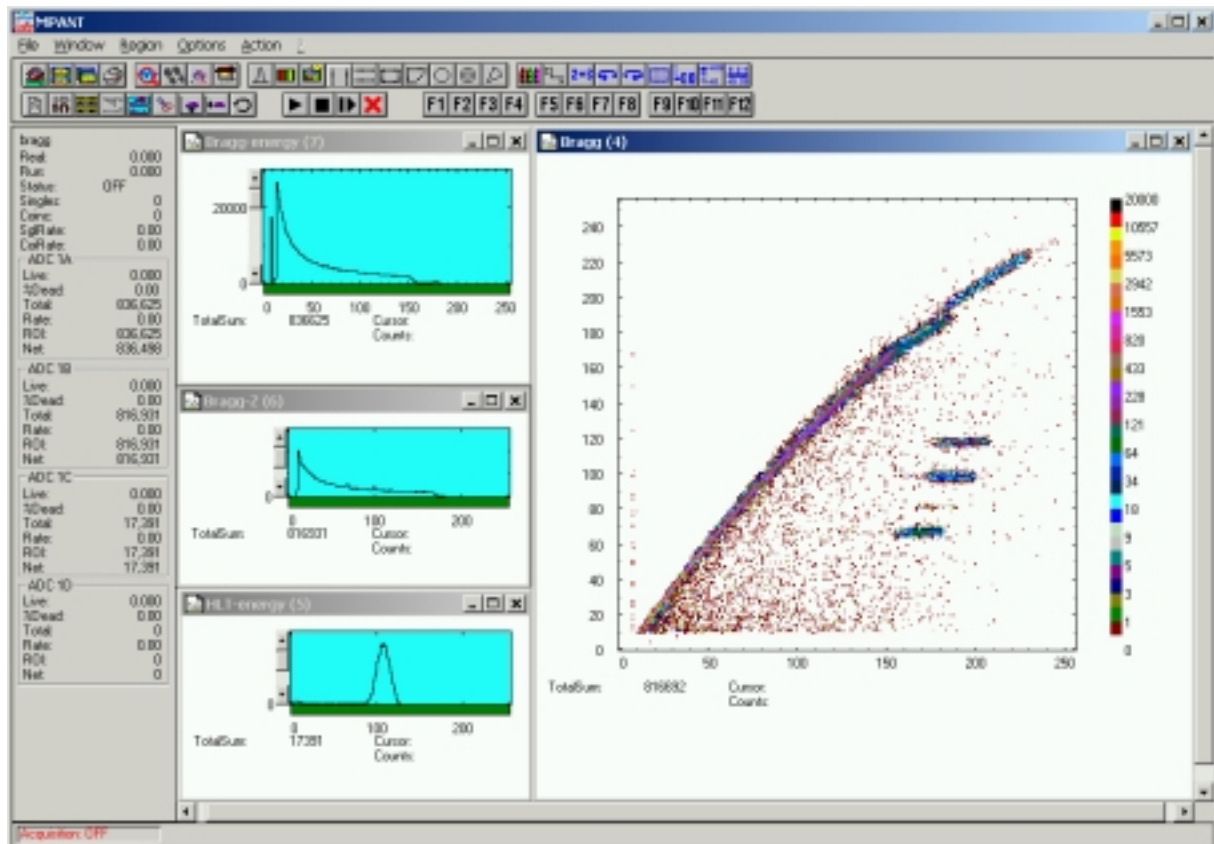


ERDA: Elastic Recoil Detection Analysis

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Chlorine ions with energies of 35 MeV from the Rossendorf 5 MV tandem accelerator hit the sample at angles between 7° and 22.5° relative to the surface. Three particle identifying detection techniques were used to separate the forward scattered ions and recoils from the target with respect to their energy and atomic number or mass:

A Bragg Ionization Chamber (BIC) filled with isobutan and with an $1.2 \mu\text{m}$ thick entrance window (Mylar) was placed at the scattering angle of 30° . It separates elements with energies $\geq 0.5 \text{ MeV/u}$ according to their atomic number. Two parameters are measurable with the chamber: The Bragg peak height, which is proportional to the atomic number of the detected particle and the total energy of the particle. Spectrum # bnsi shows a typical BIC 2D-spectrum of a thin Boron-Nitride-layer on Silicon with some impurities of Oxygen ,Carbon and Argon.



A Time-Of-Flight-Energy Telescope (TOF-E)

To increase the accessible depth of ERDA a time-of-flight-energy (TOF-E) telescope was installed at a scattering angle of 45° . A thin Carbon foil of $10 \mu\text{g}/\text{cm}^2$ near the target combined with a MCP detector gives the start signal and a 450 mm^2 SSB detector after a flight path of 1050 mm provides both a time stop and energy signal of the detected particle.

Two parameters are measurable with this telescope: The time of flight of the particle, which is proportional to the mass number and the total energy of the particle. The spectra # nal ; # tinox and # tisiox are examples of measurements with this technique.

The energy spectra of separated elements were converted into concentration depth profiles by means of a special computer code using the stopping power of ions and the Rutherford cross section for ERDA.

