

Example: Imaging a Virus

You wish to observe a virus with a diameter of 20 nm, much too small to observe with an optical microscope. Calculate the voltage required to produce an electron wavelength suitable for studying this virus with a resolution of $d_{\min} = 2 \text{ nm}$. The “f-number” for an electron microscope is quite large: $f/D \approx 100$.

Hint: First find λ required to achieve d_{\min} .
Then find E of an electron from λ .

