Summary: Photon & Matter Waves

Everything

$E = hf$

$p = h/\lambda$

Light ($v = c$)

$E = pc$, so

$E = hc/\lambda$

$$E_{photon} = \frac{1240\ \text{eV} \cdot \text{nm}}{\lambda}$$

Slow Matter ($v << c$)

$KE = p^2/2m$, so

$KE = h^2/2m\lambda^2$

For electrons:

$$KE = \frac{1.505\ \text{eV} \cdot \text{nm}^2}{\lambda^2}$$