Measurement of Ion-impact X-ray Emission
by a novel technique based on
High-pressure Gas Ampoules in Silicon Blisters

César Olivares, Gimena Aníbal, Gustavo Ruano, Pablo Pérez,
, Francisco Divi, Esteban Sánchez, Raul Barrachina
Department of Interaction of Radiation with Matter
Bariloche Atomic Centre - ARGENTINA

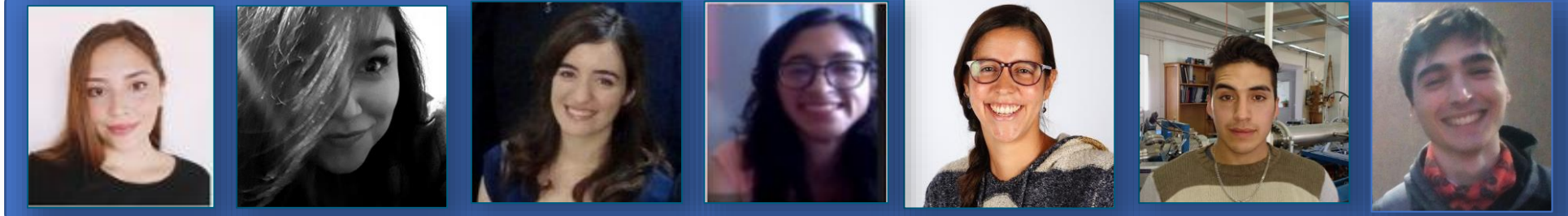
https://fisica.cab.cnea.gov.ar/dirm/

Department of Interaction of Radiation with Matter

Bariloche Atomic Center, National Atomic Energy Commission (CNEA)

DEPARTMENT OF INTERACTION OF RADIATION WITH MATTER

THE WISE



THE YOUNG

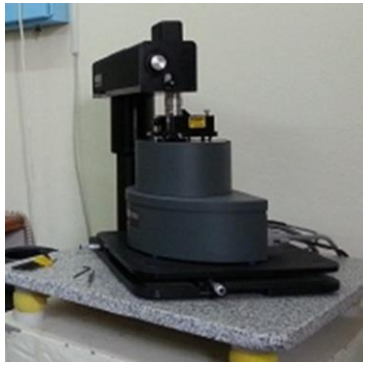
KEVATRON

TANDEM

KEVATRITO

LEA

OMICRON AFM



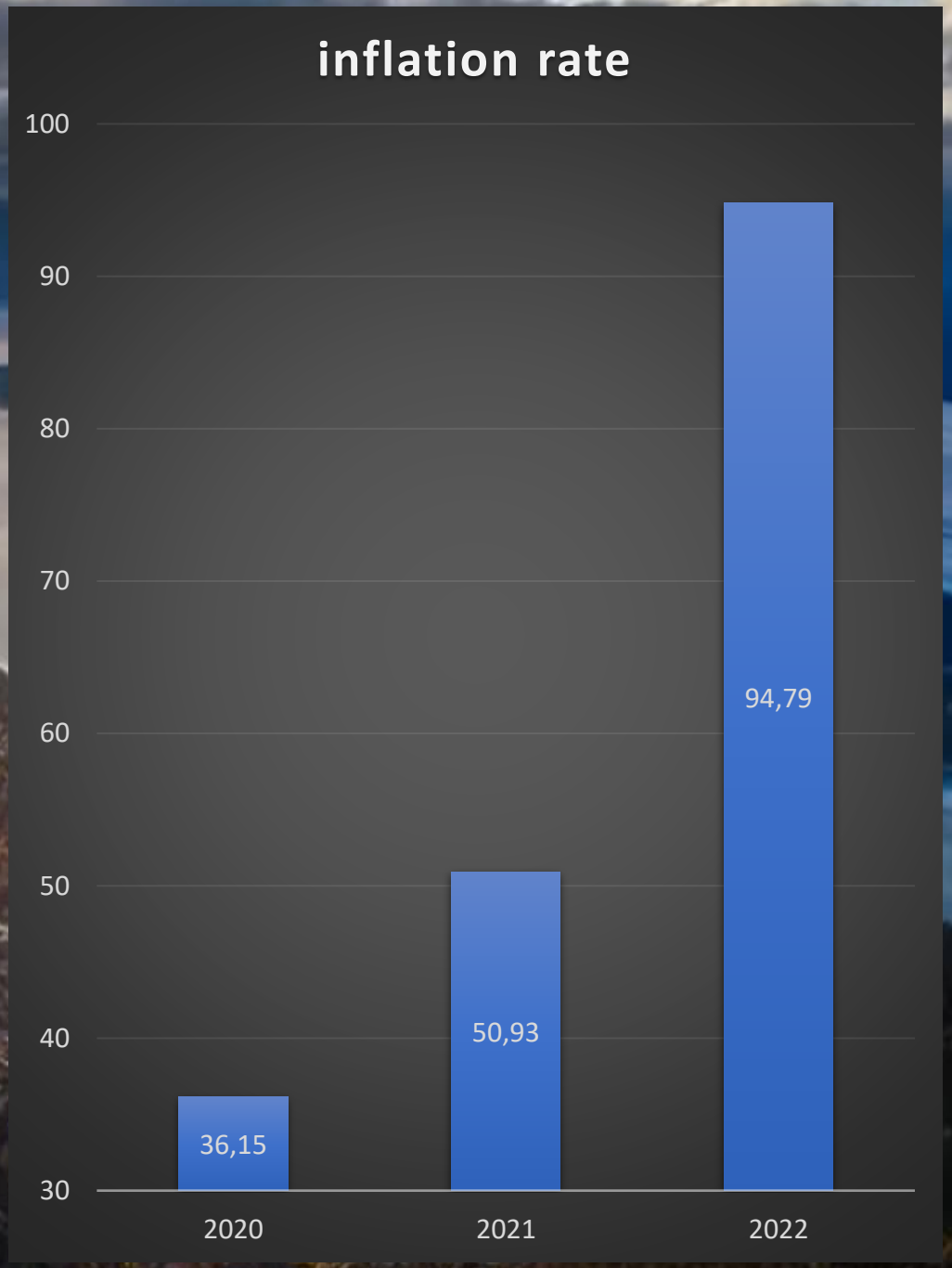
AUTOPROBE CP

XPS SPECS

TUCUTRON


DEPARTMENT OF INTERACTION
OF RADIATION WITH MATTER

DEPARTMENT OF INTERACTION OF RADIATION WITH MATTER



Measurement of Ion-impact X-ray Emission

Measurement of Ion-impact X-ray Emission from High-pressure Gas Ampoules in Silicon Blisters

Development of Surface Topography Due to Gas Ion Implantation

By Bernhard M. U. Scherzer

This review is predominantly oriented toward helium and hydrogen implantation in metals. Effects in nonmetals are only marginally considered and chemical interactions are not included.

In *Sputtering by Particle Bombardment II, Topics in Applied Physics* Vol. 52, edited by R. Behrisch (Springer, Berlin, 1983), pp. 271–355.

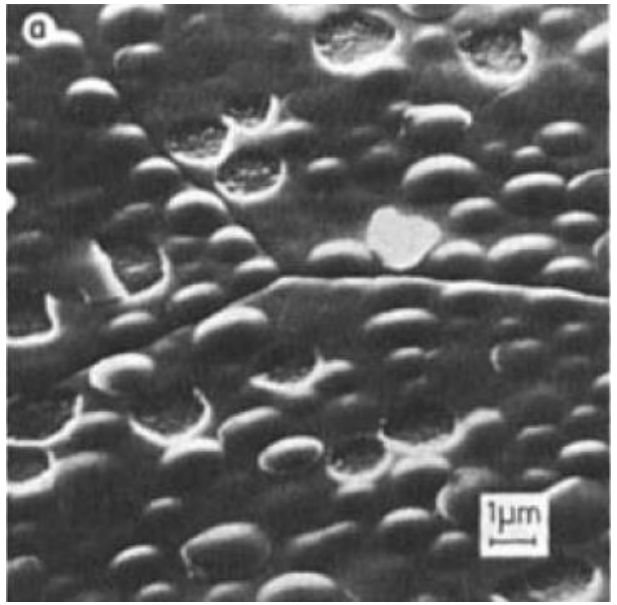


Fig. 7.17a–d. Blistering of molybdenum surfaces after bombardment with 36 keV He^+ ions

Measurement of Ion-impact X-ray Emission from High-pressure Gas Ampoules in Silicon Blisters

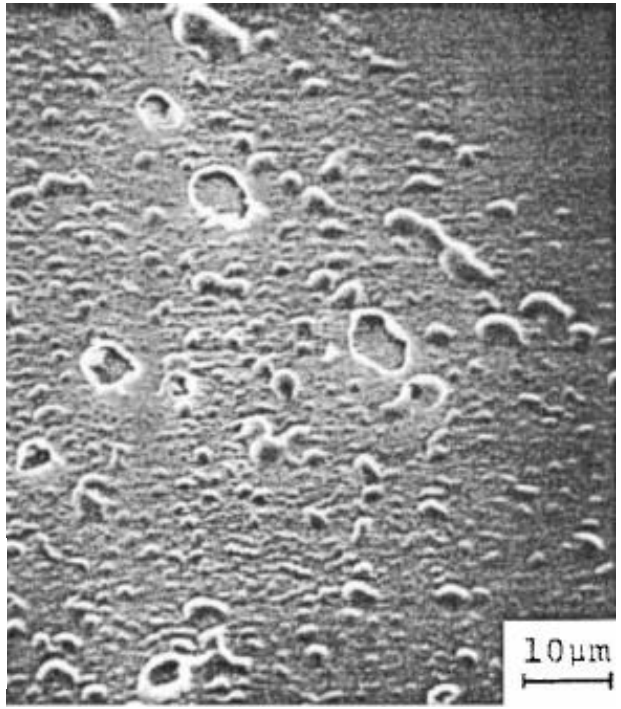
Radiation Effects
1978, Vol. 39, pp. 81–95

HIGH FLUENCE RETENTION OF NOBLE GASES IMPLANTED IN SILICON

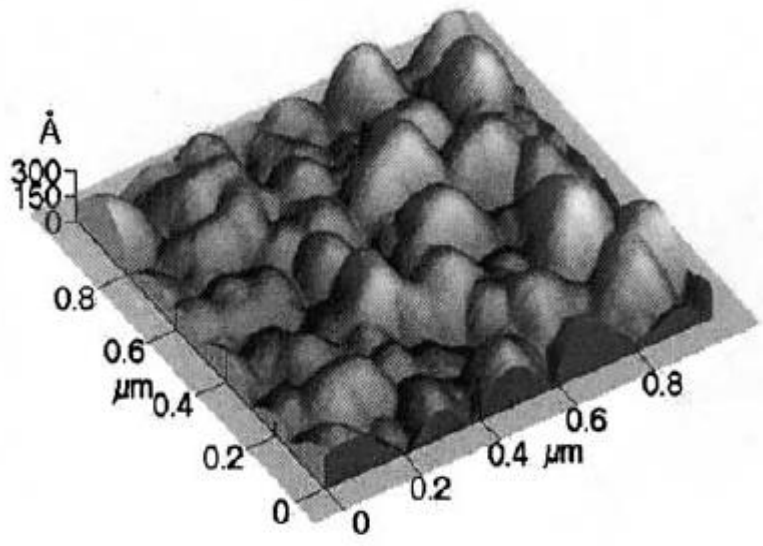
K. WITTMAACK†, P. BLANK‡ and W. WACH

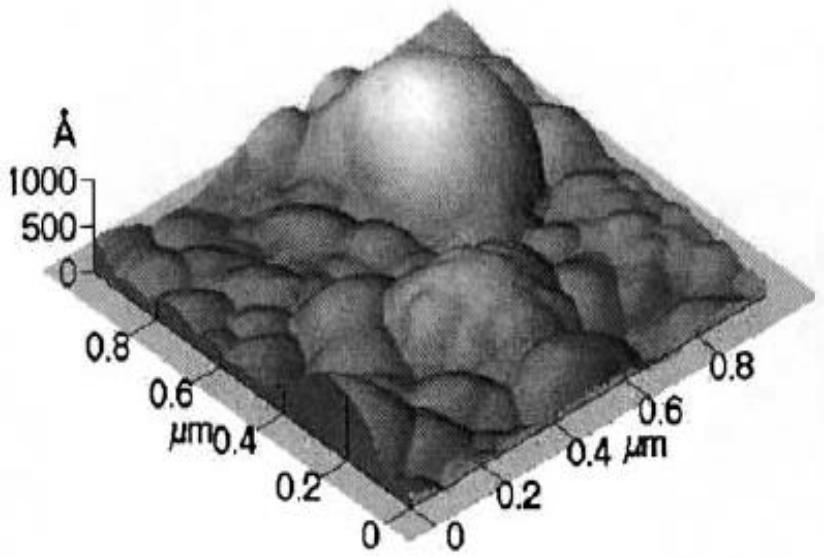
Gesellschaft für Strahlen- und Umweltforschung mbH, Physikalisch-Technische Abteilung, D-8042 Neuherberg, FR Germany

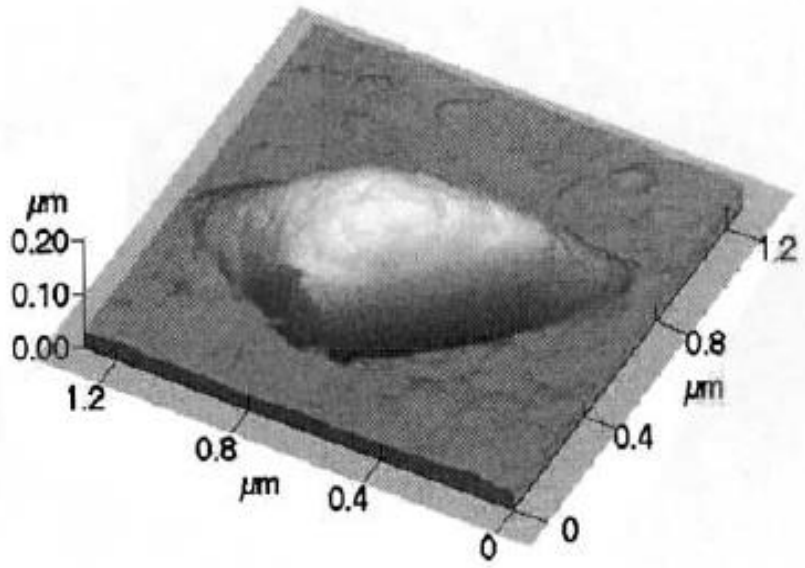
FIGURE 6 Electron micrographs of silicon bombarded with 270 keV argon ions, taken at the rim of the bombarded area. Mean implantation fluence 5.5×10^{17} ions/cm^2.



AFM 3D images for Si(1 1 1) surfaces modified by bombardment with 15 keV Ar^+.







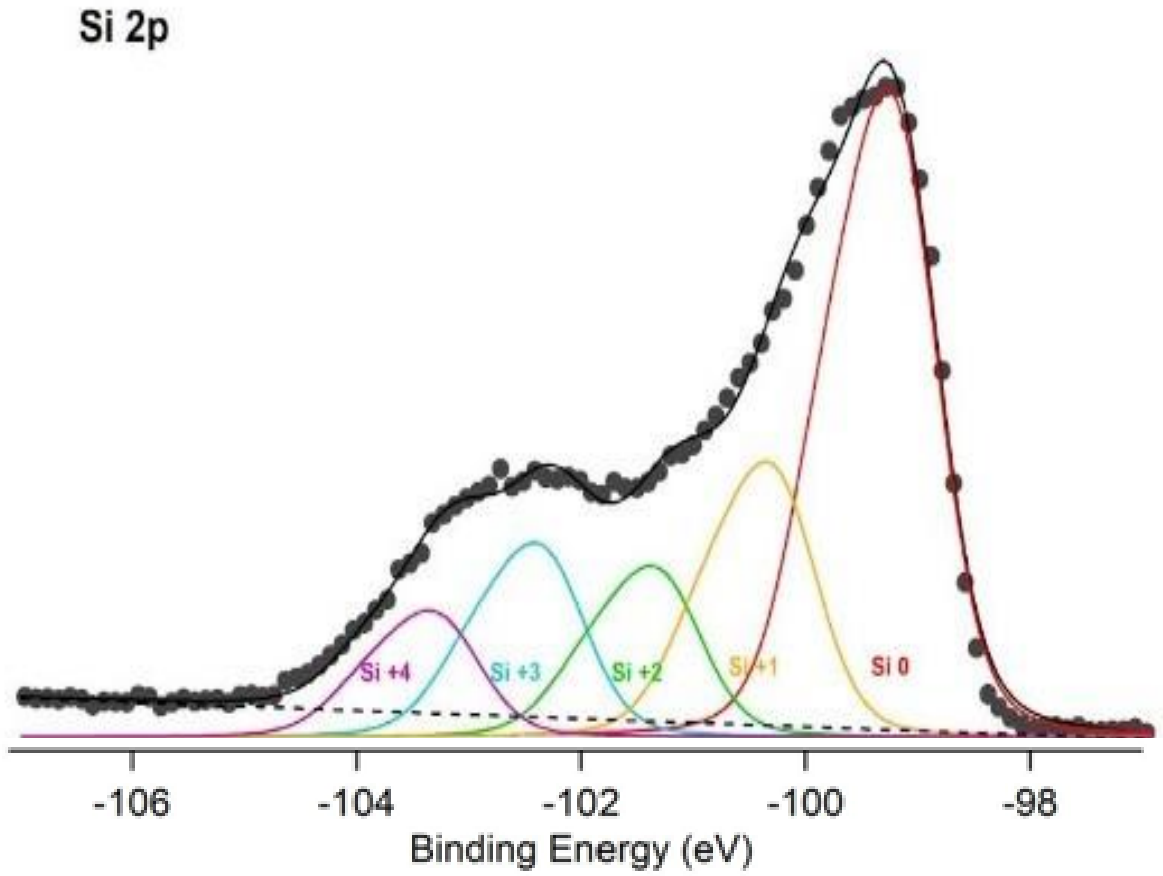
IRRADIATION DOSE

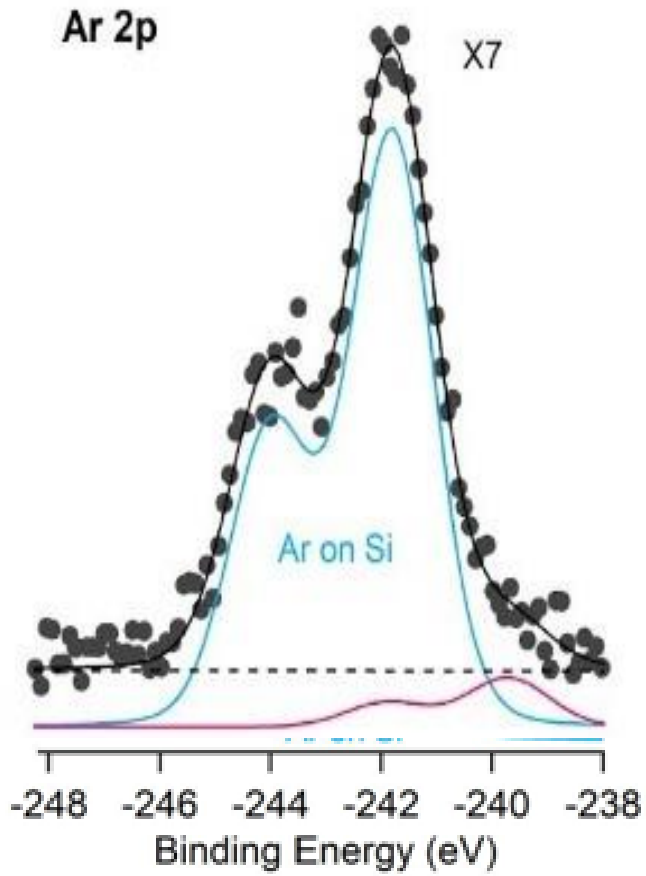
3 x 10^{16} ions/cm^2

5 x 10^{16} ions/cm^2

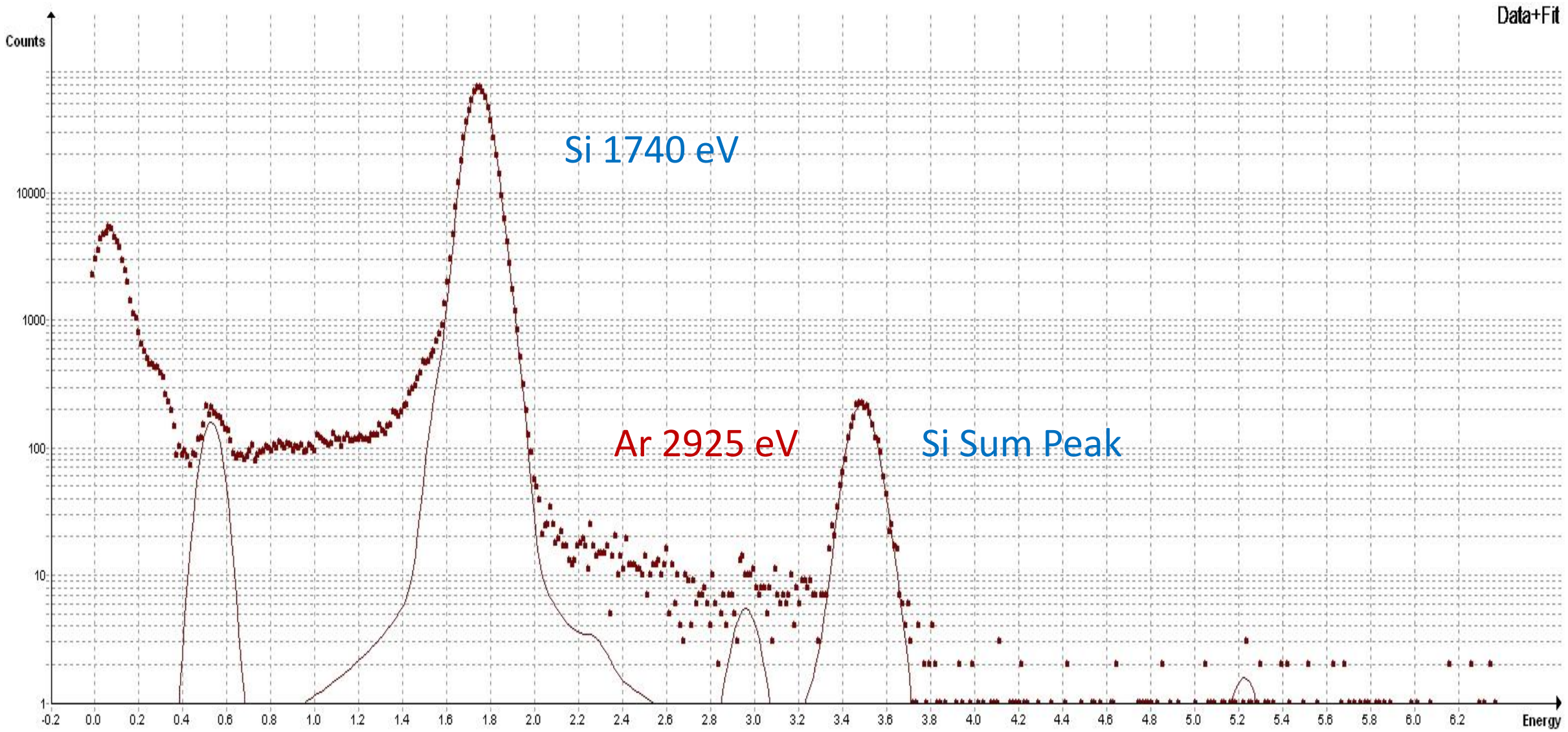
18 x 10^{16} ions/cm^2

XPS spectra in the Si 2p and Ar 2p region of a sample with implanted Ar in Si.





PIXE spectra of SI with implanted Ar.



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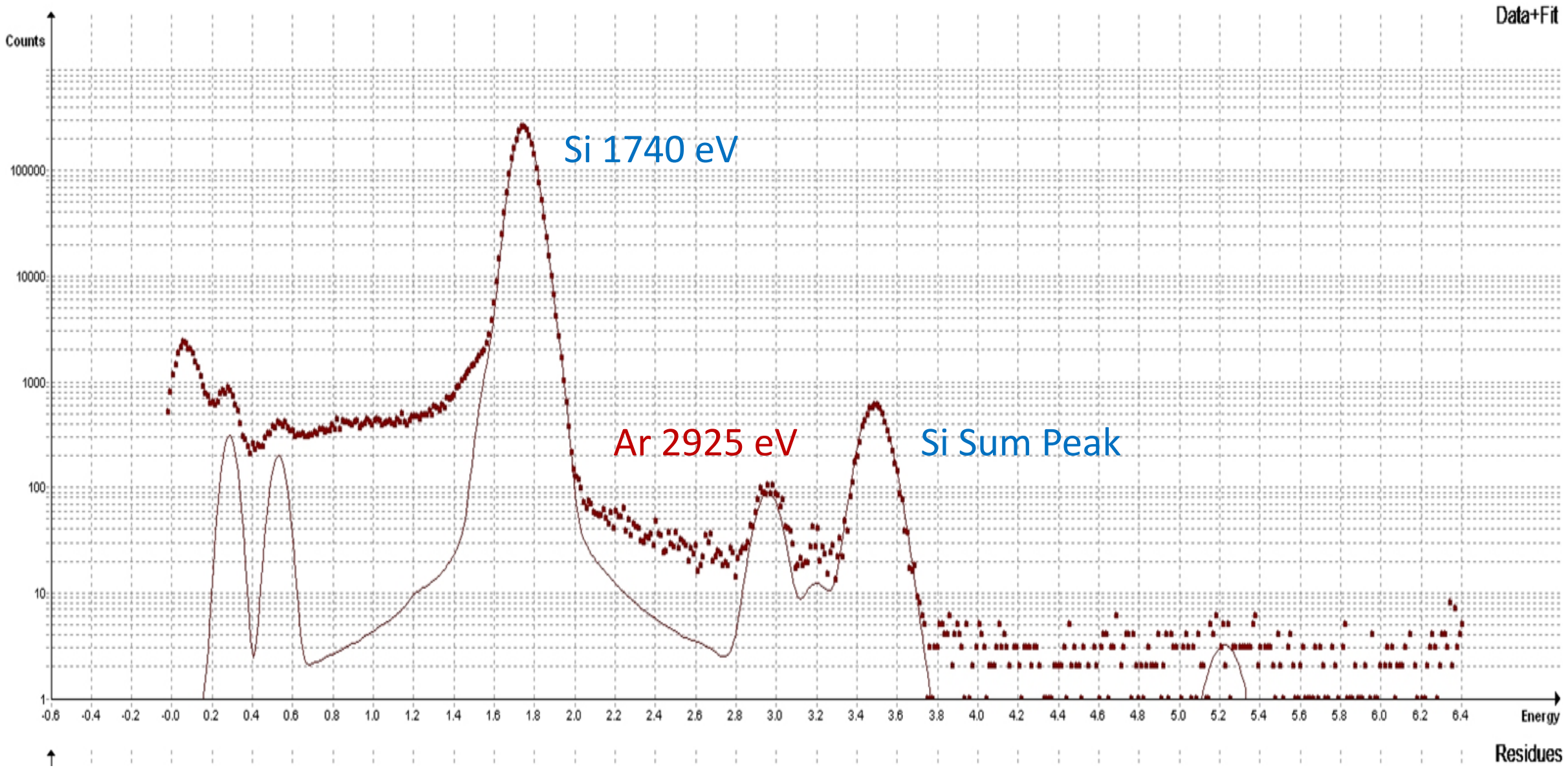
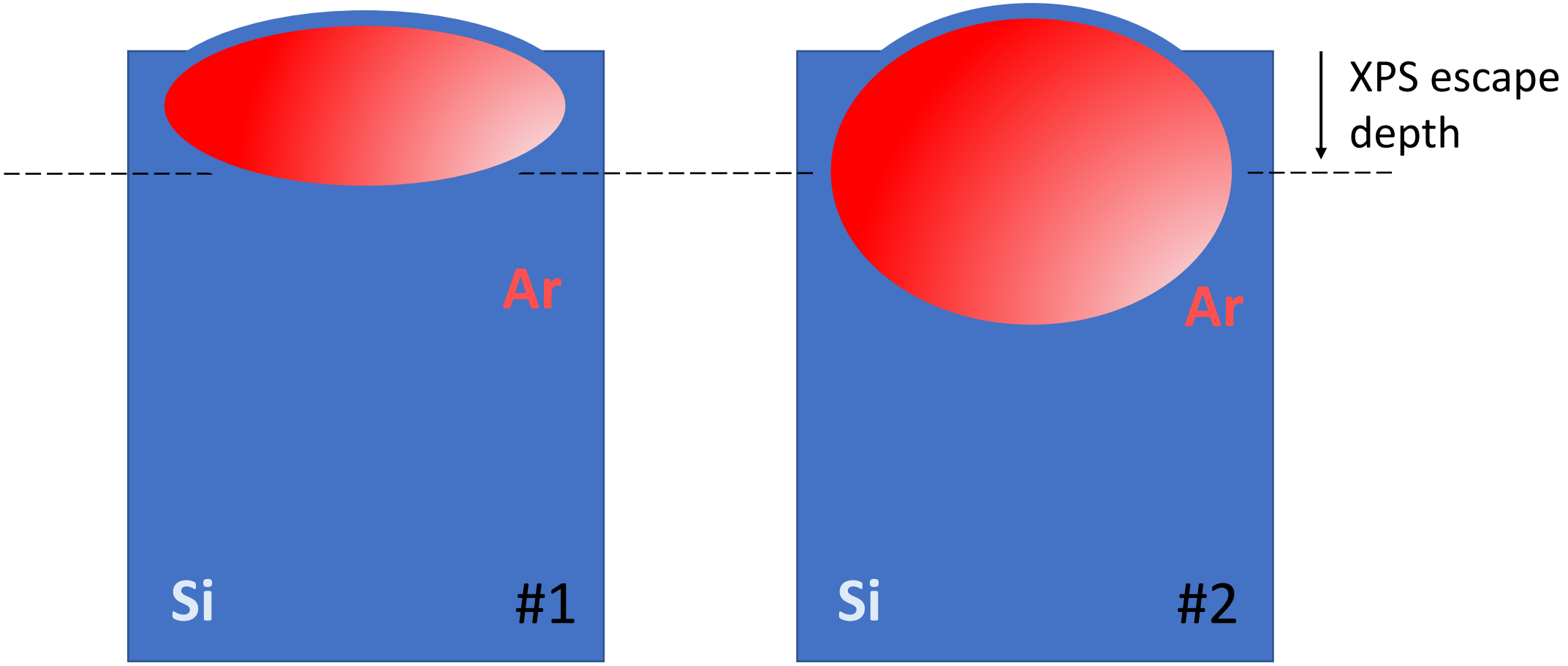
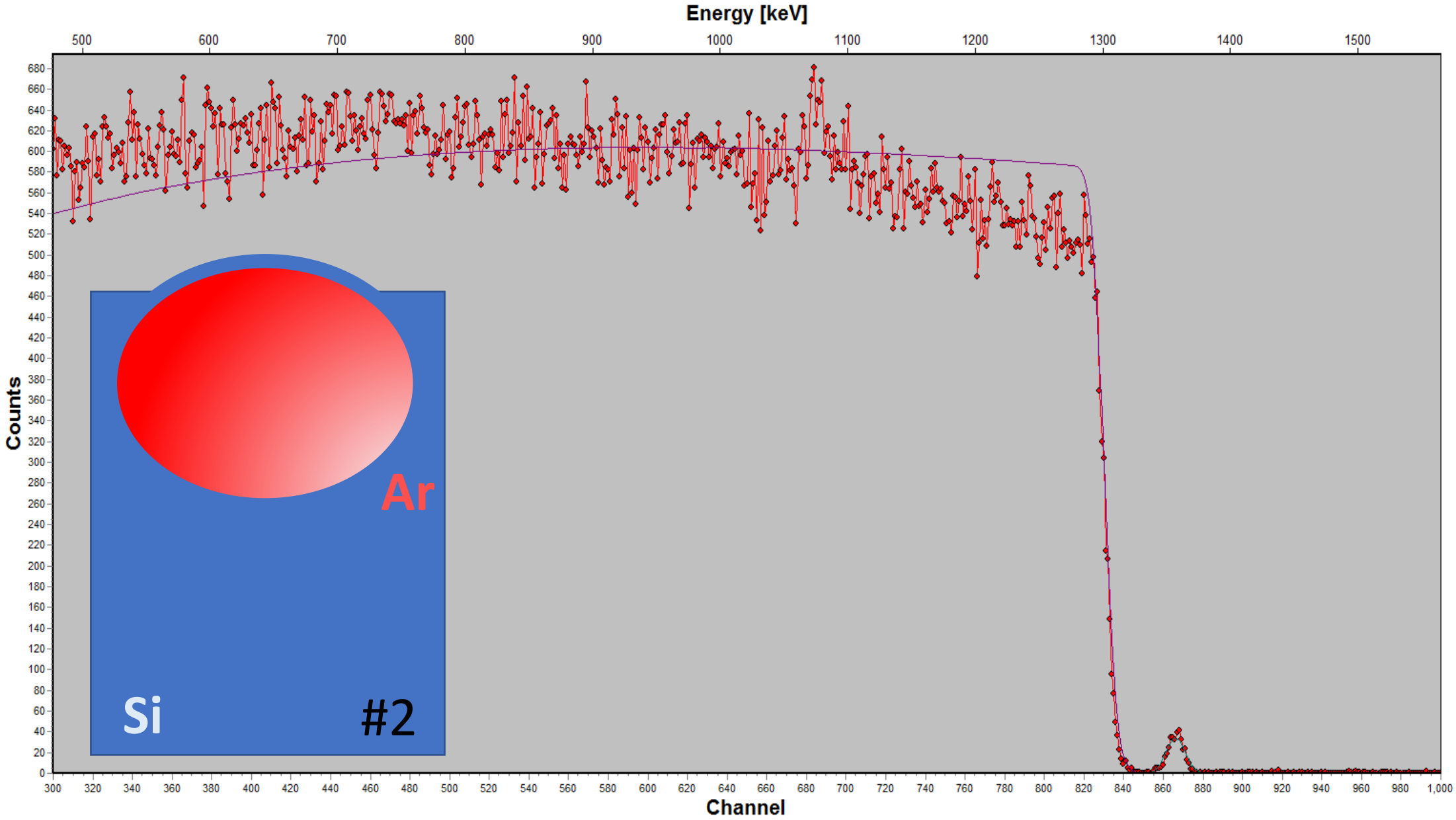


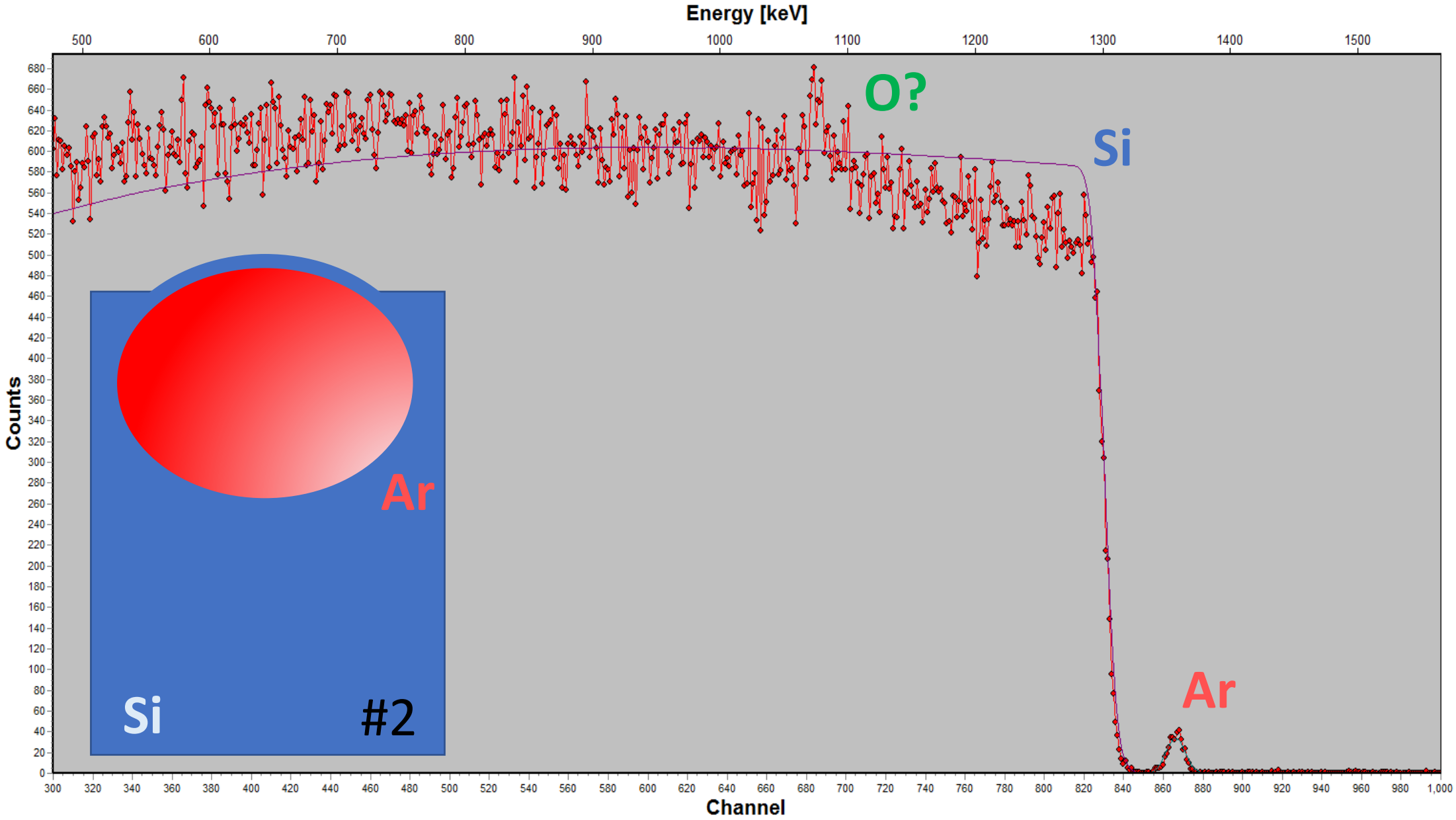
Scheme of the Ar distribution in samples #1 and #2.



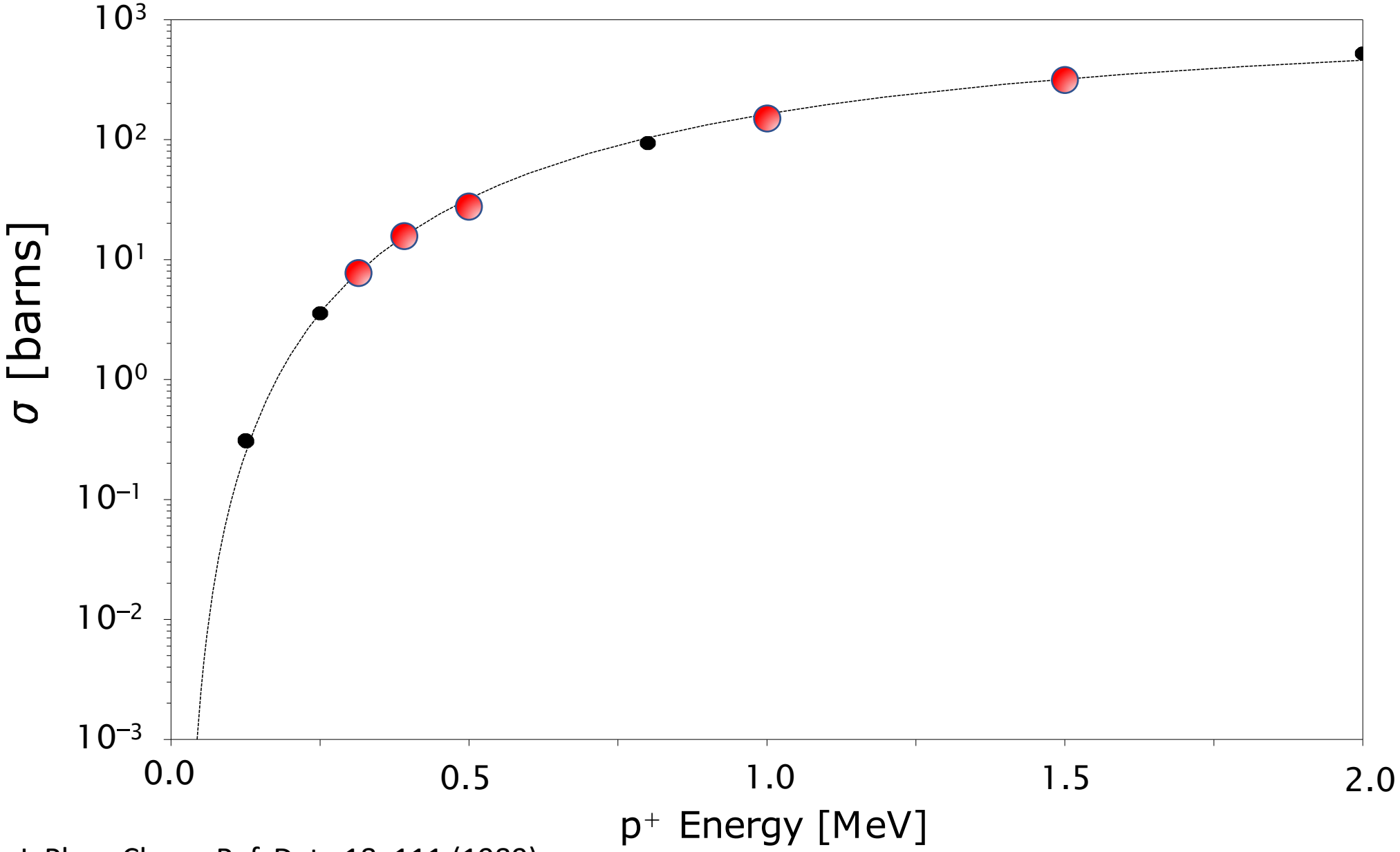
RBS proton spectrum for samples #2.



RBS proton spectrum for samples #2.

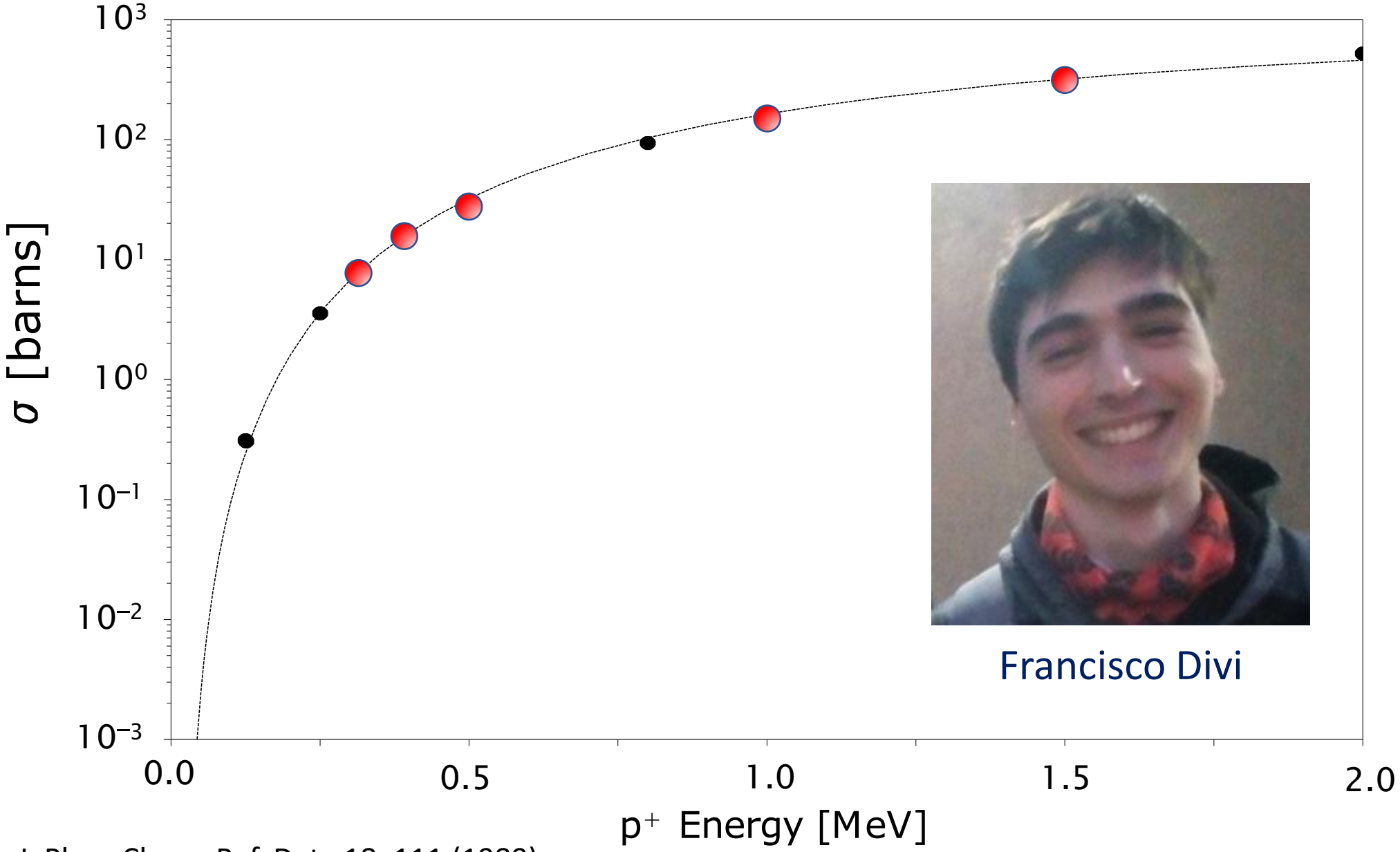


X-ray emission from Ar by proton impact.



G. Lapicki: J. Phys. Chem. Ref. Data 18, 111 (1989)

X-ray emission from Ar by proton impact.

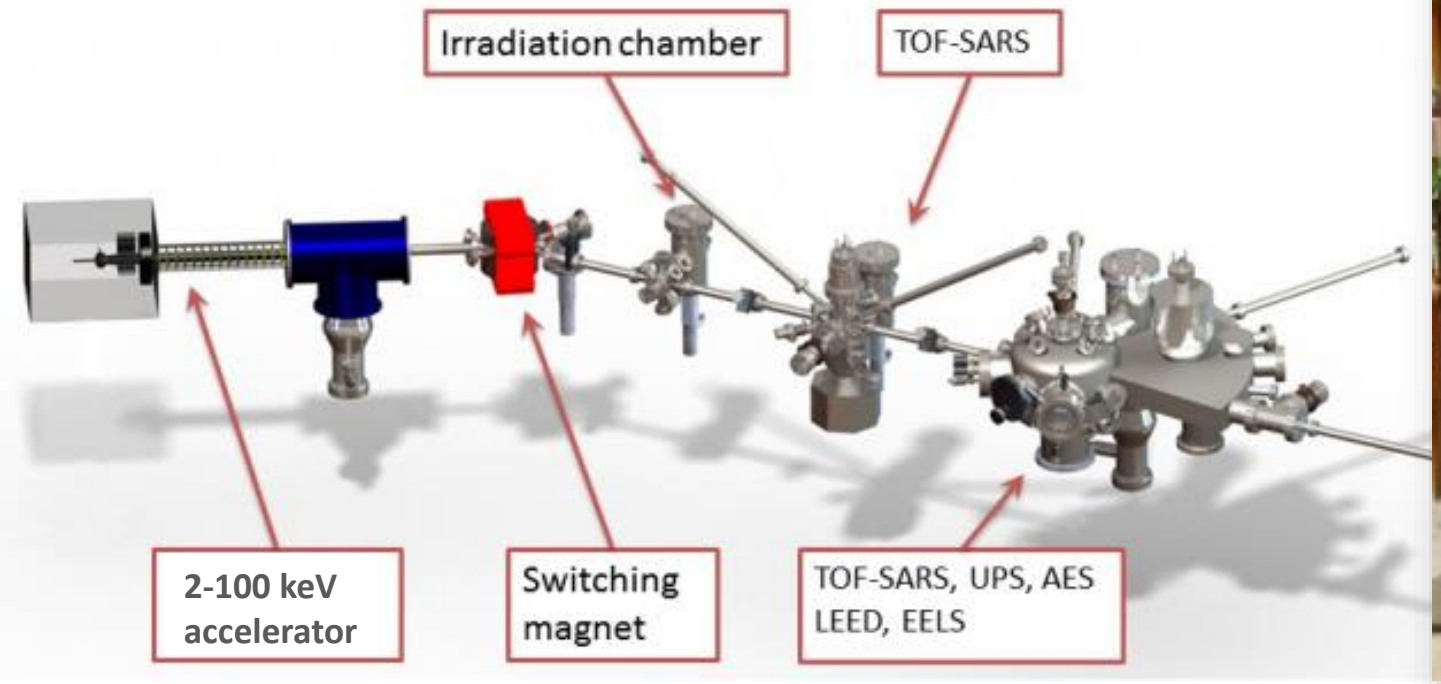


Francisco Divi

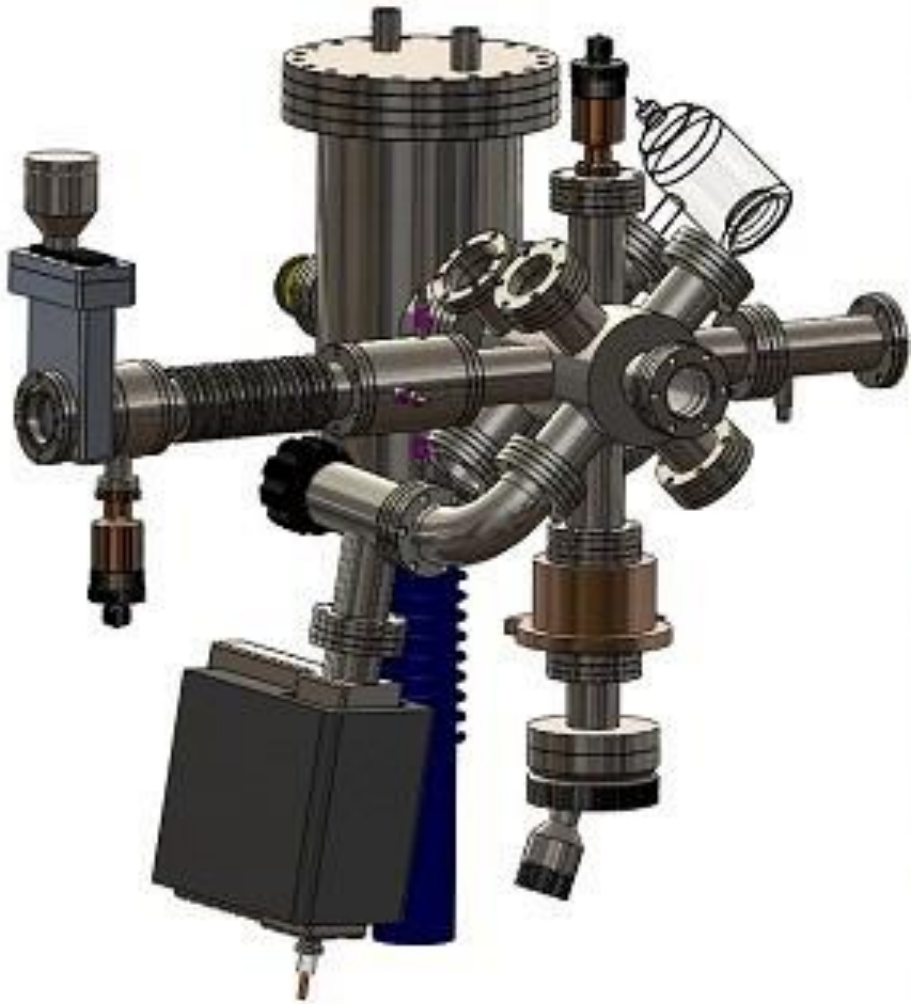
G. Lapicki: J. Phys. Chem. Ref. Data 18, 111 (1989)

KEVATRITO

- ✓ Time-of-flight scattering and recoiling spectrometer x 2 (TOR-SARS)
- ✓ Ultra-violet Photoelectron Spectroscopy (UPS)
- ✓ Auger Electron Spectroscopy (AES)
- ✓ Low Energy Electron Diffraction (LEED)
- ✓ Electron Energy Loss Spectroscopy (EELS)



KEVATRITO



IRRADIATION CHAMBER

STM / AFM MICROSCOPES

Autoprobe CP microscope

STM / AFM MICROSCOPES

Omicron VT AFM 25 DRH microscope

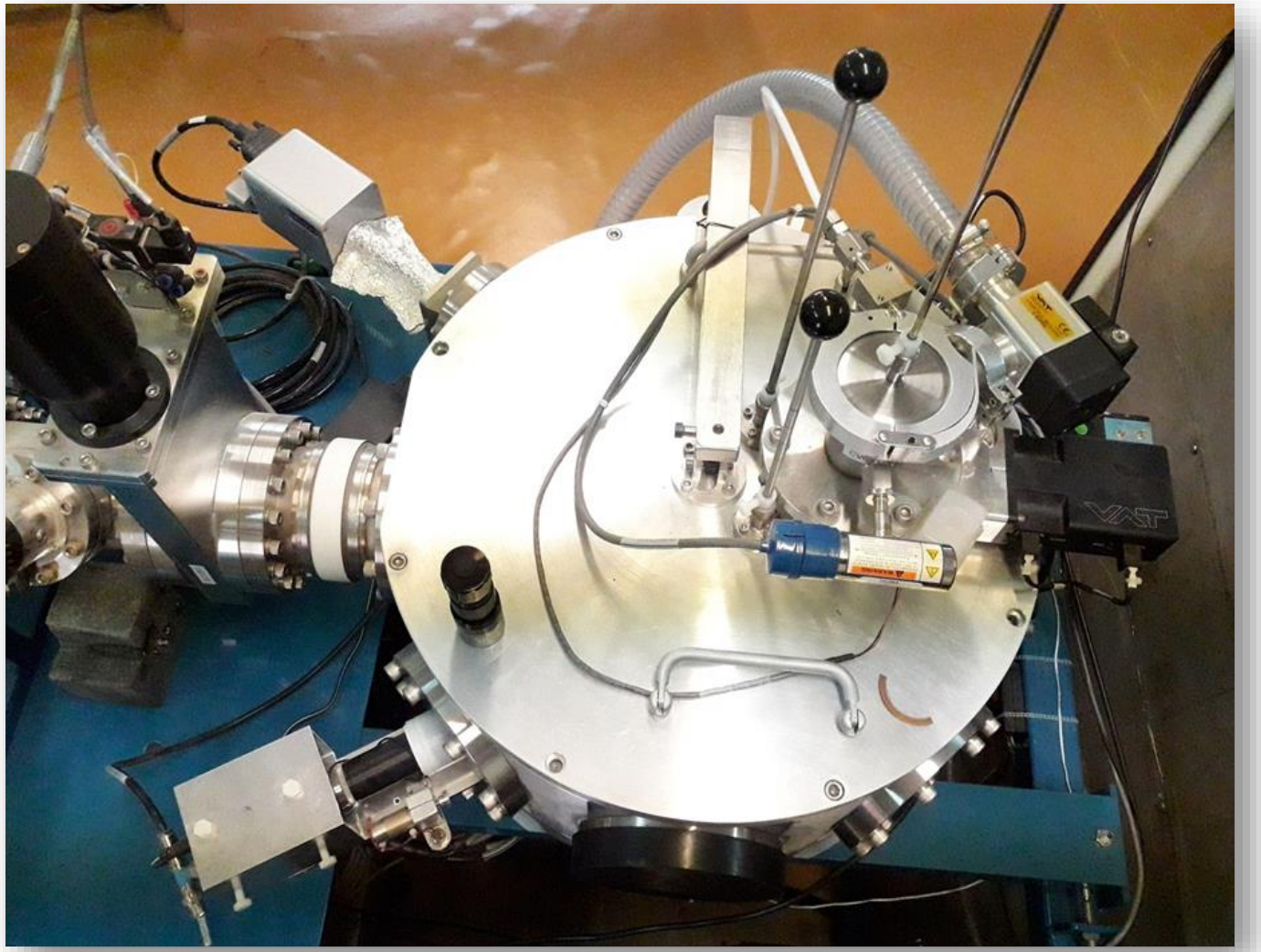
XPS

Surface Analysis Equipment (SPECS)

TÁNDEM

5 SDH Tandem accelerator from the National Electrostatics Corp. (NEC)

RC43 Ion Beam Analysis Endstation

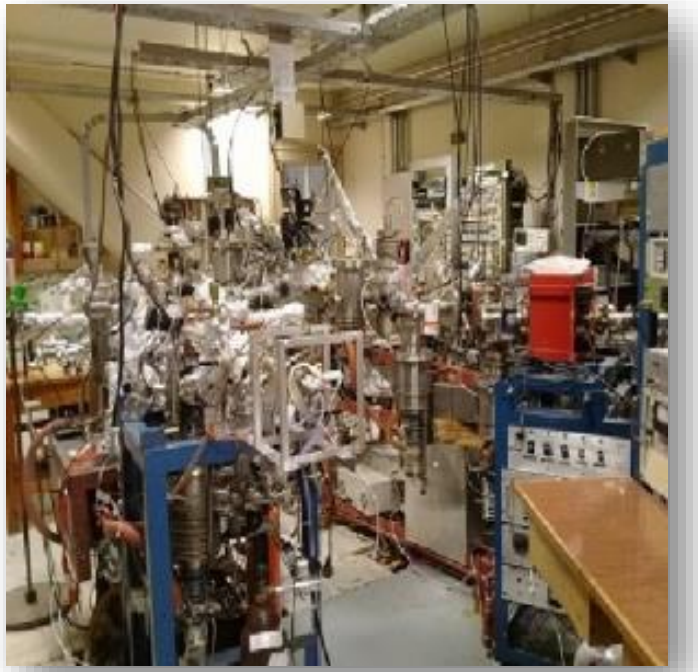


- ✓ Rutherford Backscattering Spectrometry (RBS)
- ✓ Elastic Recoil Detection Analysis (ERDA)
- ✓ Particle Induced X-ray Emission (PIXE)
- ✓ Nuclear Reaction Analysis (NRA)

TÁNDEM
Centro Atómico Bariloche

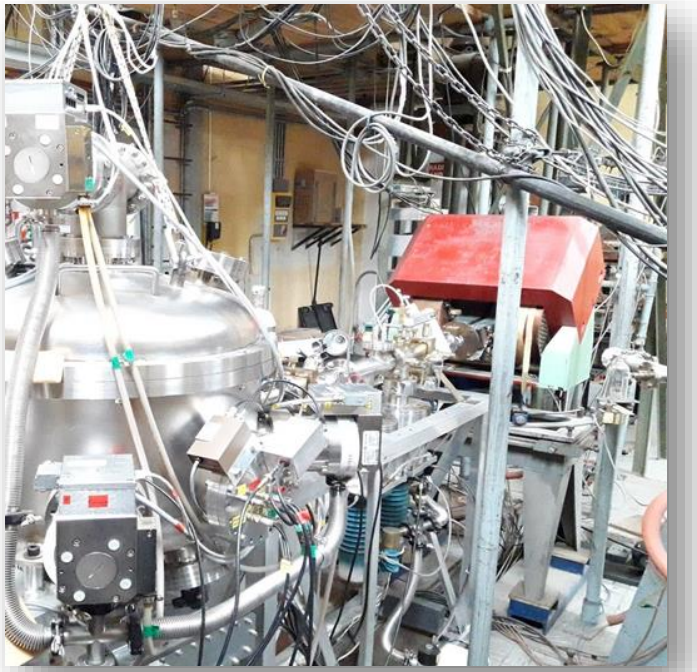
X-ray emission from gas blisters by ion impact

KEVATRITO



2 to 100 kV

KEVATRON



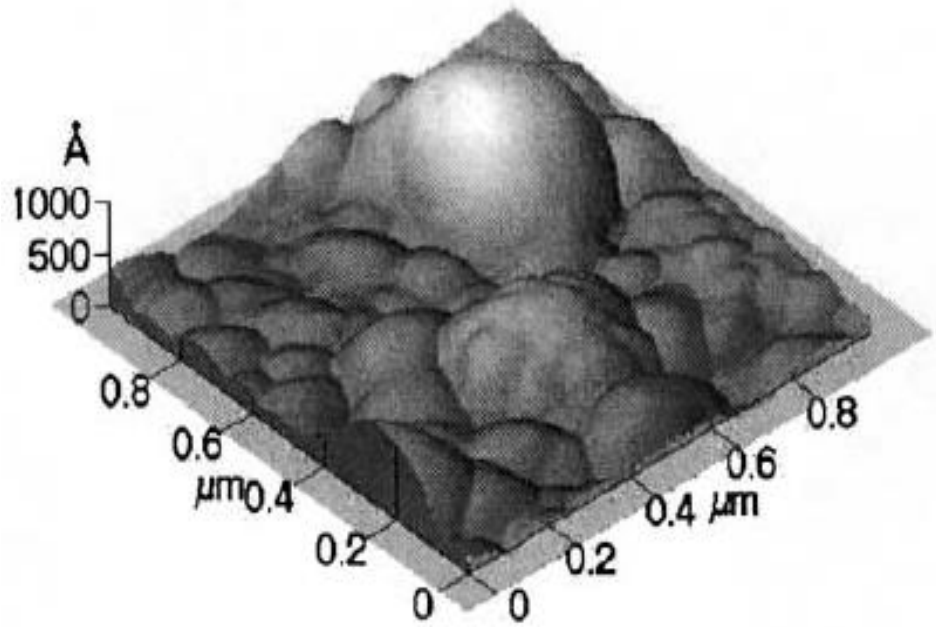
50 to 350 kV

TANDEM

200 - 3400 MV

X-ray emission from gas blisters by ion impact

- ✓ Blisters manufacturing
- ✓ Gas and Si upper layer characterization
- ✓ X-ray emission cross section measurement



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U2
adidas