55. (a) The average kinetic energy is

$$K = \frac{3}{2}kT = \frac{3}{2}(1.38 \times 10^{-23}\,\text{J/K})(300\,\text{K}) = 6.21 \times 10^{-21}\,\text{J} = 3.88 \times 10^{-2}\ \text{eV}\ .$$

(b) The de Broglie wavelength is

$$\begin{aligned} \lambda &= \frac{h}{\sqrt{2m_n K}} \\ &= \frac{6.63 \times 10^{-34}\,\text{J}\cdot\text{s}}{\sqrt{2(1.675 \times 10^{-27}\,\text{kg})(6.21 \times 10^{-21}\,\text{J})}} \\ &= 1.5 \times 10^{-10}\ \text{m}\ . \end{aligned}$$