

Scanning electron microscopy

Prepared by a student

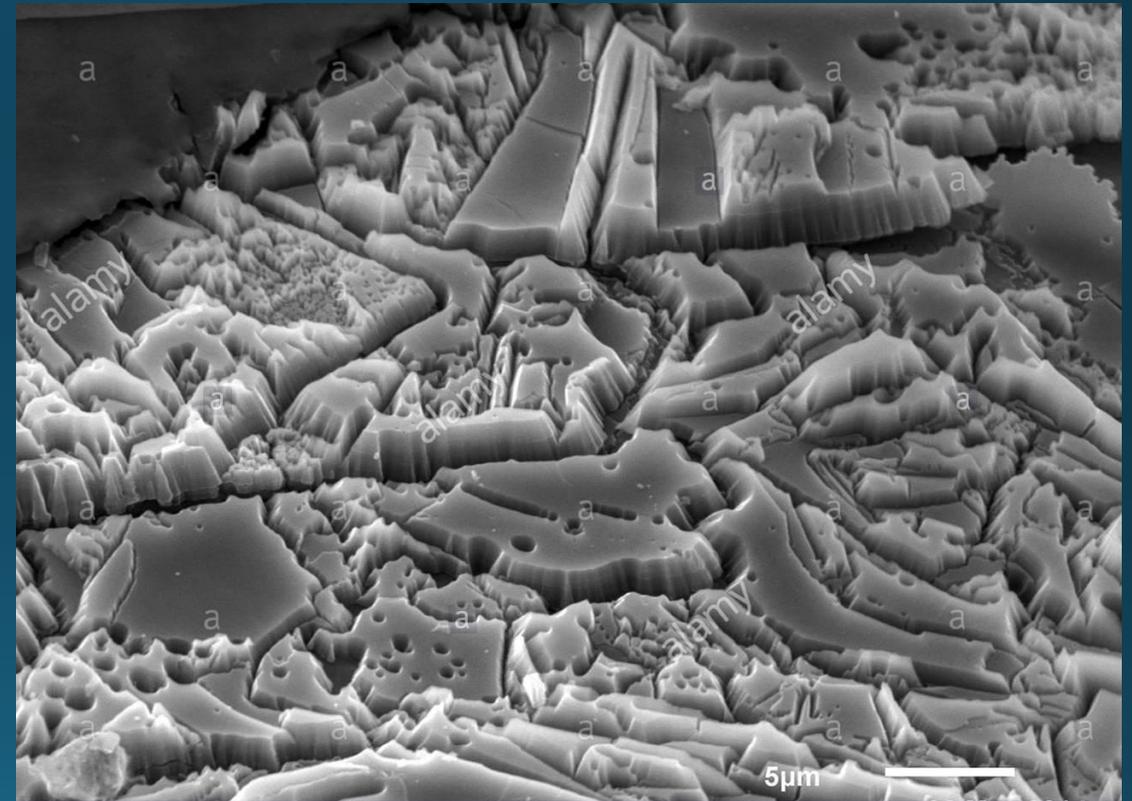
g.33339/1

Raziapov Timur

scanning electron microscope



JSM-7610F Schottky Field Emission Scanning Electron Microscope

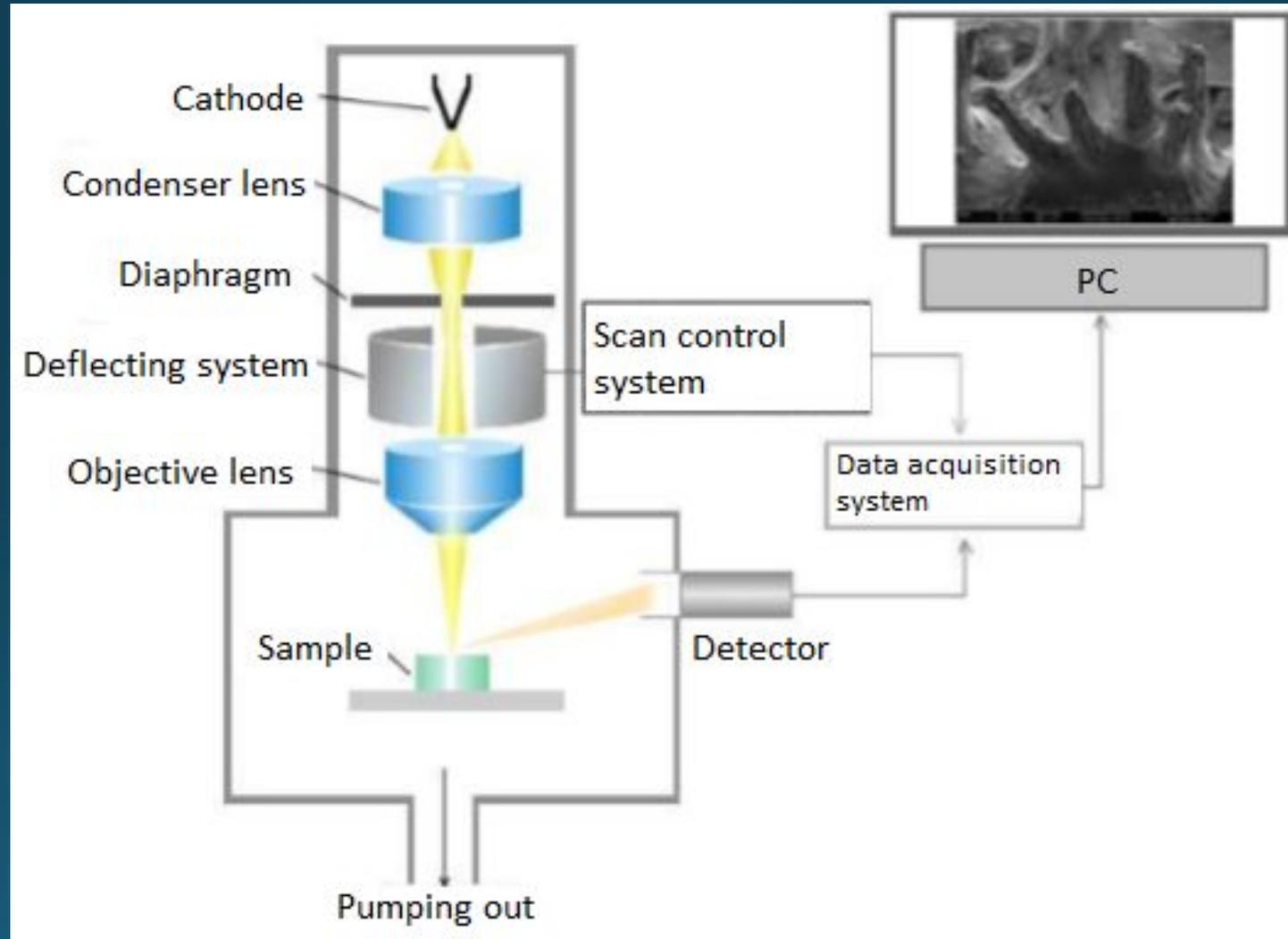


alamy stock photo

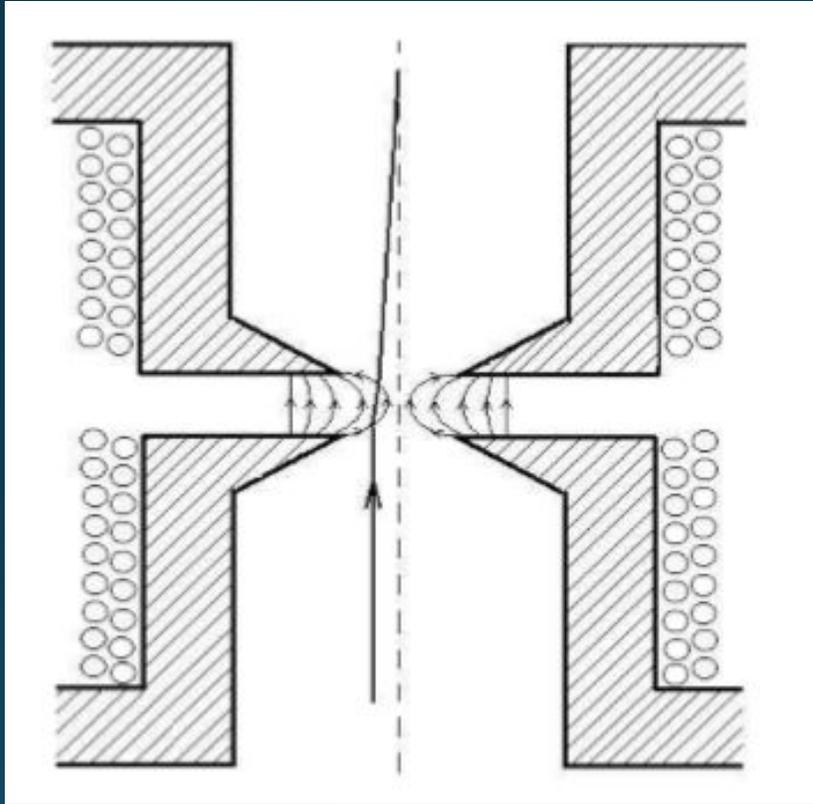
E1H6CT
www.alamy.com

iron oxide formations with sulphur and chlorine present

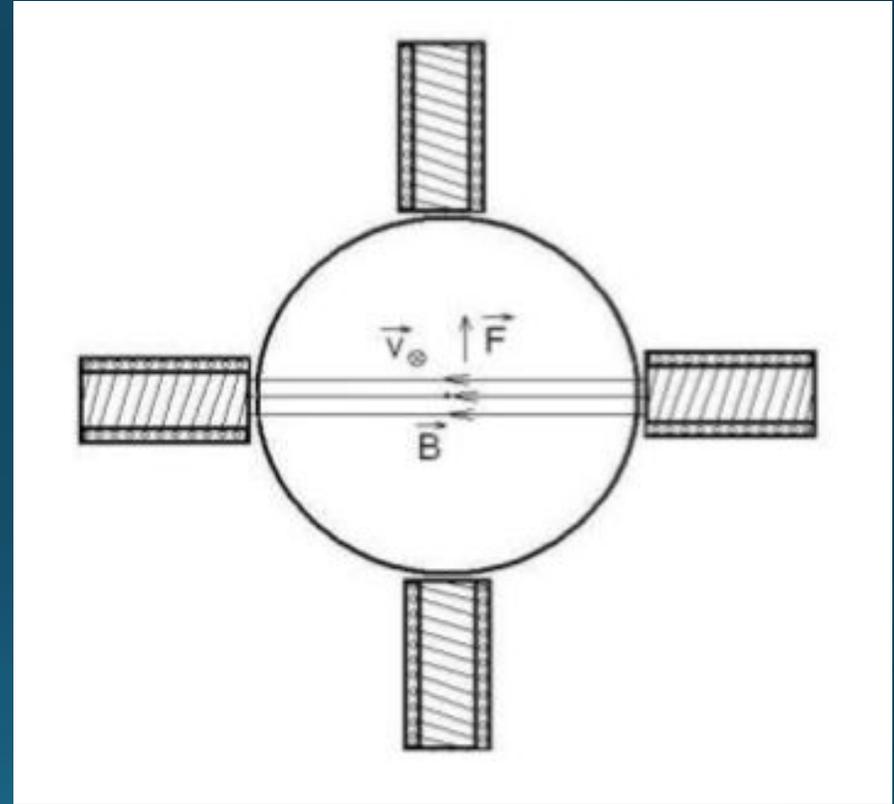
Schematic diagram SEM



Electronic optics



Magnetic lens

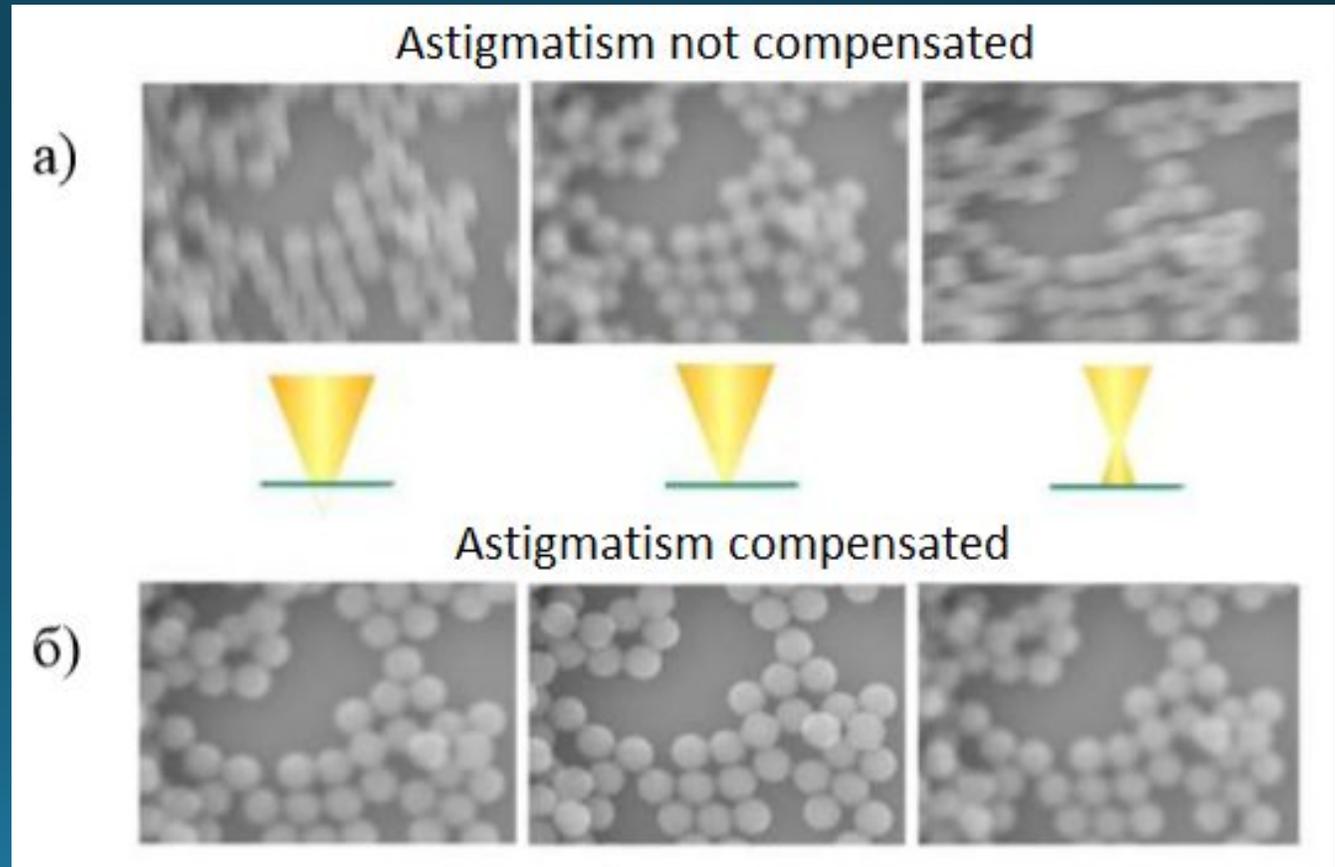


Magnetic deflection system

Factors that impair Magnification

- aberrations (spherical and chromatic)
- electron diffraction
- Astigmatism

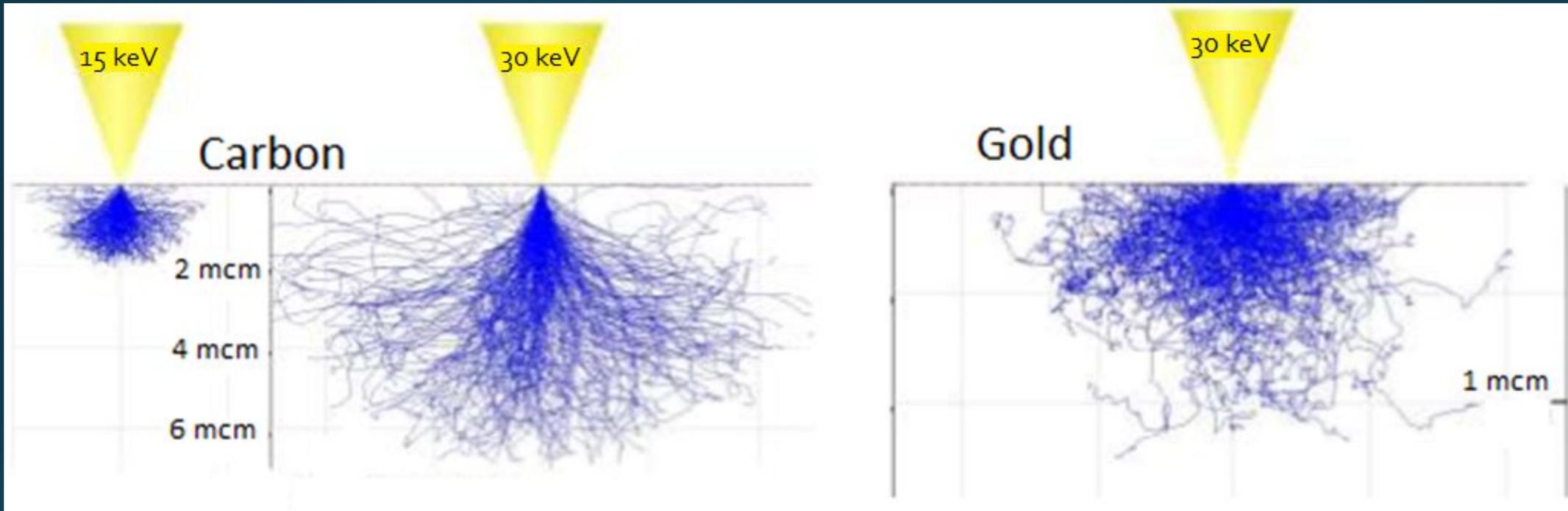
Blurring the image when focusing above and below the sample in the presence of astigmatism (a) and without astigmatism (b).



Main types of signals SEM

- secondary electrons
- BSE - backscattered electrons
- x-rays

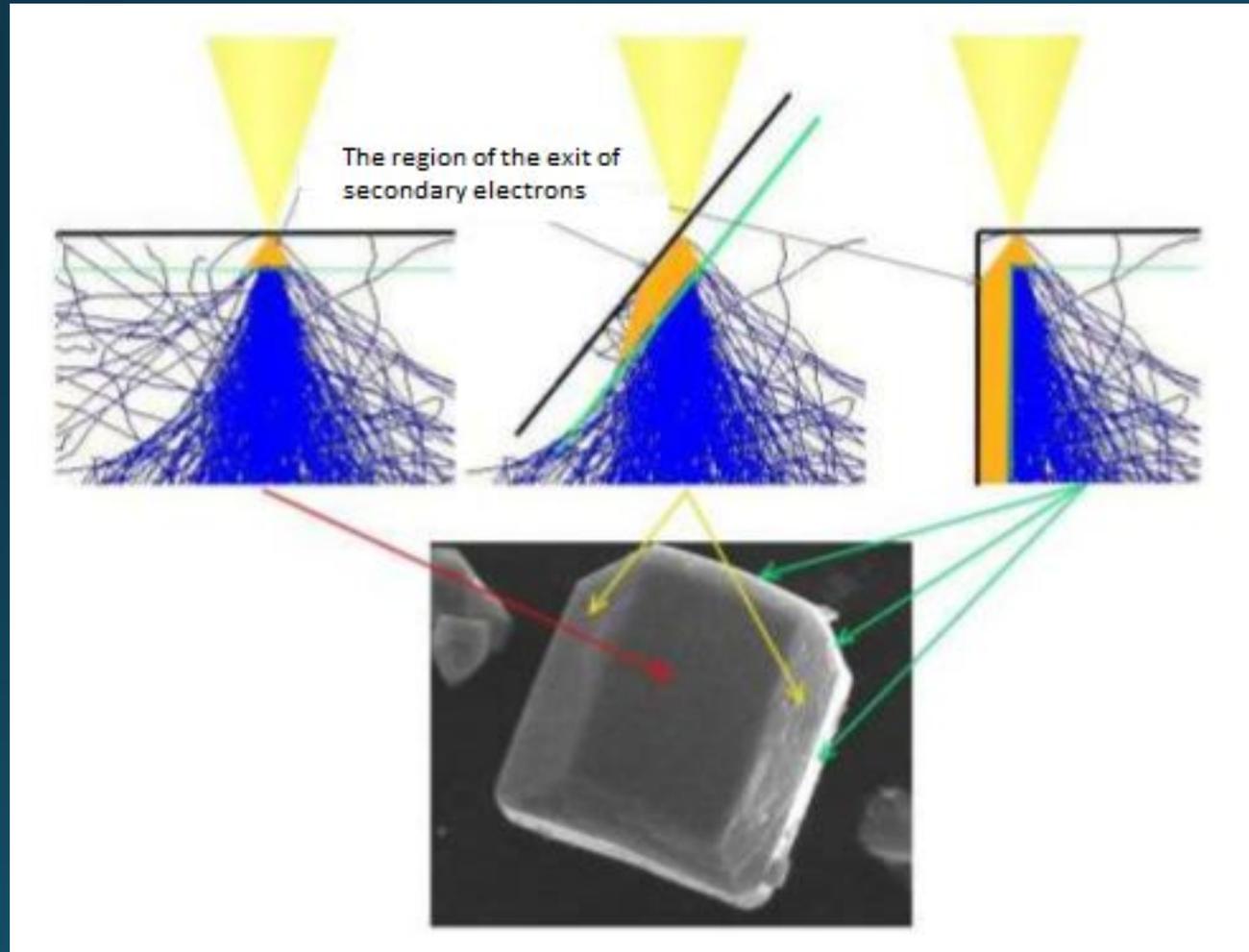
Main types of signals SEM



Scattering of electrons in various materials

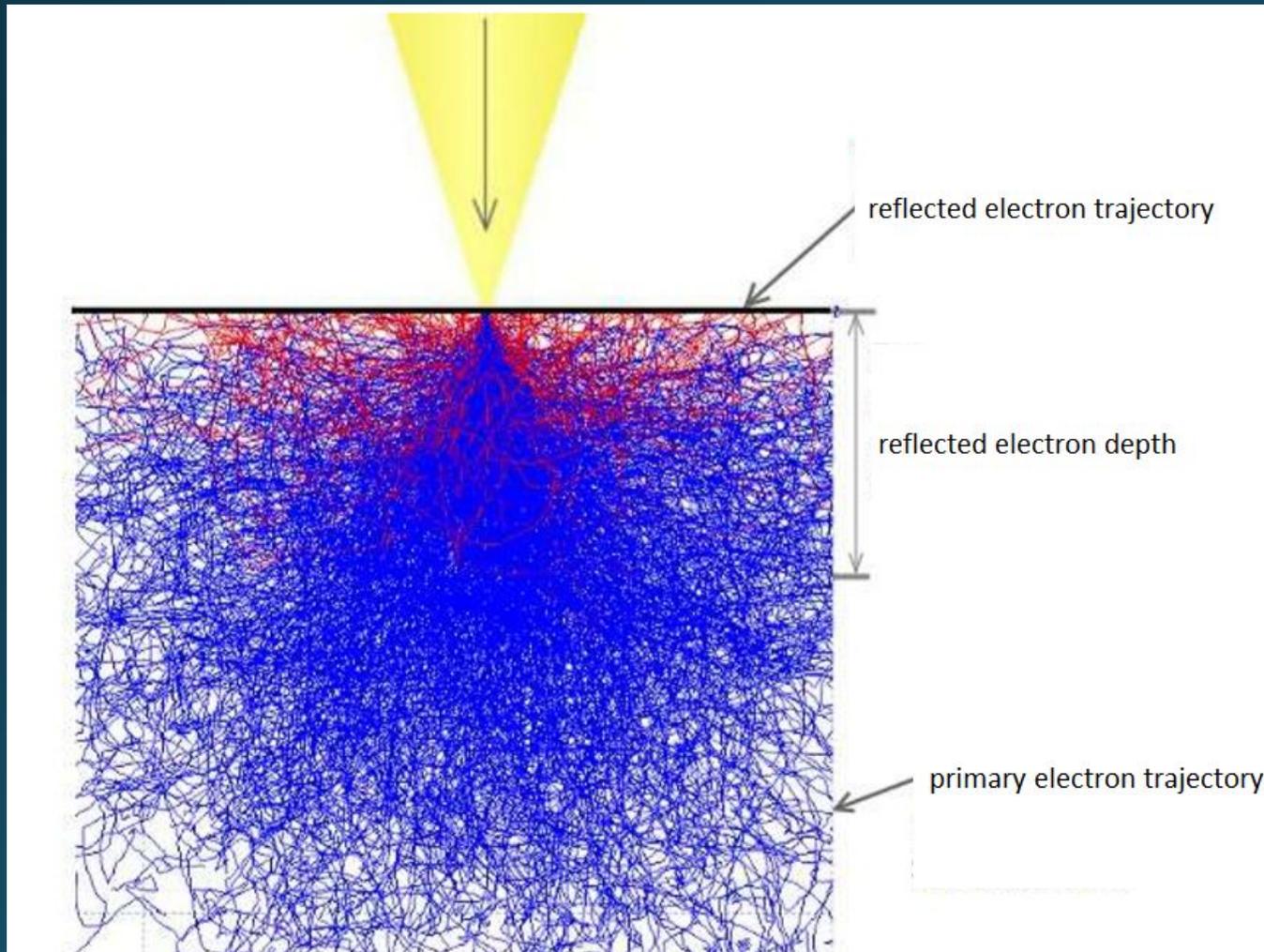
(Hereinafter, the numerical simulation of the trajectories was performed using the MonteCarlo simulation of electron trajectory in solids software package "CASINO")

Main types of signals SEM



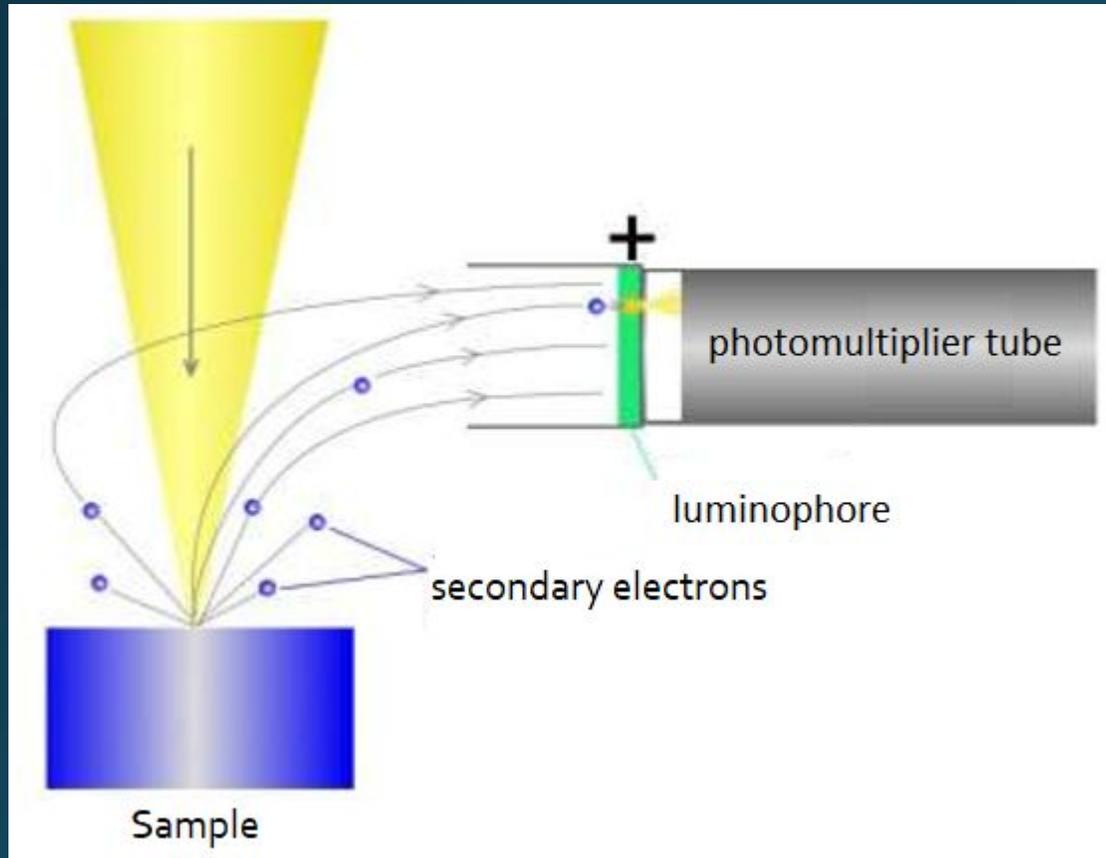
The yield of secondary electrons at different angles of incidence.

Main types of signals SEM



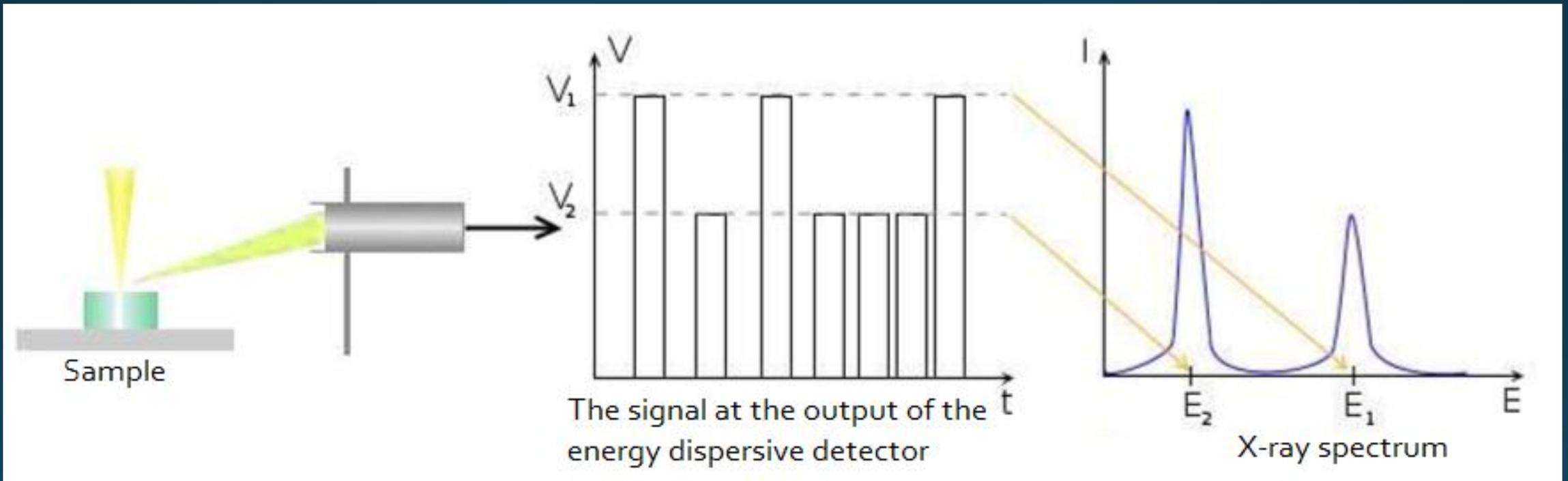
Backscattered (reflected) electrons

Detector electrons



Detection of secondary electrons.

Detector electrons



Energy Dispersive X-ray Detector

Thanks for your



Attention