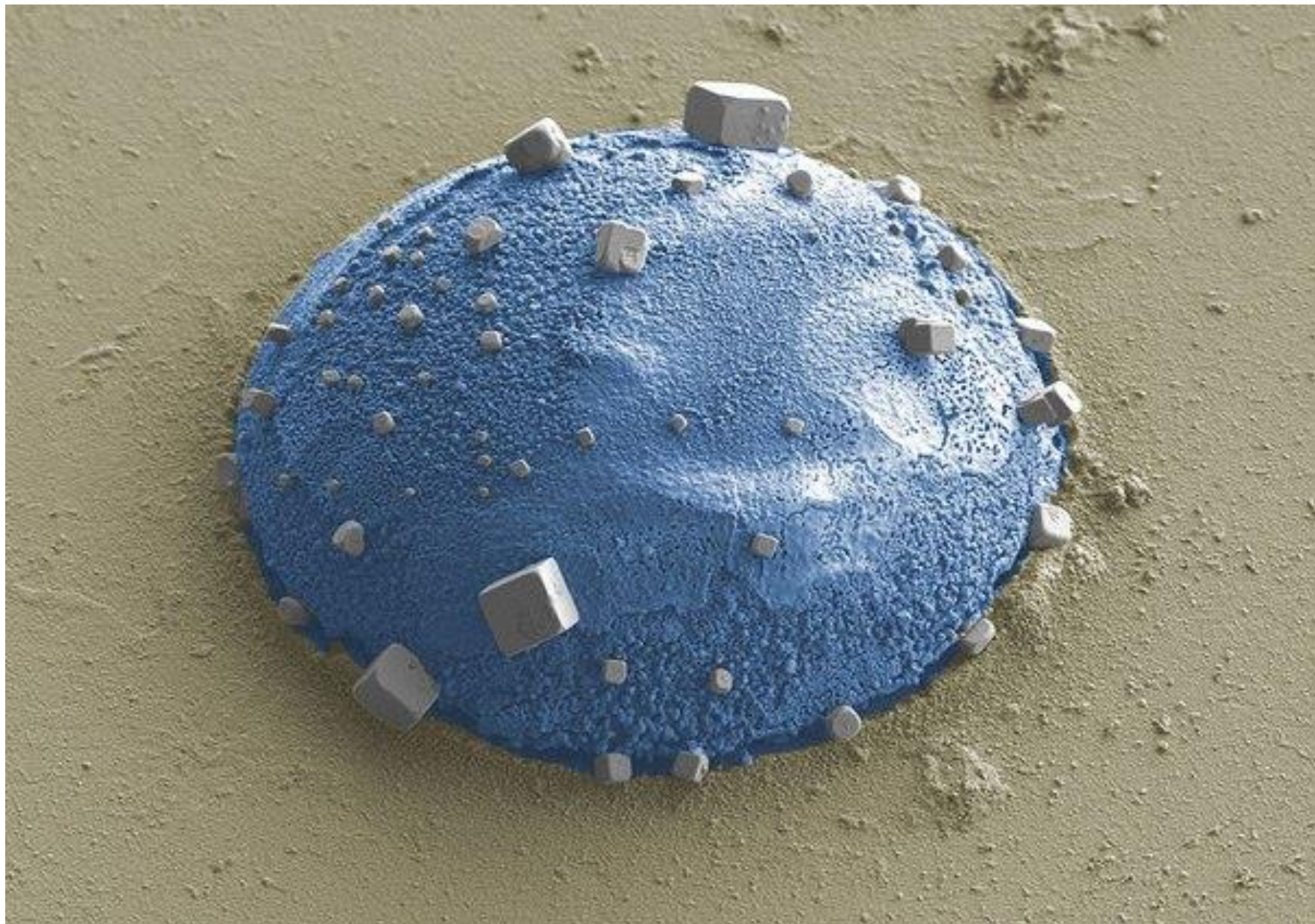
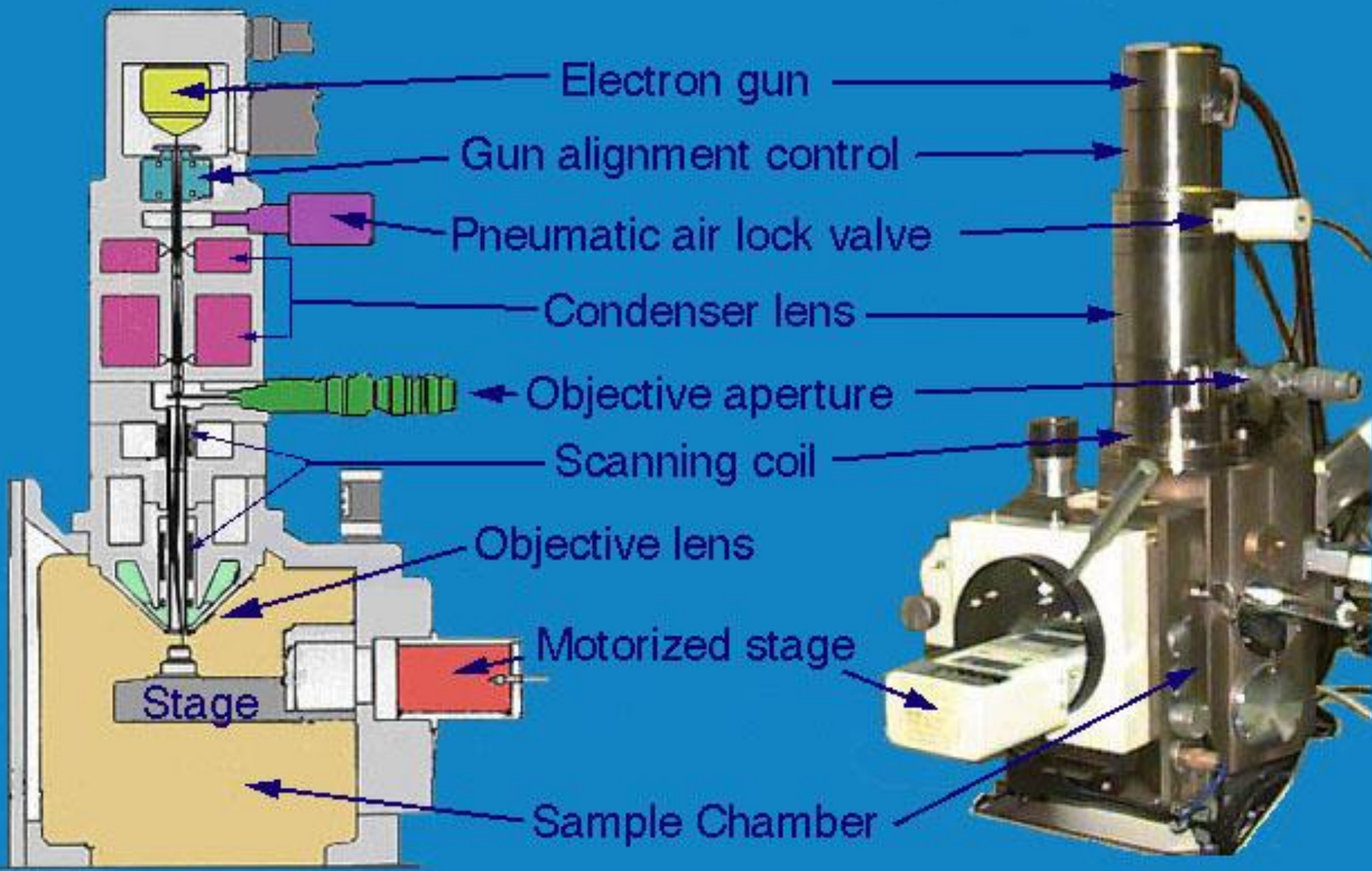
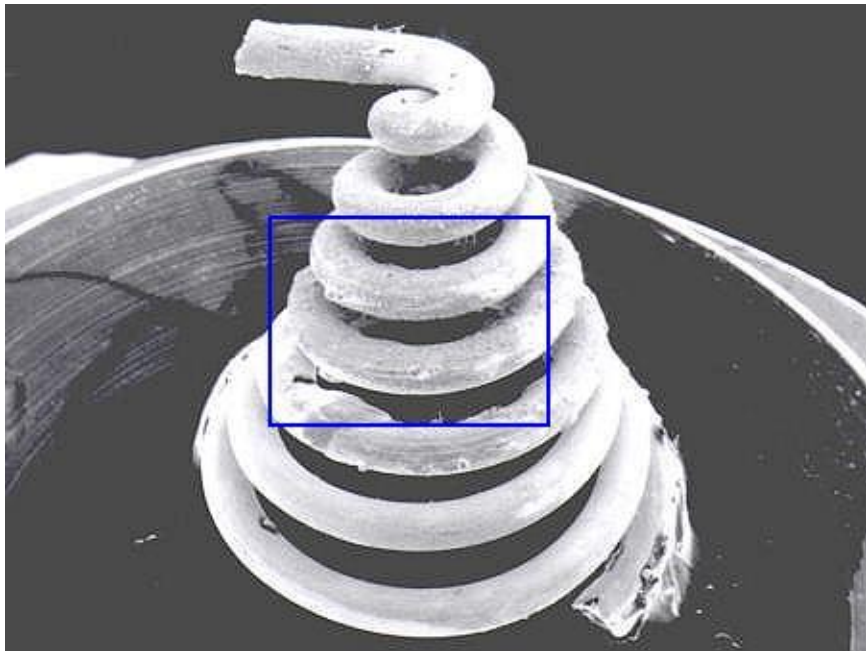


СЭМ

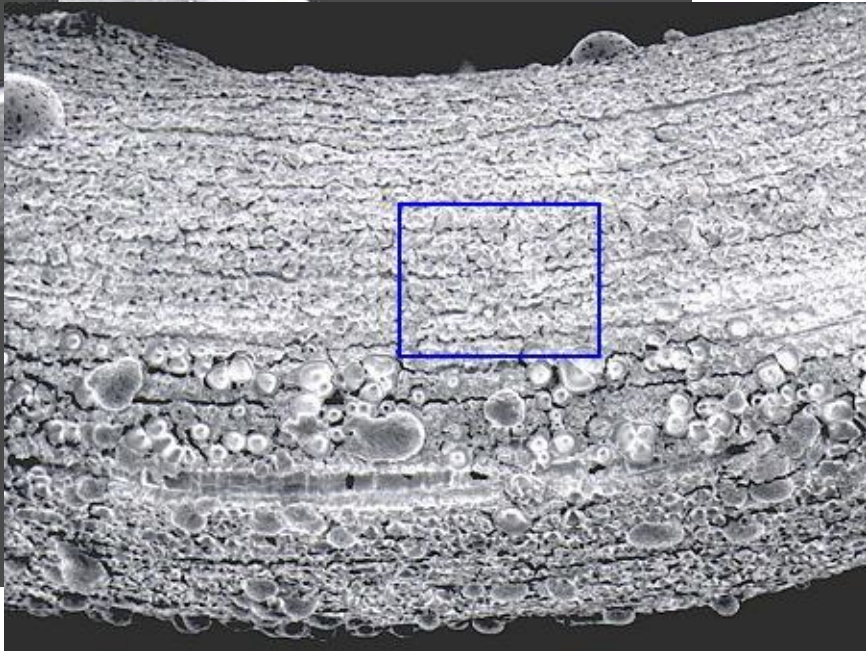




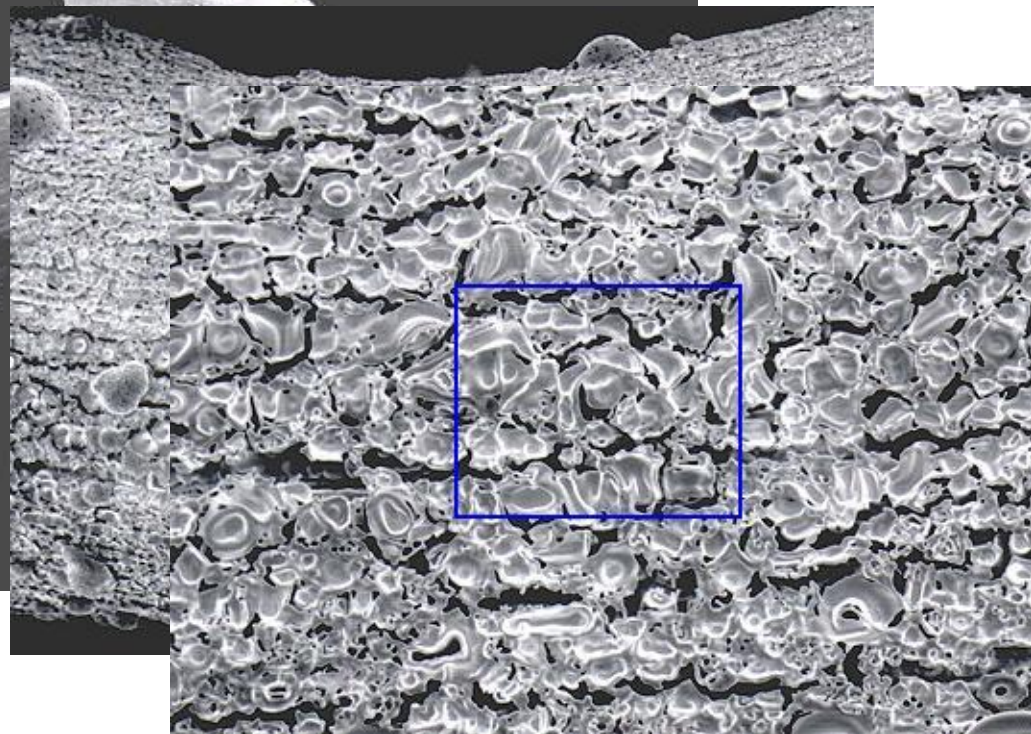


10X

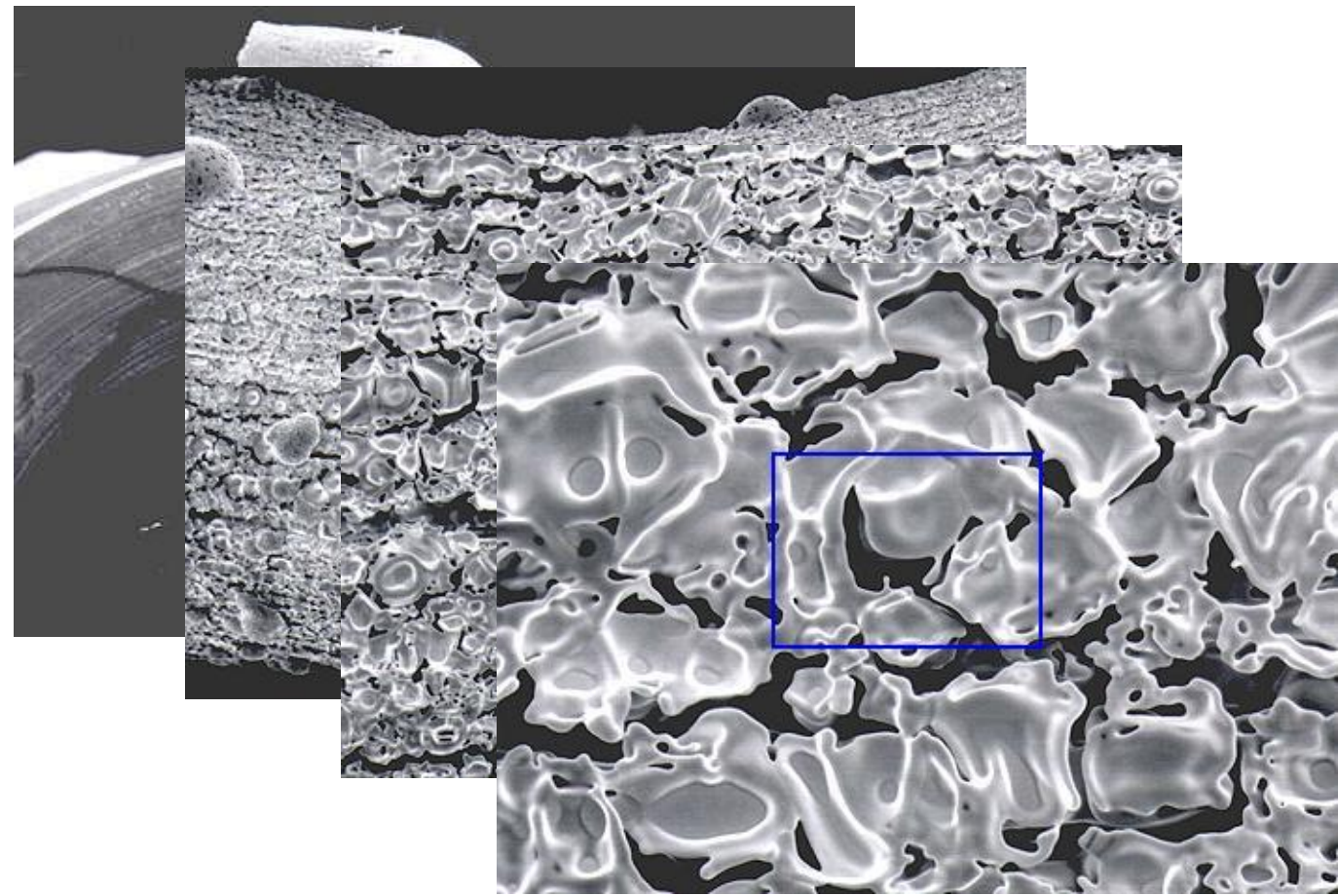
An SEM focused at high magnification will still be in focus at low magnification



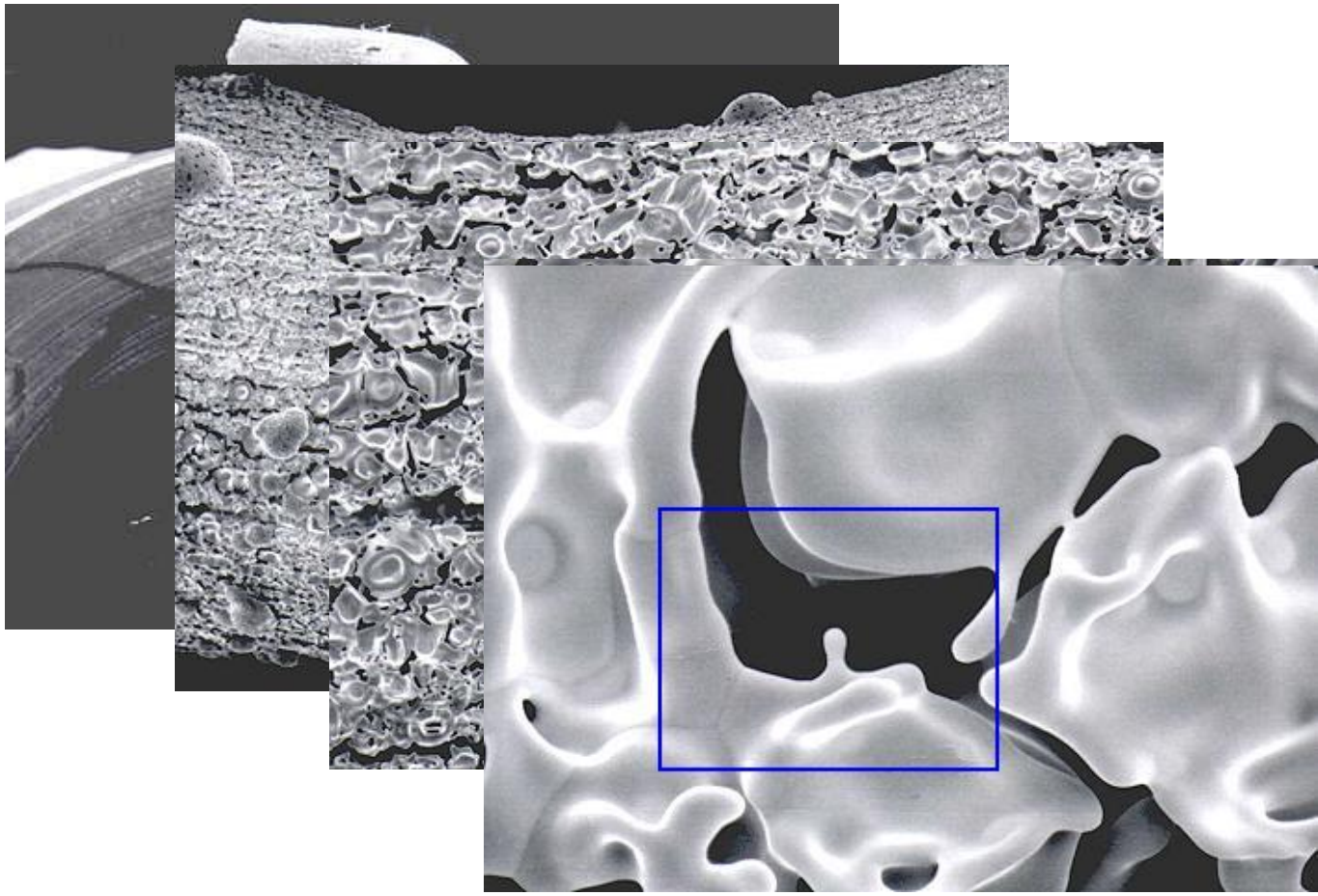
110X



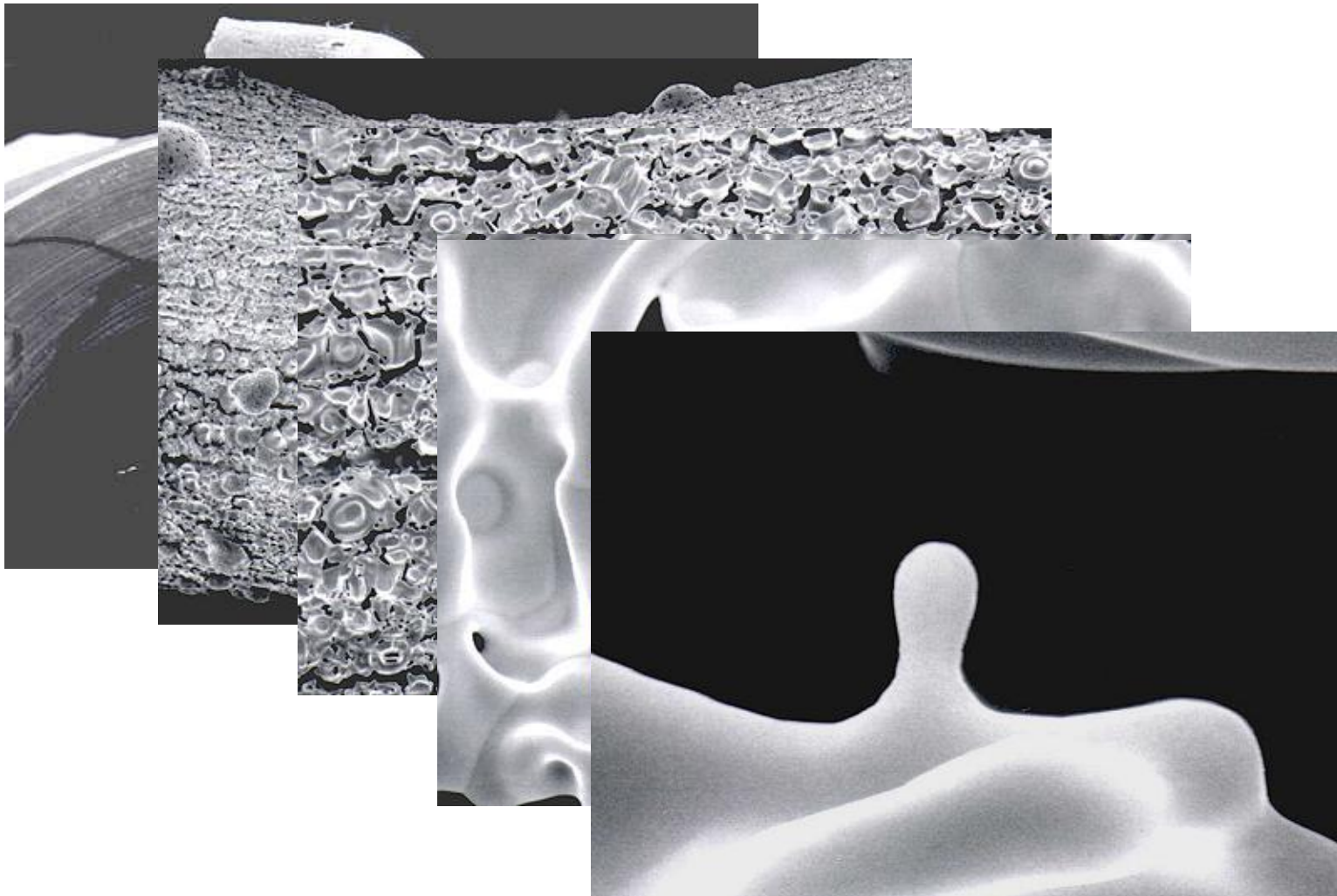
200X



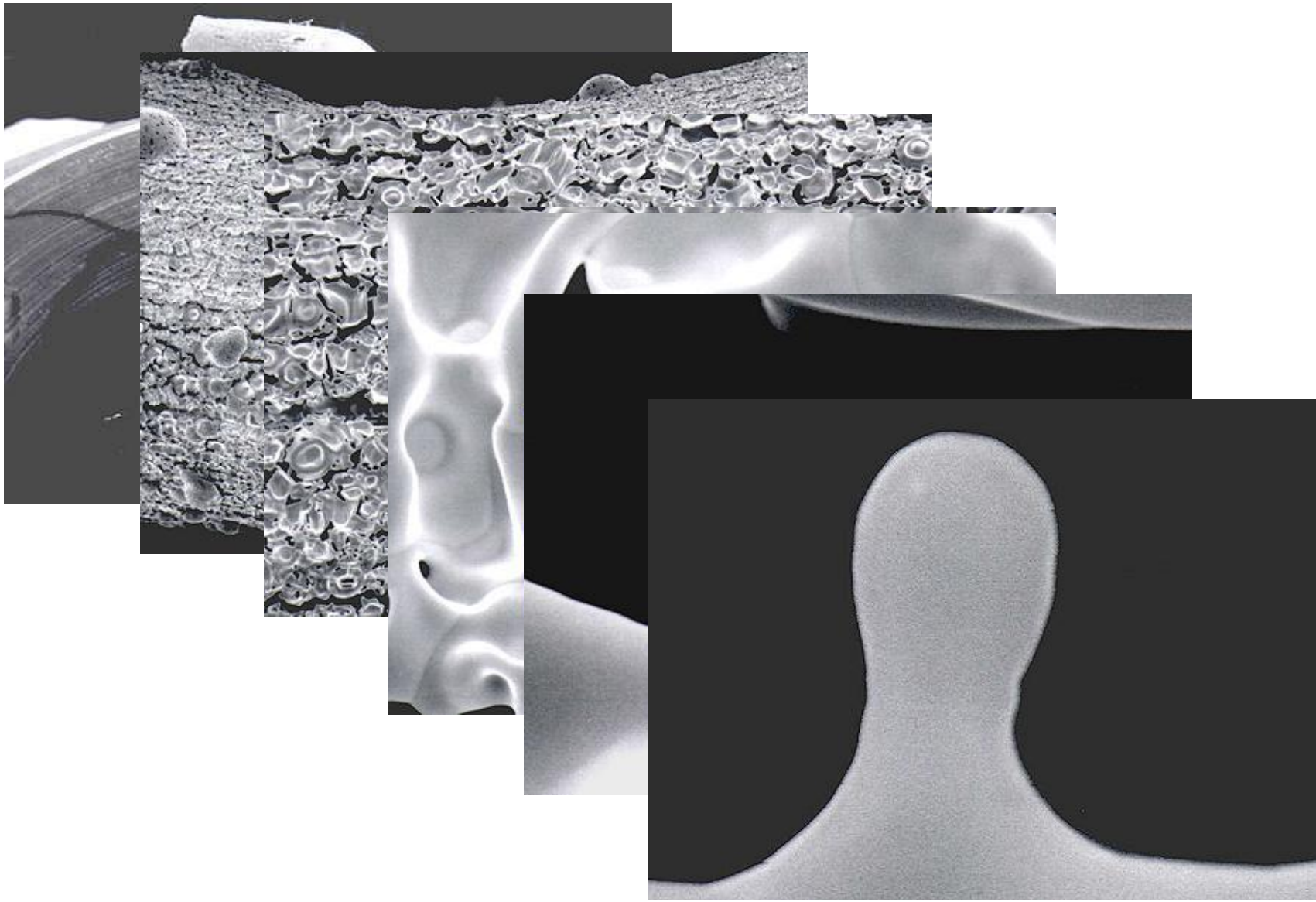
400X



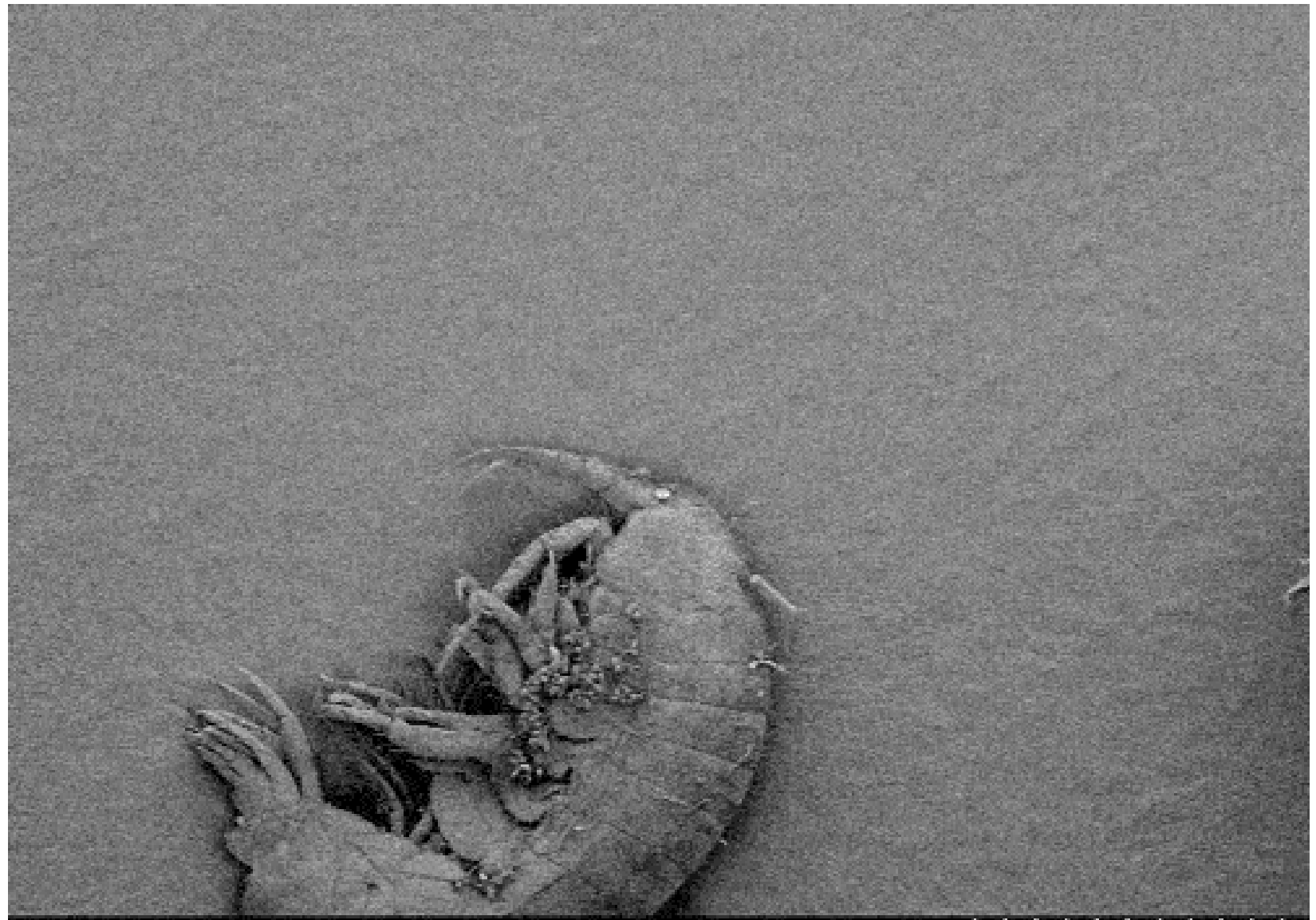
4K



16K



45K



1.0kV x30 SE(M)

1.00mm

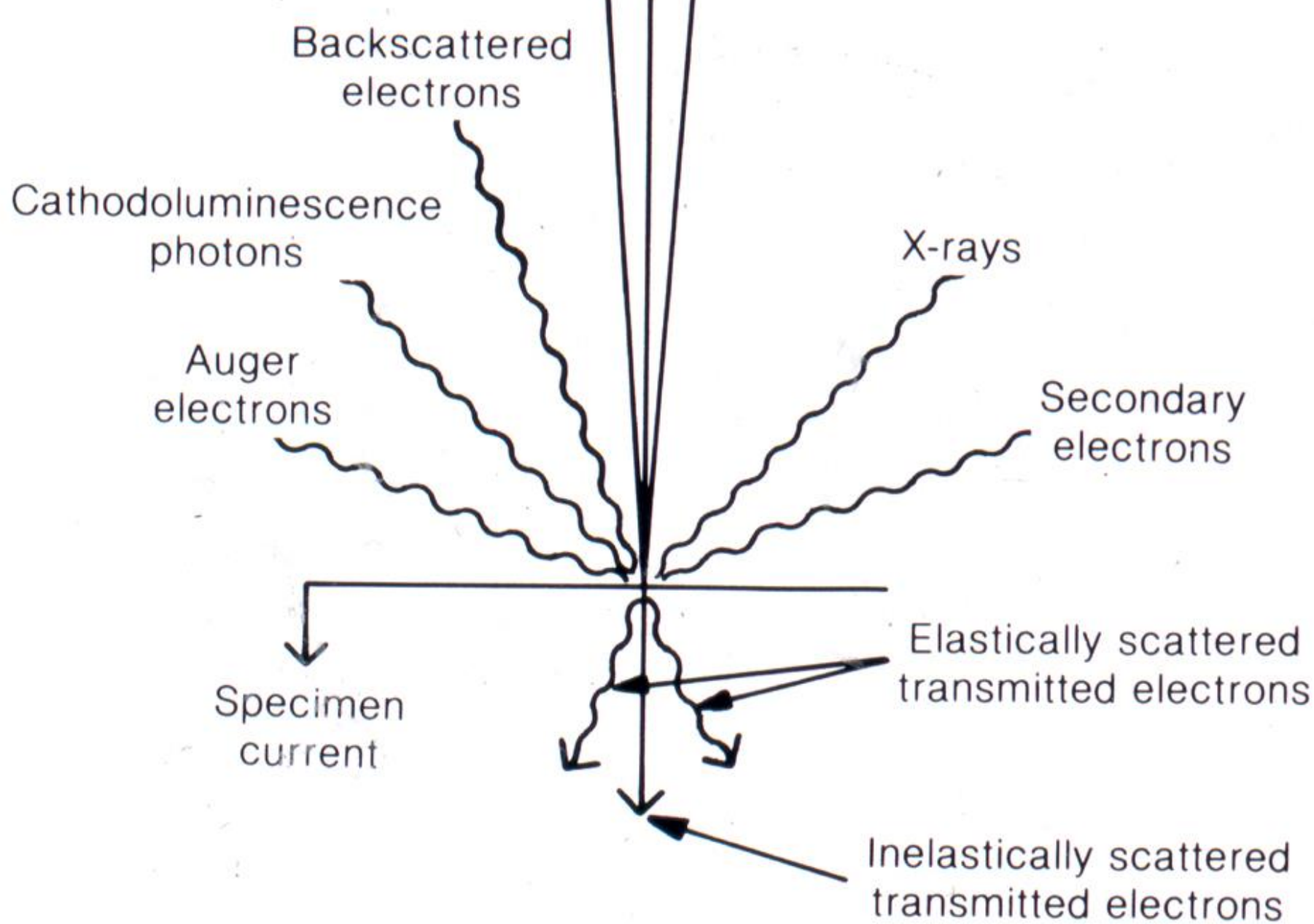


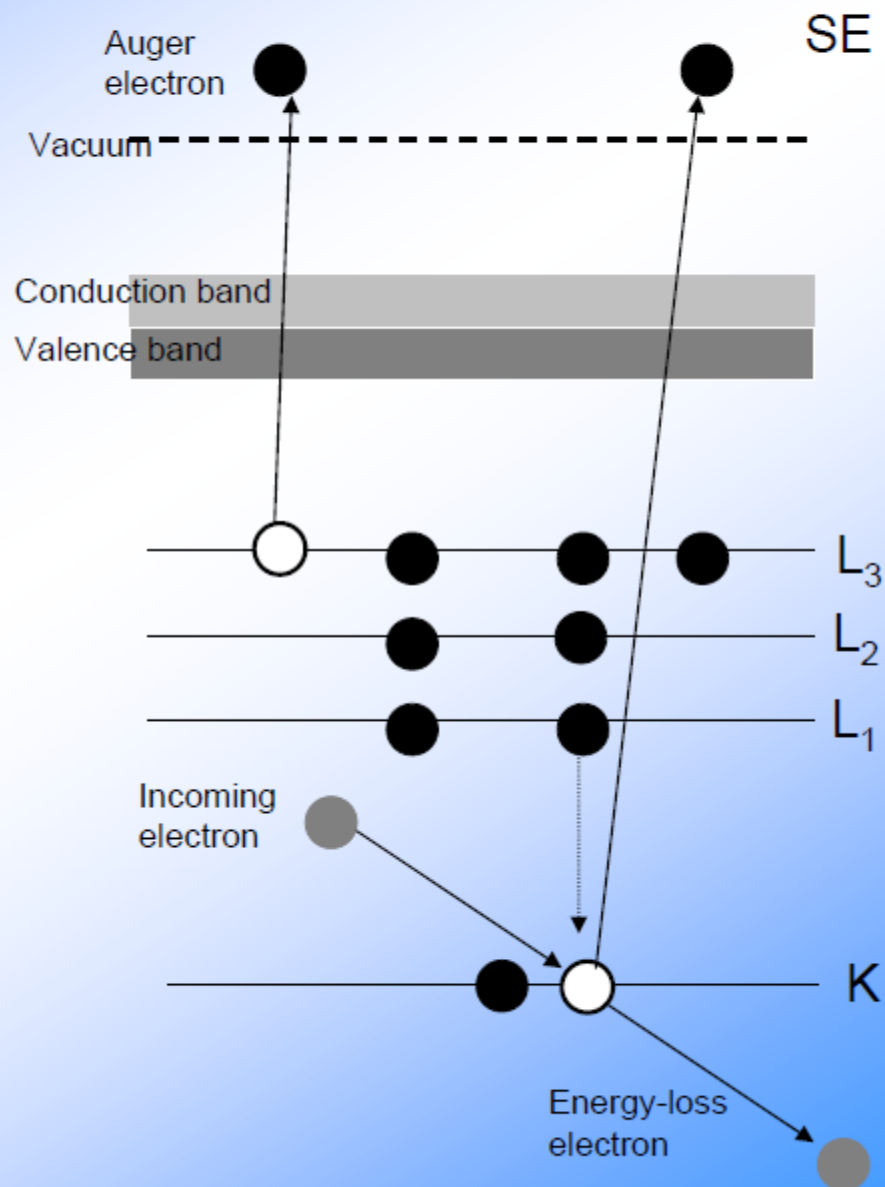
Figure 1. Signals resulting from interaction of primary beam with specimen.

Auger Electrons

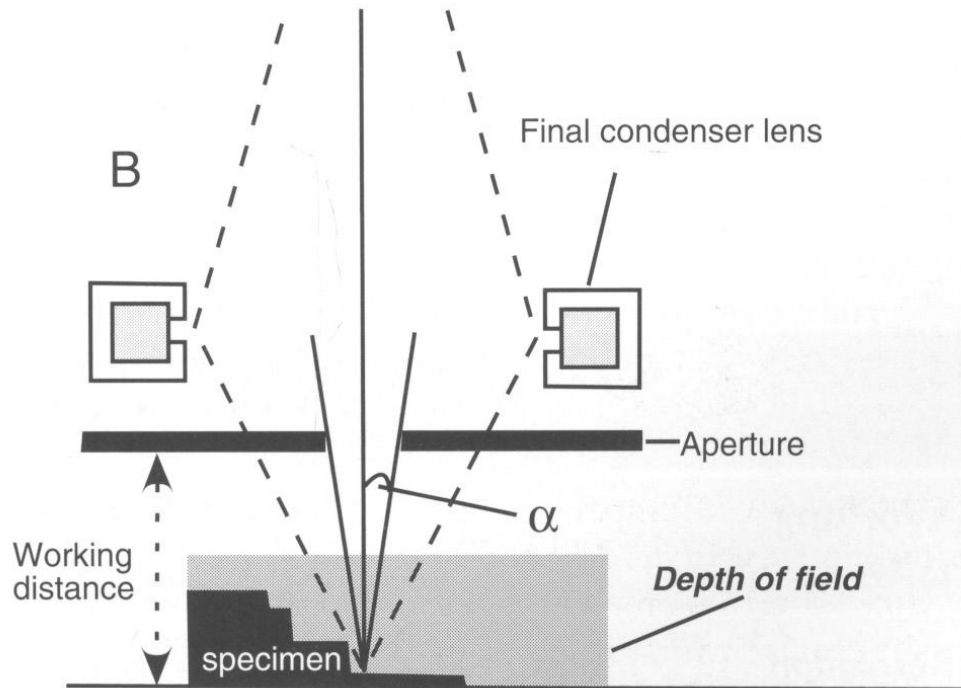
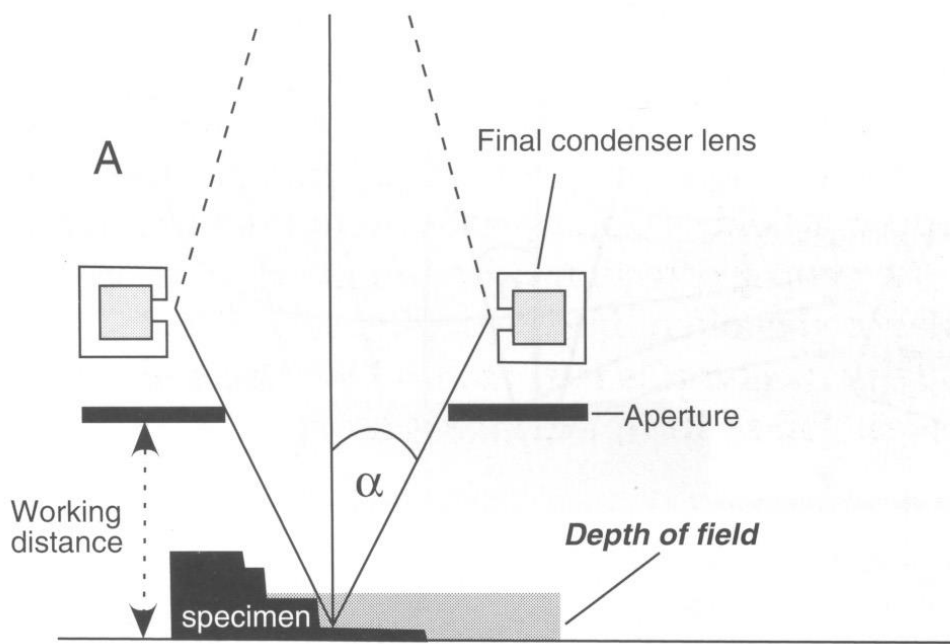
The energy of Auger electrons is given by the difference between the original excitation energy and the binding energy of the outer shell from which electron was ejected.

Typical Auger electron energies are in the range of a few hundred eV to a few keV and are strongly absorbed within the specimen

An alternative to X-ray emission as an ionized atom returns to ground state.



Глубина резкости

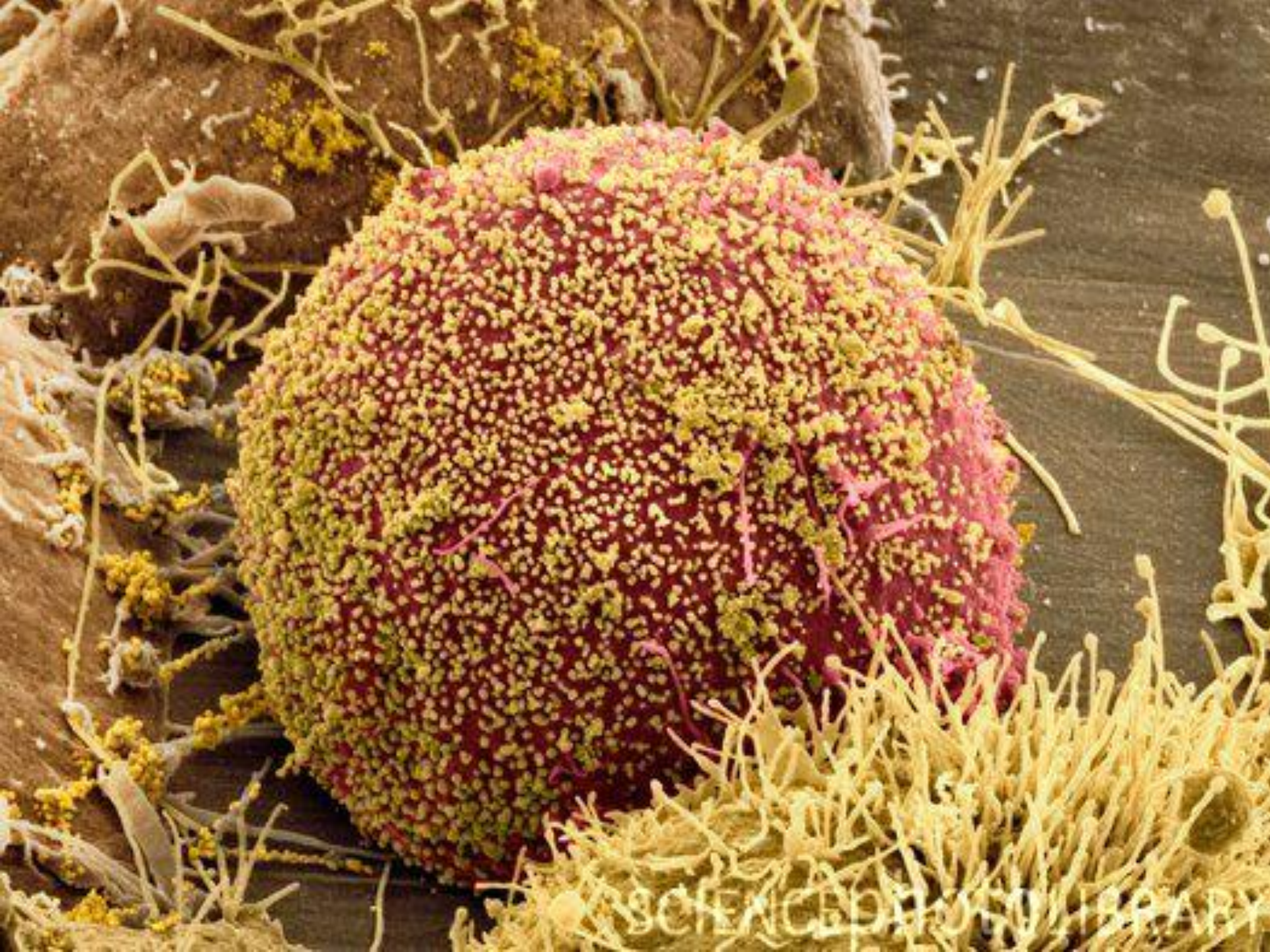


Уменьшение
апертуры может
увеличить
глубину
фокусировки
(резкости)

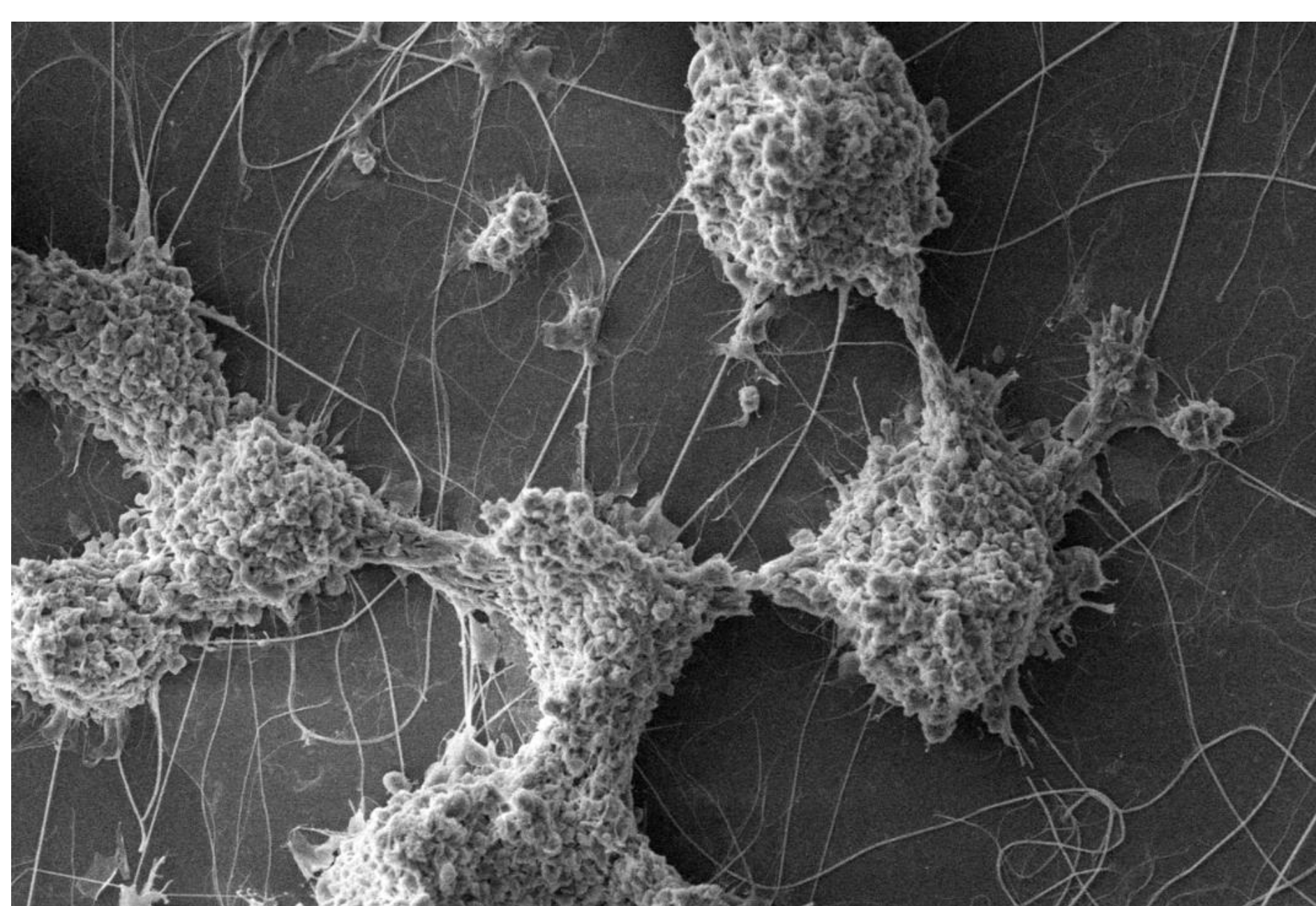




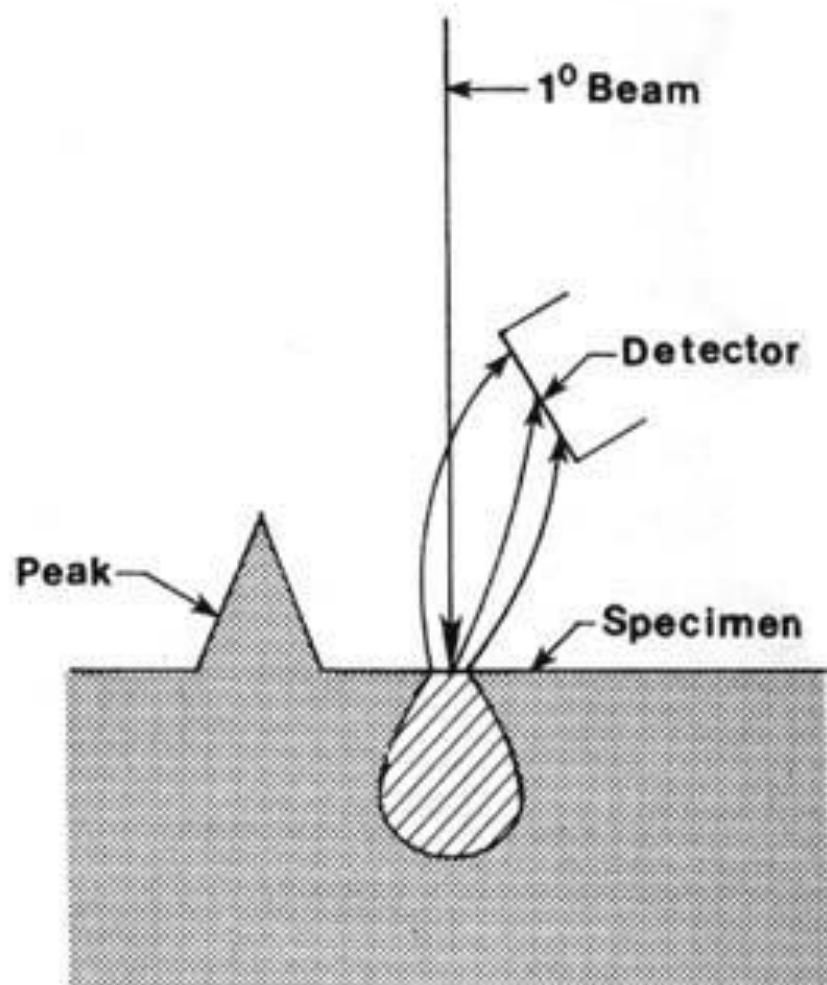
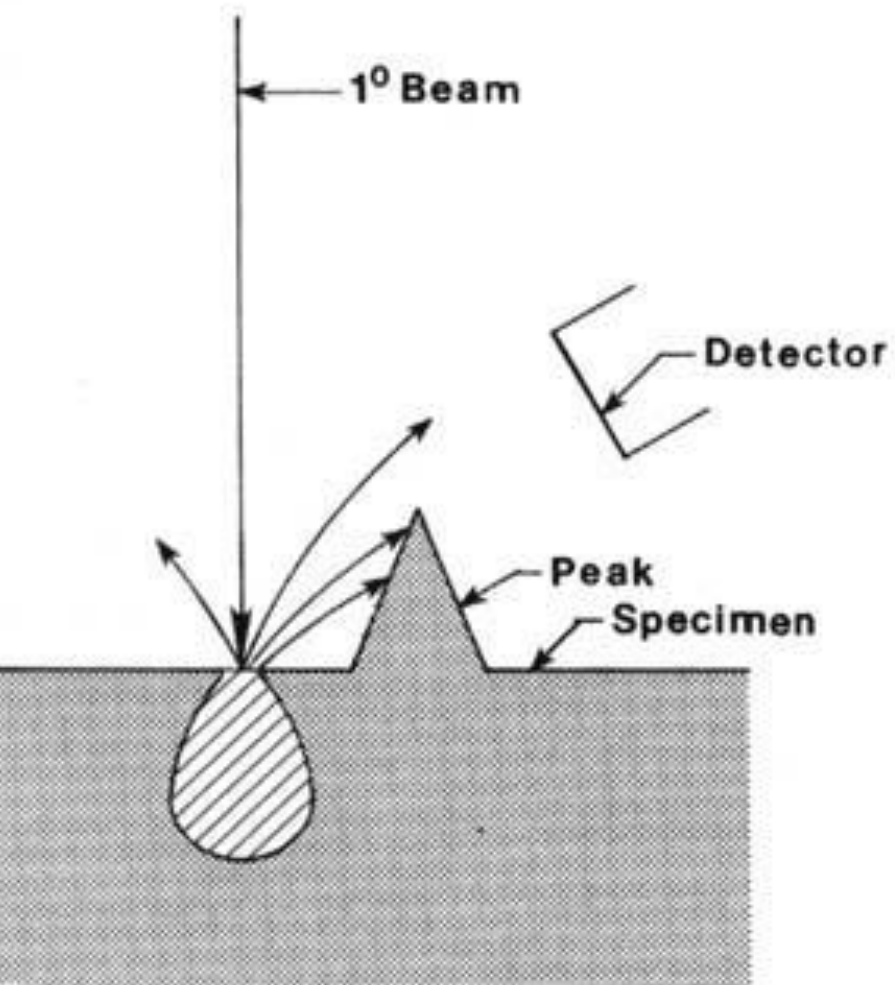




ASOCIACION DE INVESTIGADORES



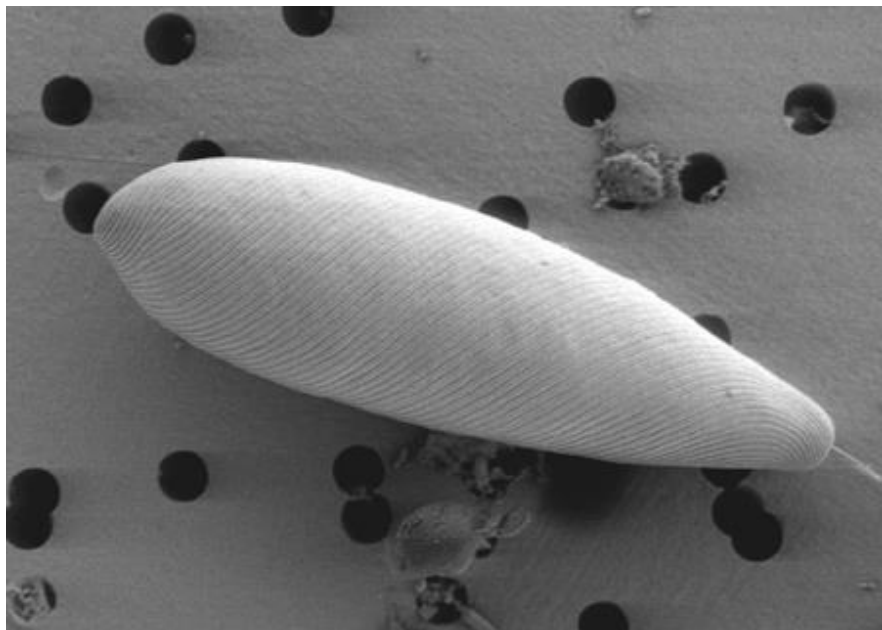
Тени



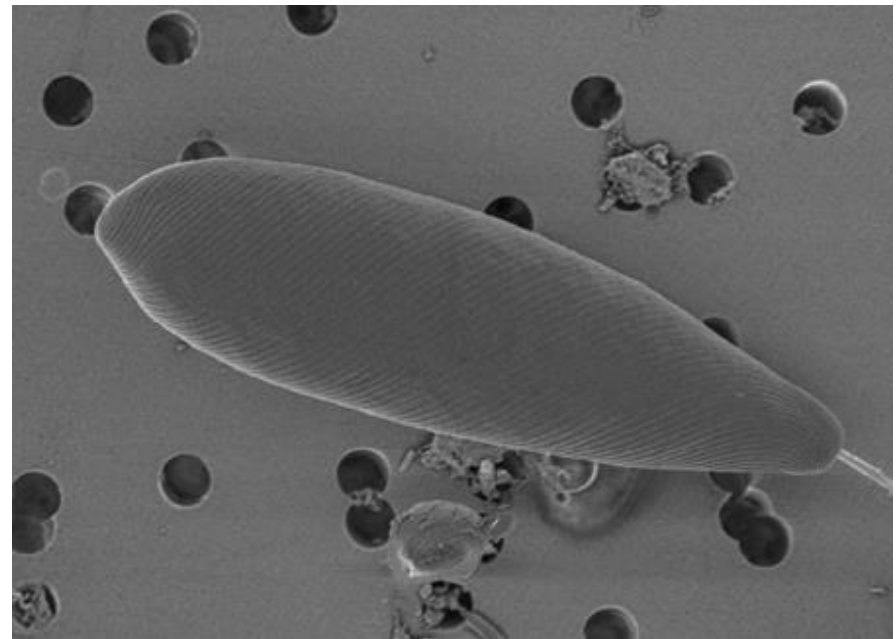


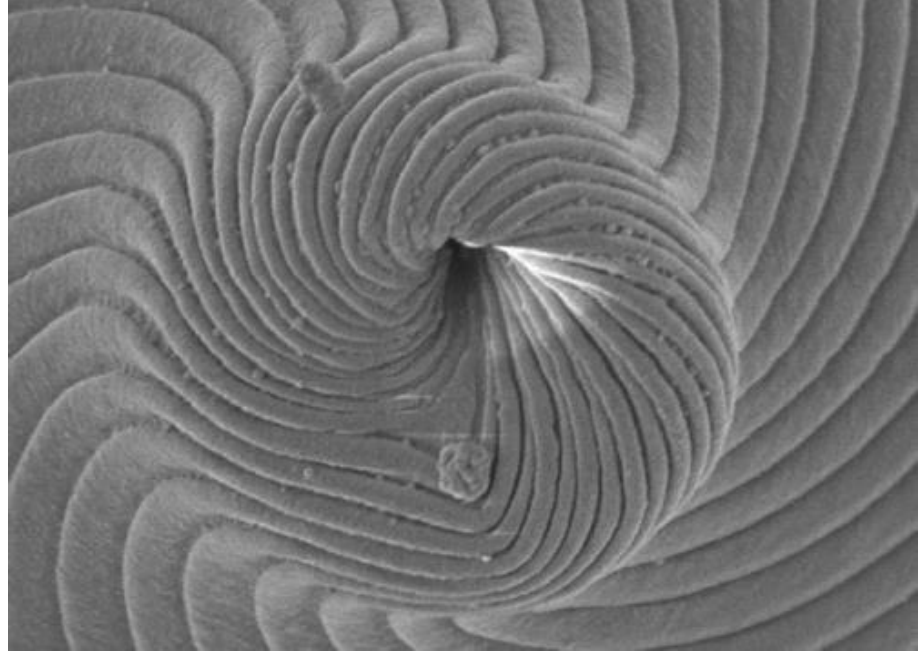
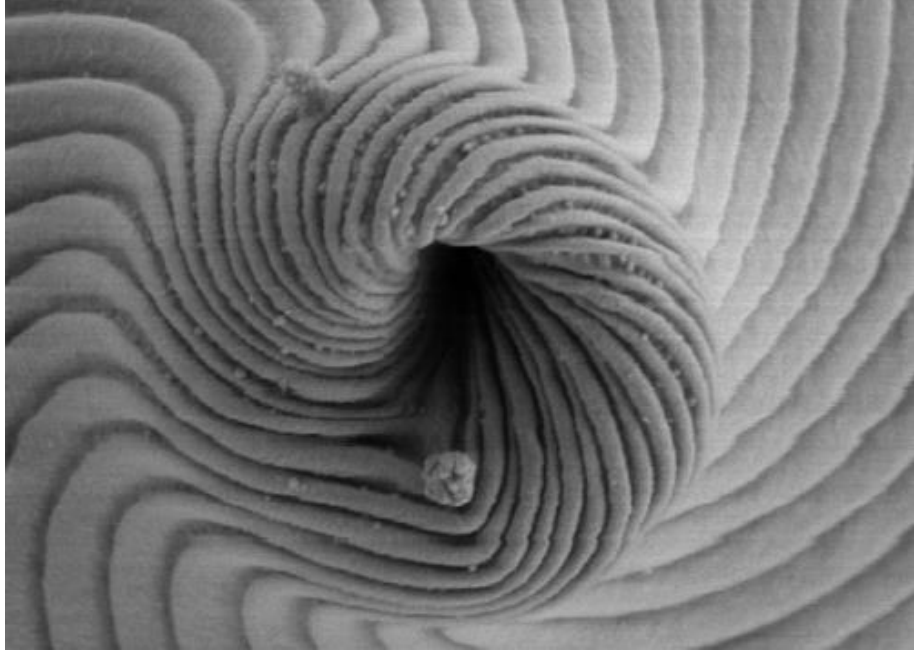
Детектирование вторичных электронов

боковое

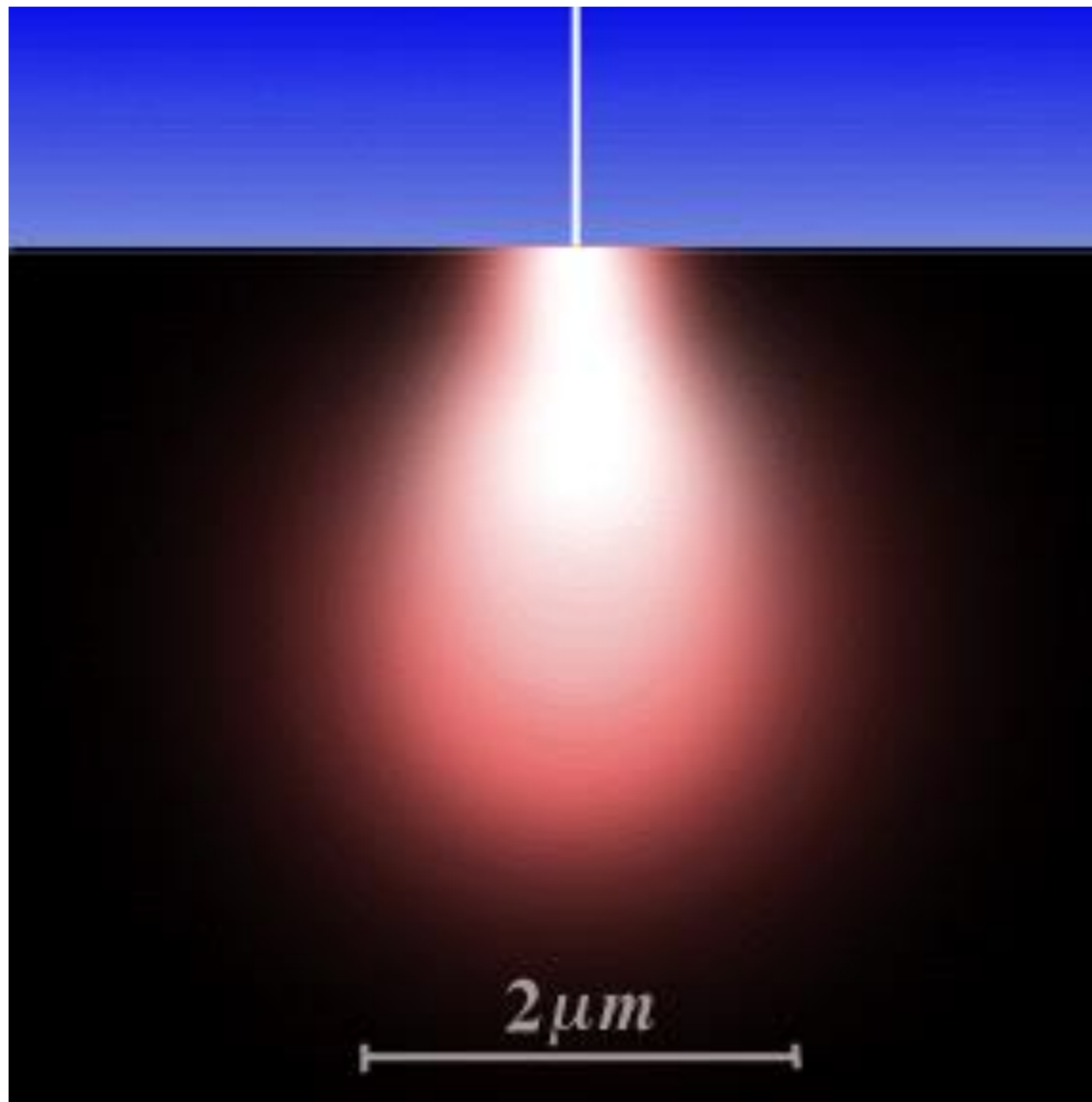


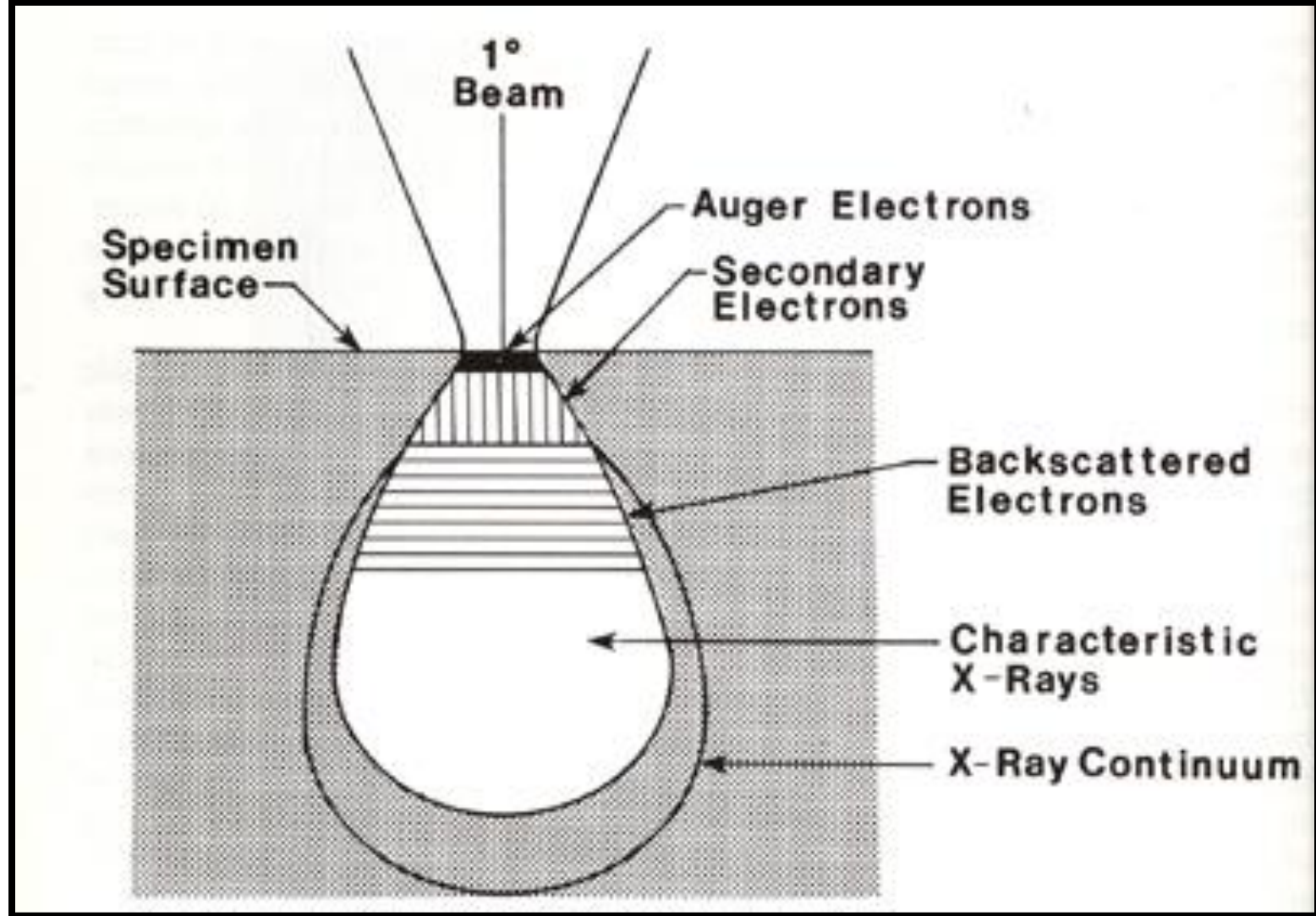
осевое



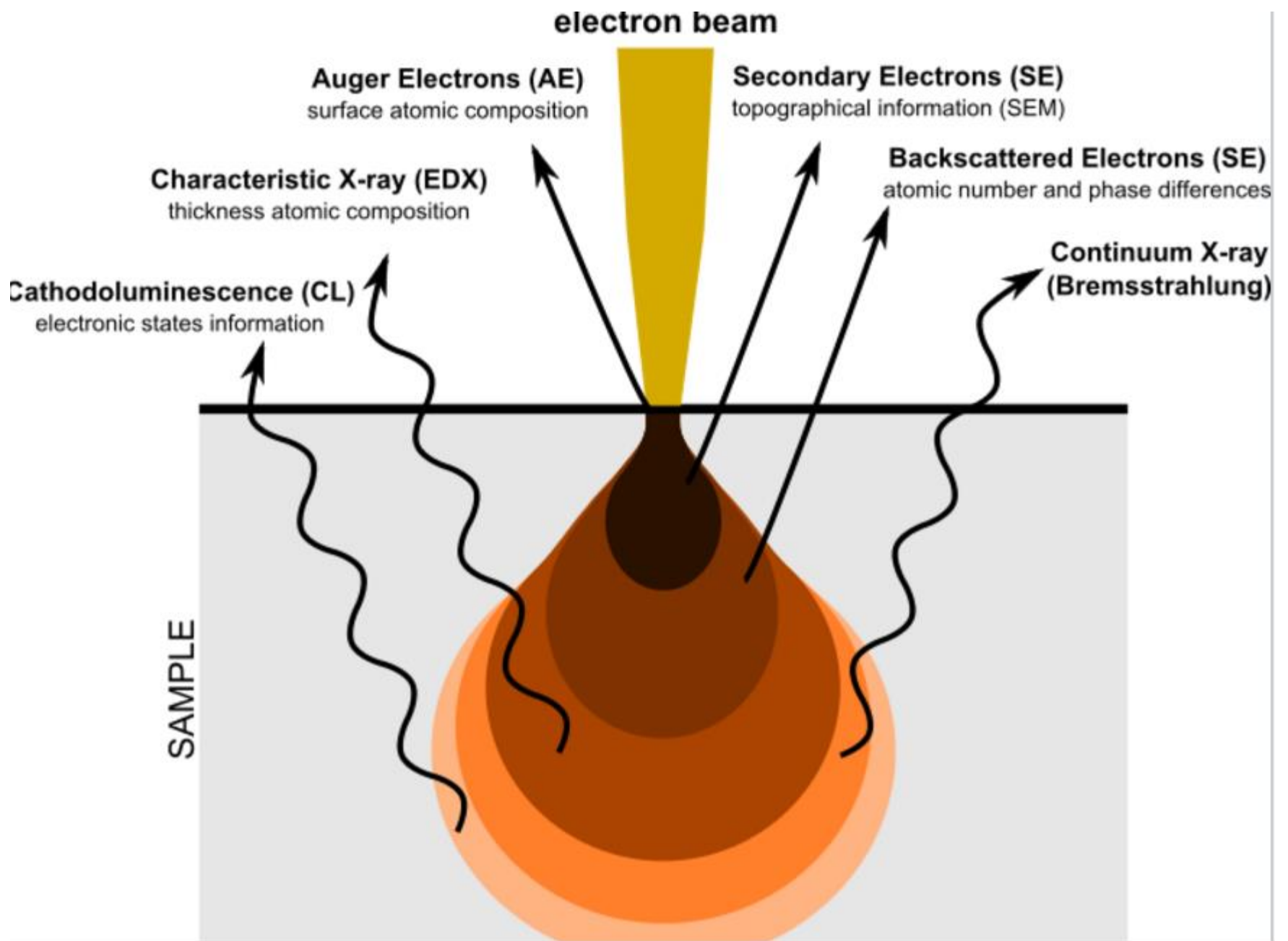


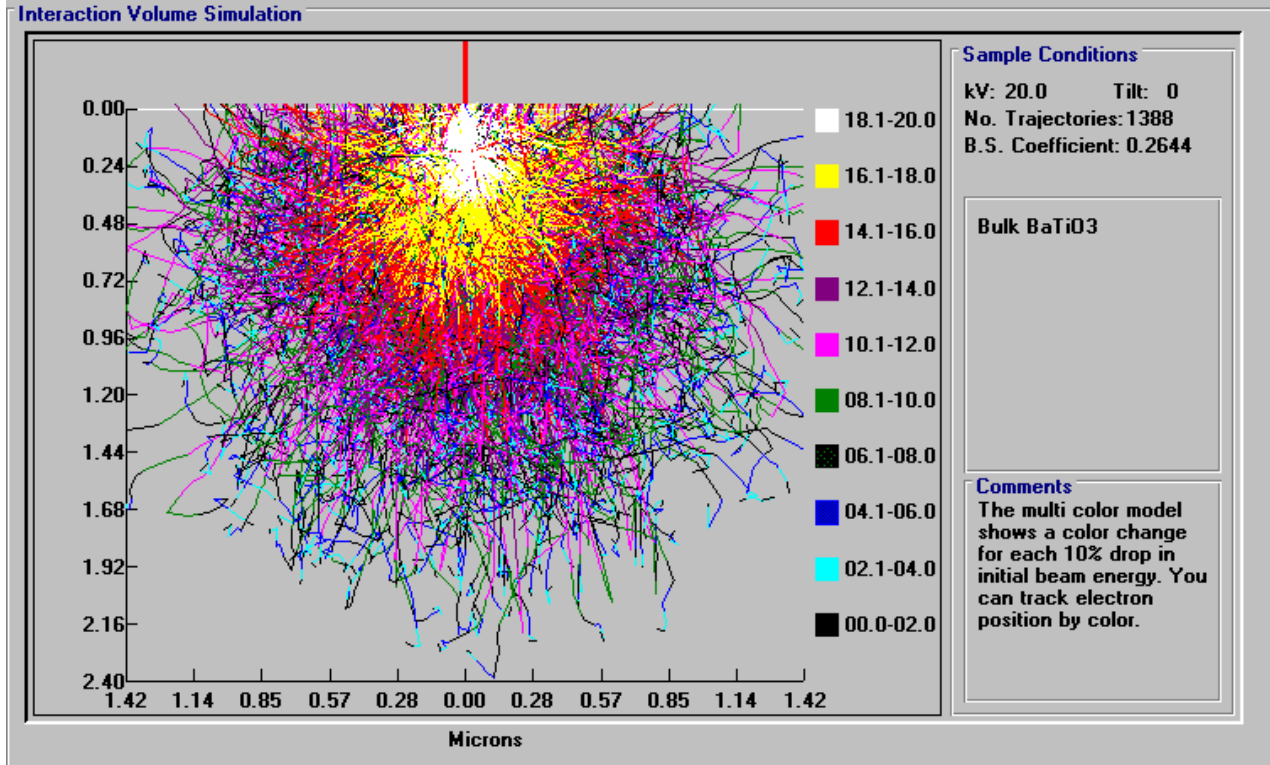
Взаимодействие с веществом





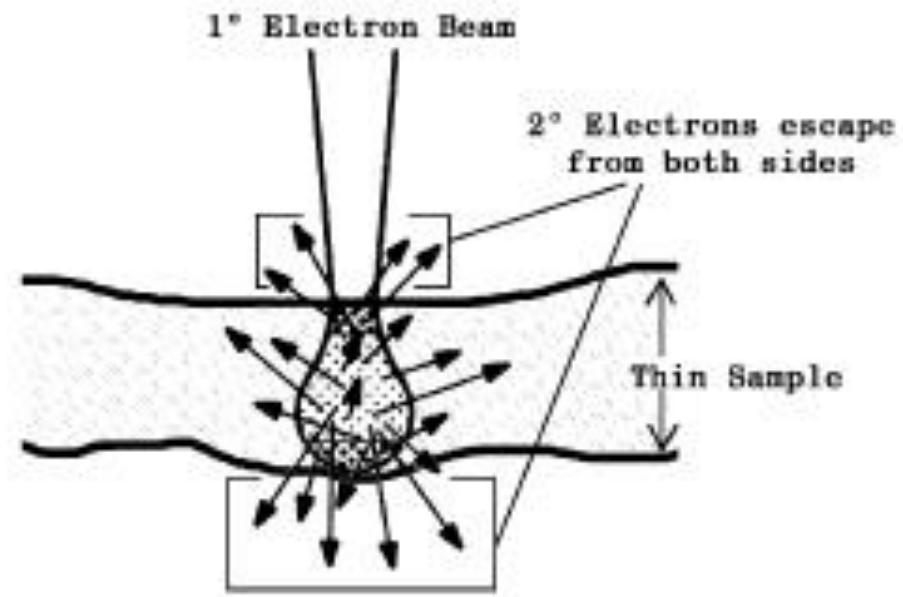
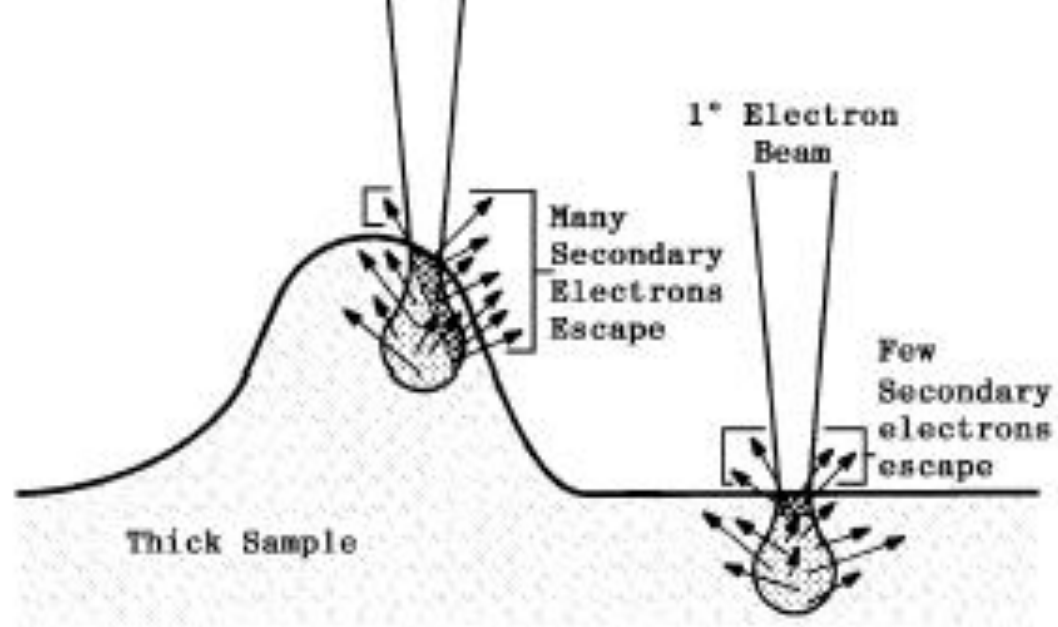
Первичный сигнал: вторичные электроны, обратно рассеянные электроны, рентгеновское излучение

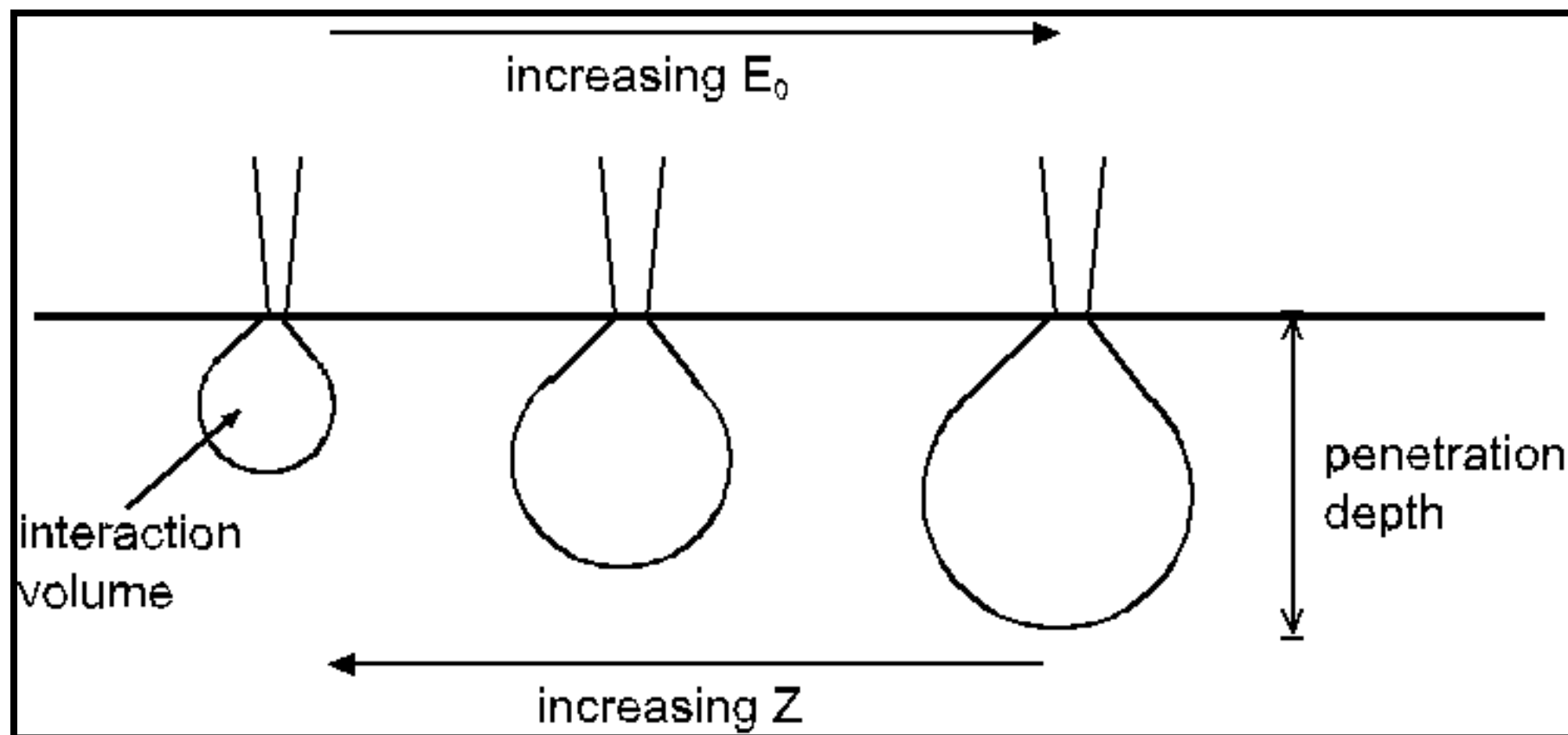




Моделирование методом Монте Маркло включает следующие параметры:

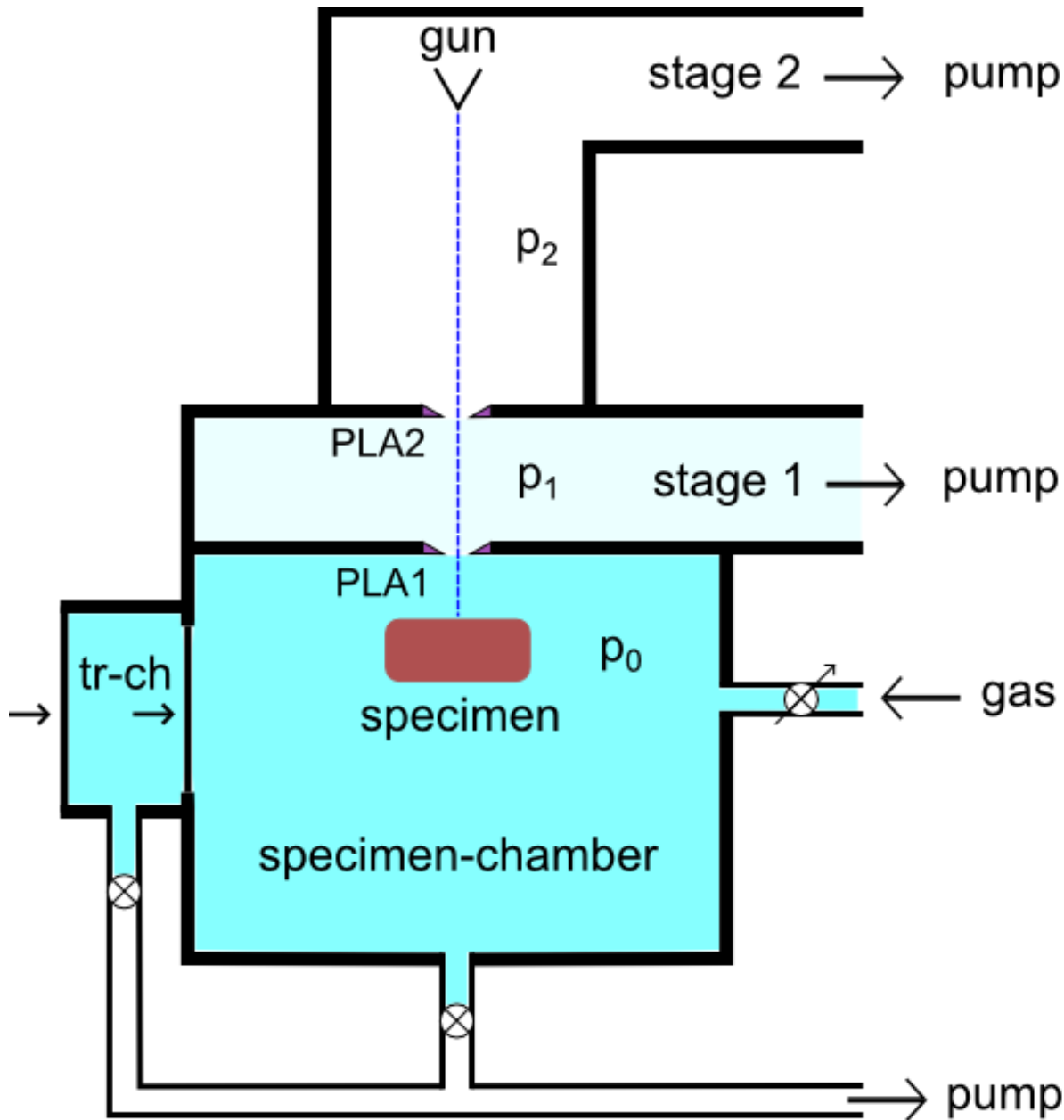
энергия первичного пучка,
сечение различных взаимодействий,
длина свободного пробега,
случайный фактор





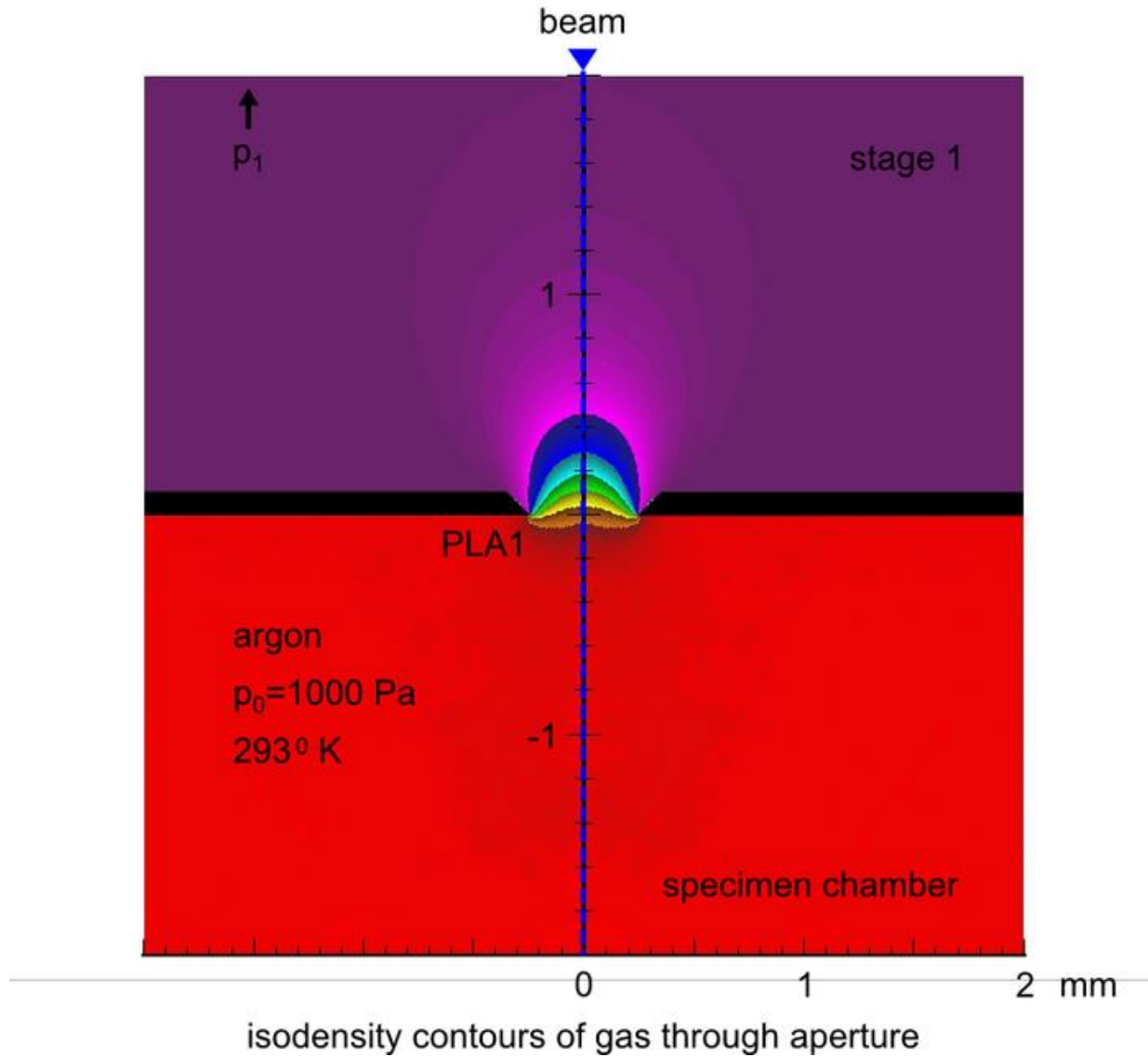
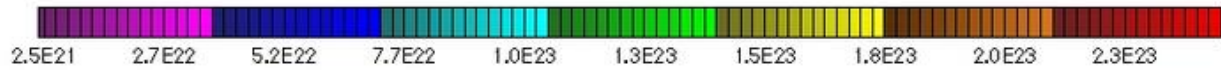
ESEM: Environmental Scanning Electron Microscope



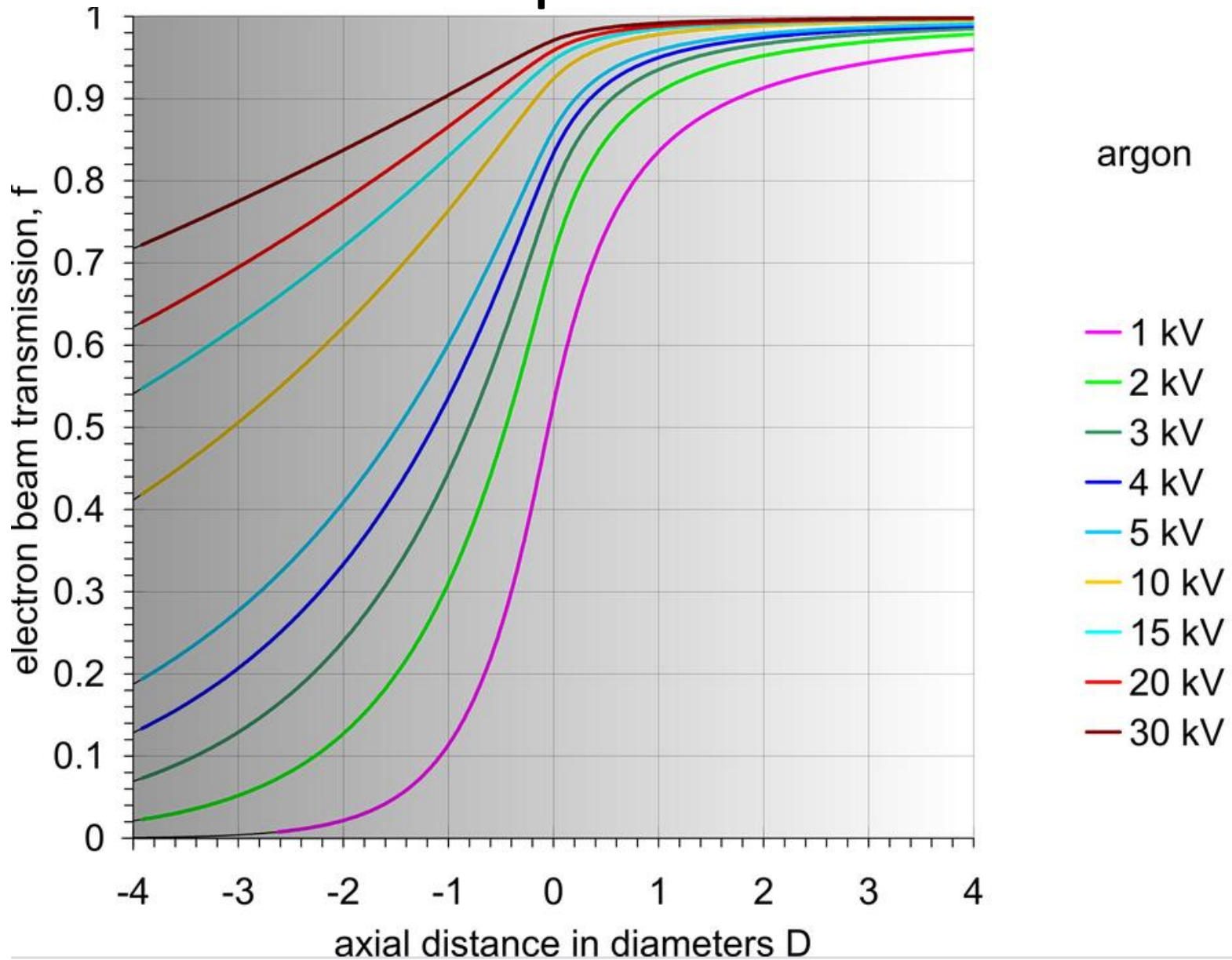


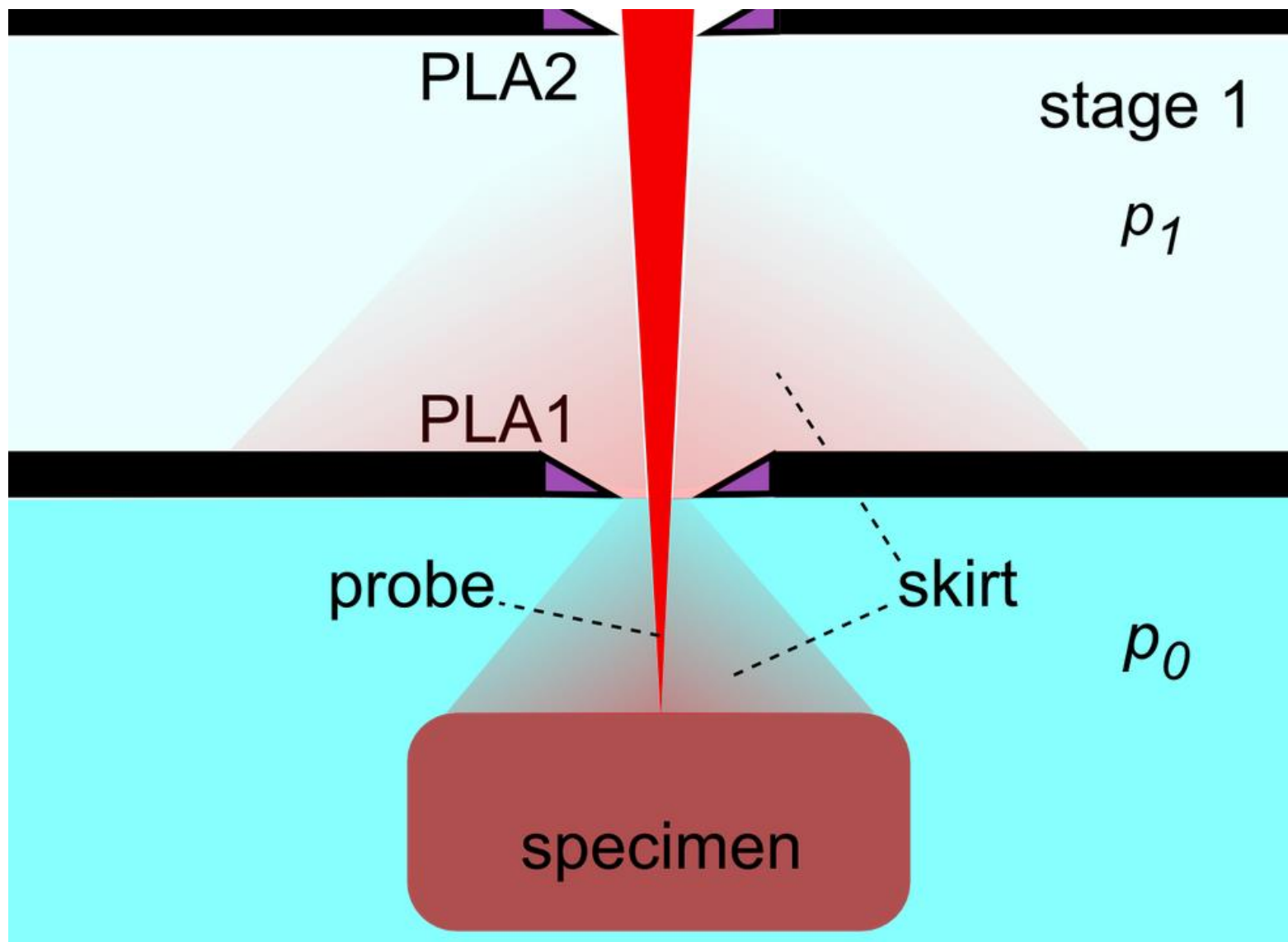
PLA:
pressure
limiting
aperture

particle number density $\#/m^3$

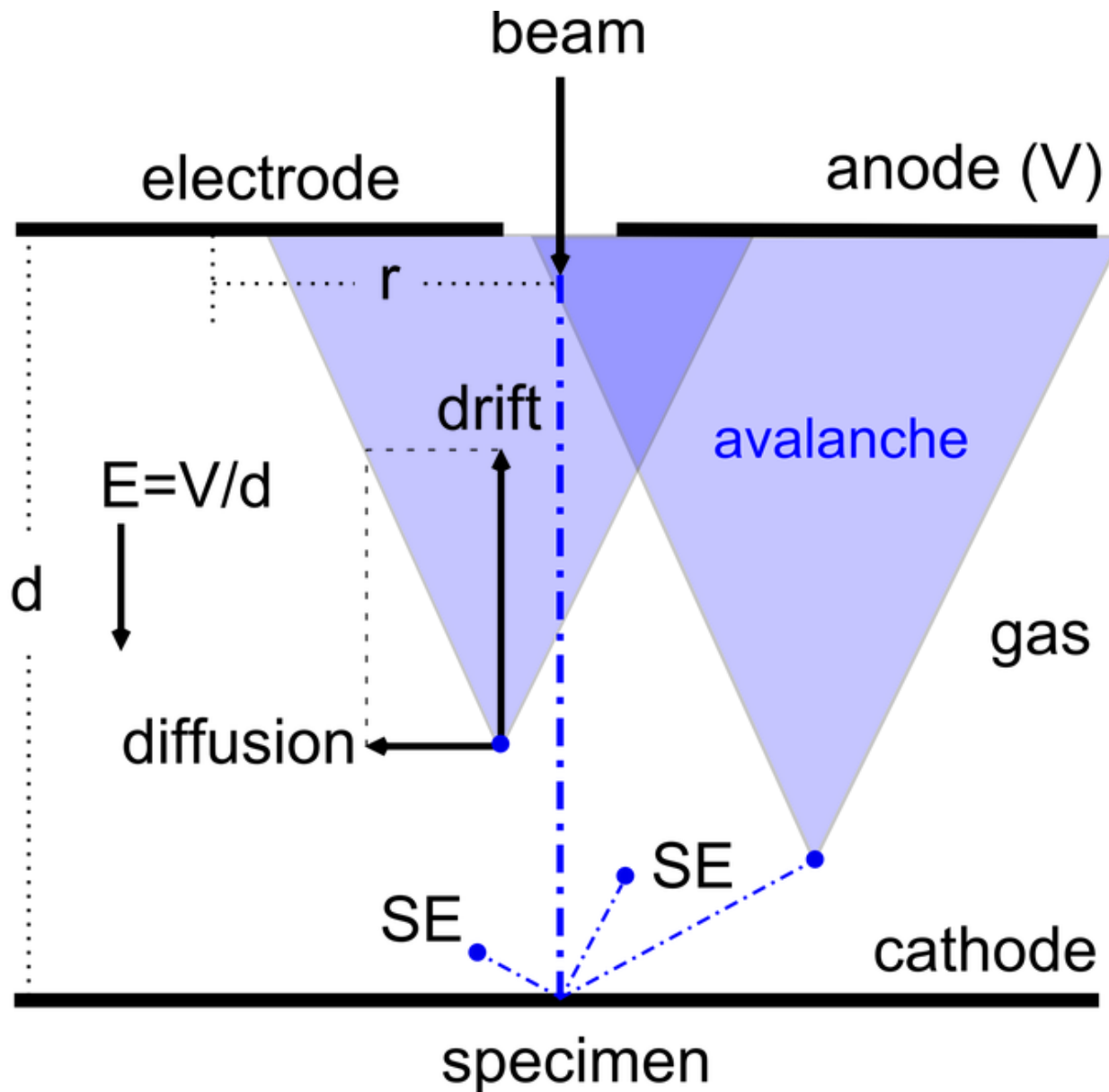


Прохождение пучка электронов через газ





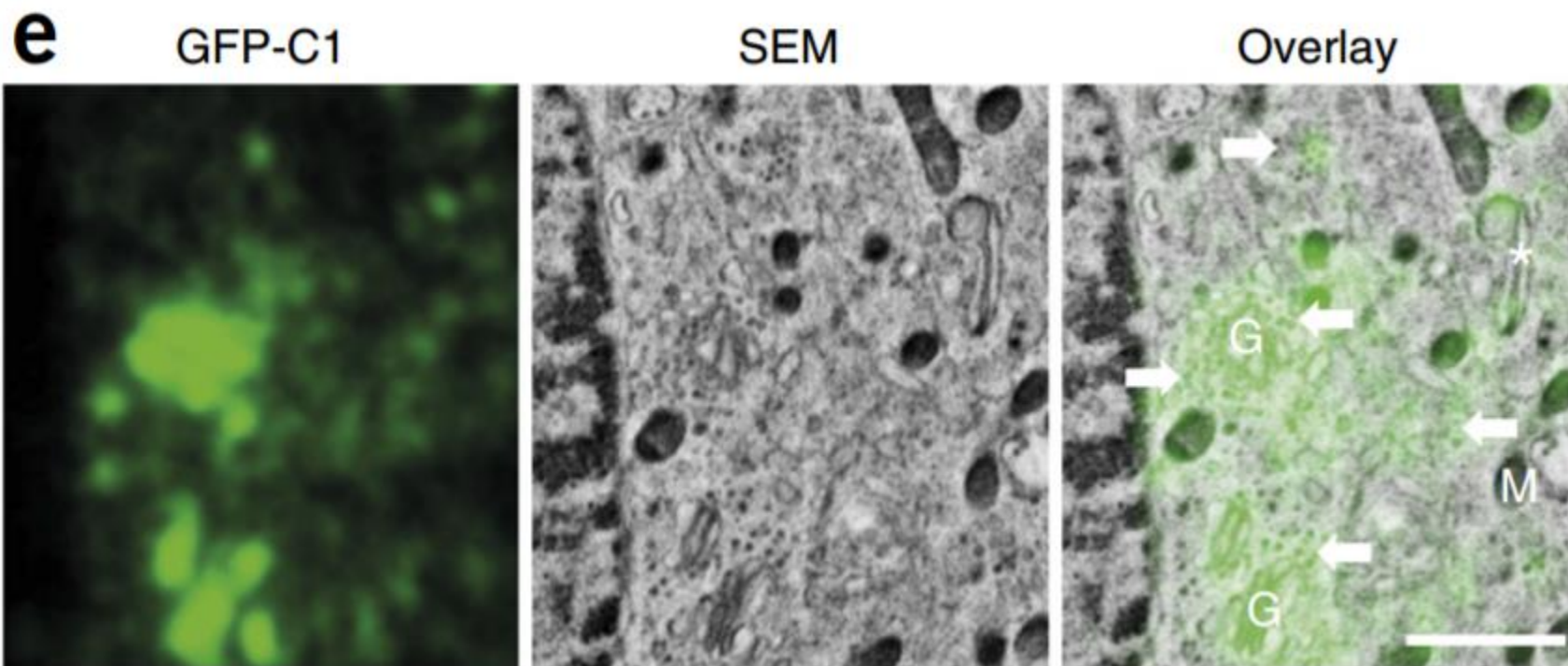
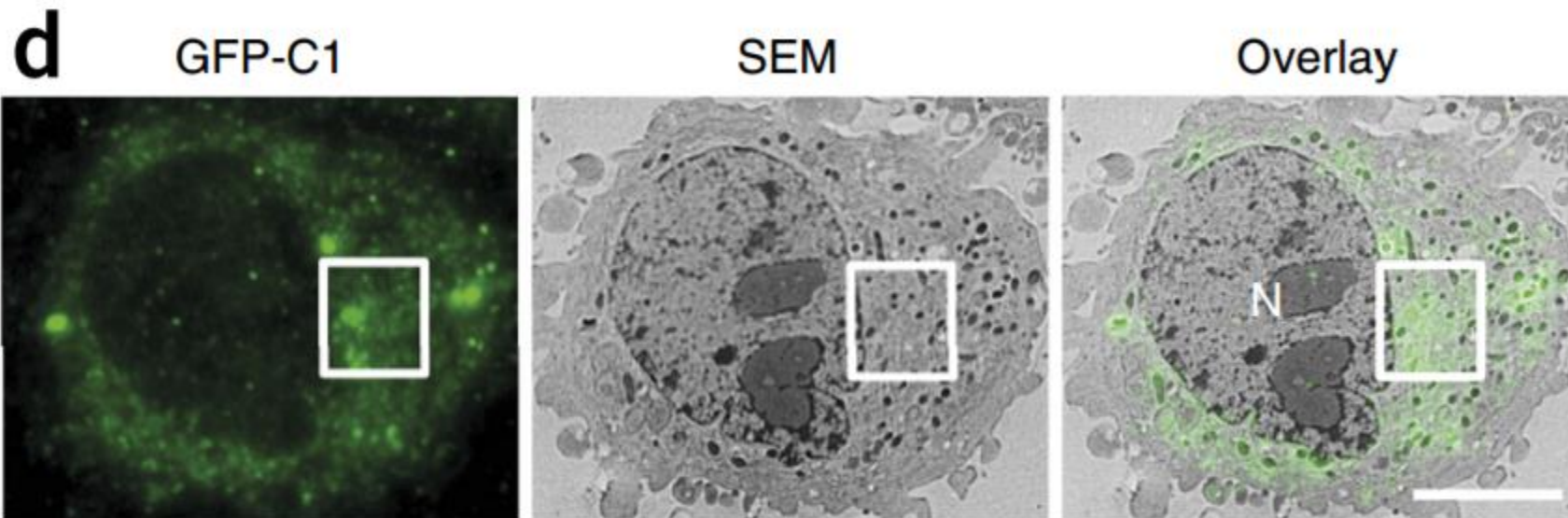
Регистрация вторичных электронов



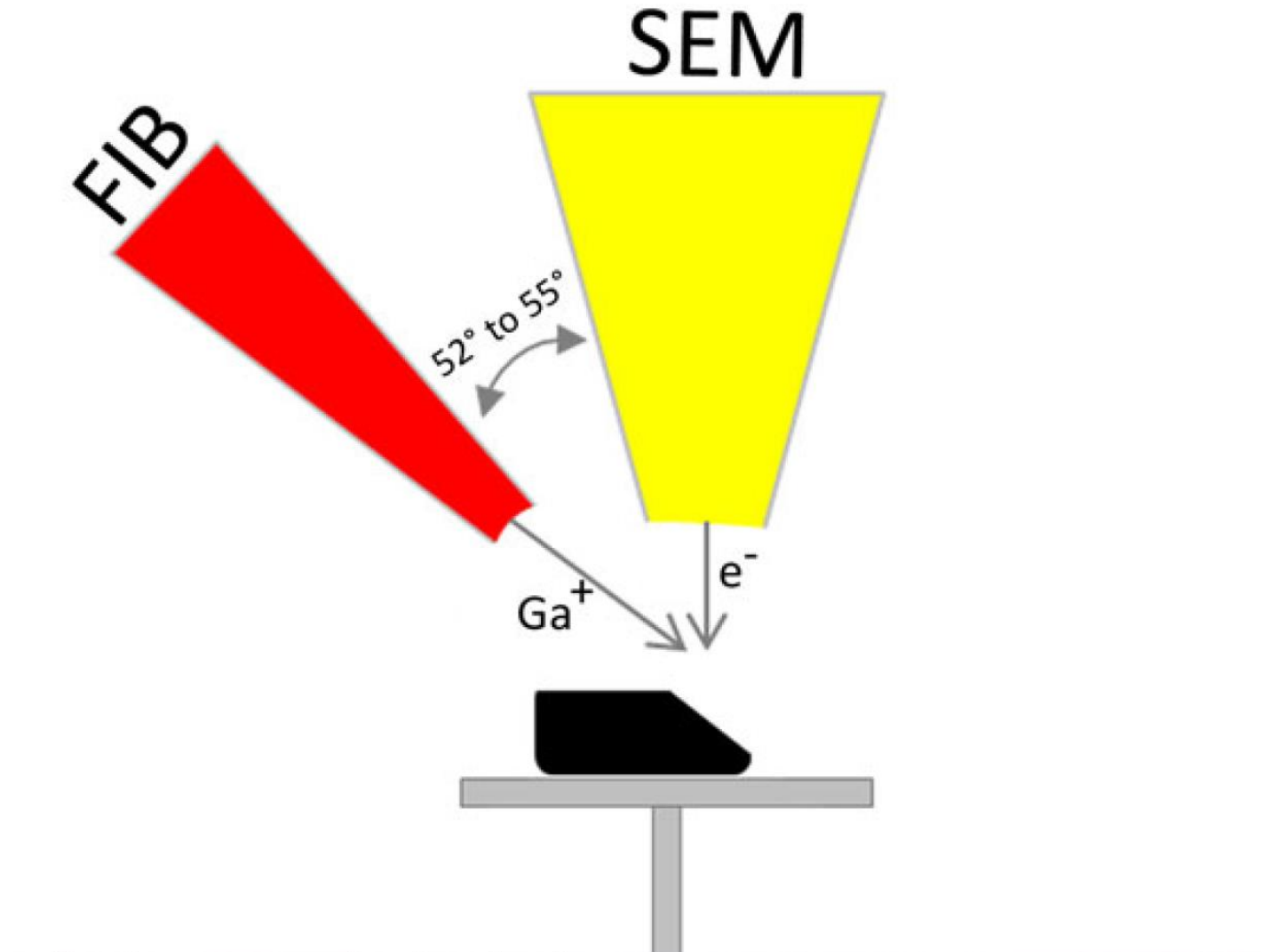
(e)

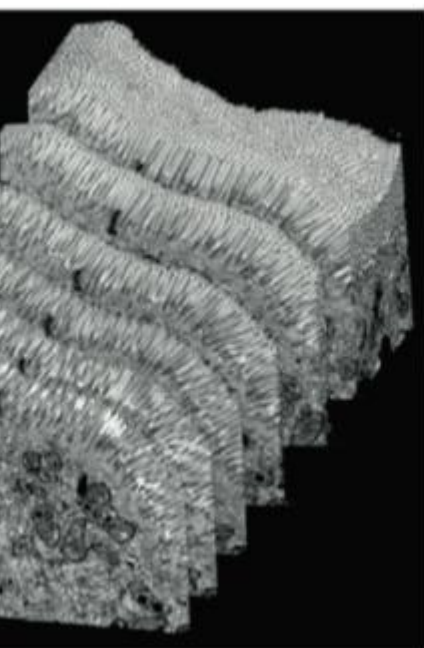
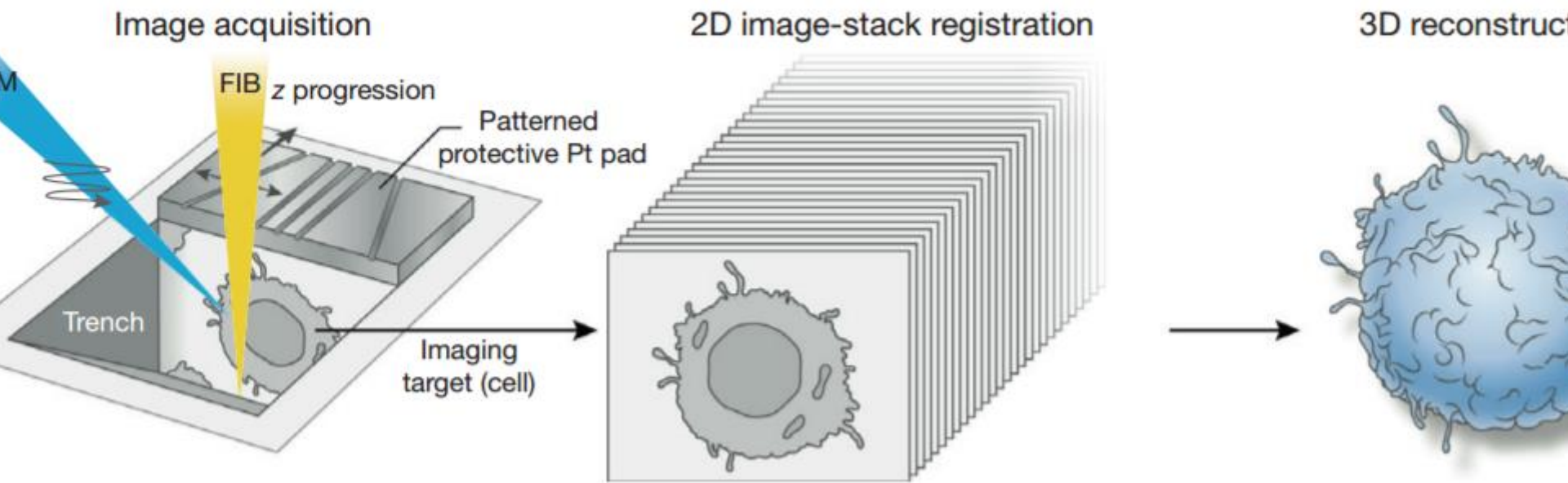
Acc.V Spot Magn Det WD |-----| 10 μ m
5.00 kV 5.0 3420x GSE 10.1 2.0 Torr for density - 2

CLEM: Correlated light and electron microscopy

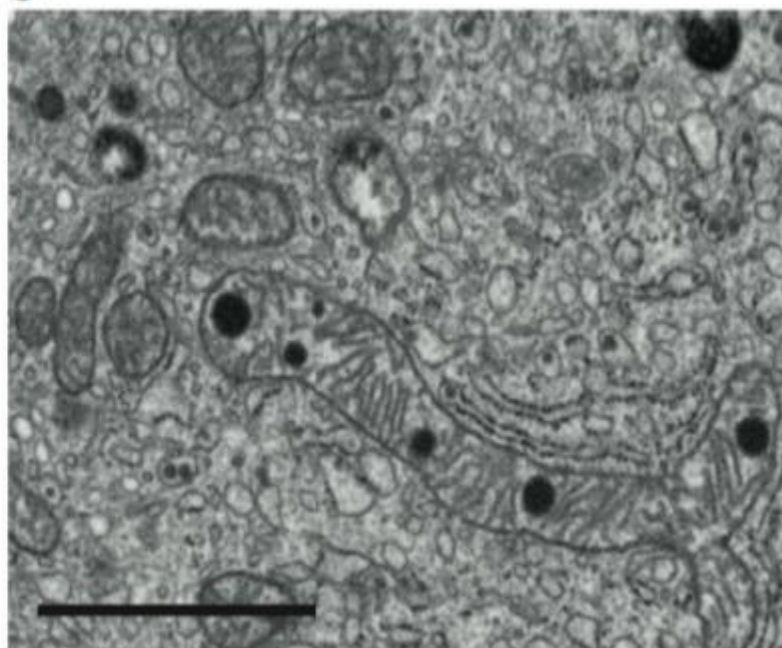


Focused ion beam scanning electron microscopy (FIB-SEM)





c



d

