



Electron probe microanalysis

Low Voltage SEM Operation



What's the point?

Traditionally SEMs and microprobes operate at gun voltages (E_0) in the range from 15-20 kV.

However, it is possible to operate at a wider range of accelerating voltages: down to around 1 kV as well as up to 30 kV.

There are benefits under certain conditions of operating at these different (esp. lower) voltages.



“Thinking like an electron”

You have seen with your Monte Carlo simulations that for a constant material, dropping the incident electron kV value will decrease the scattering of the electrons in the sample.

In fact this decrease goes approximately as a 1.7 power, i.e. dropping from 15 to 1.5 kV will reduce the electron range (scatter) by $10^{1.7}$ which is a factor of 50!