58. (a) The average de Broglie wavelength is

$$\begin{aligned}\lambda_{\text{avg}} &= \frac{h}{p_{\text{avg}}} = \frac{h}{\sqrt{2mK_{\text{avg}}}} = \frac{h}{\sqrt{2m(3kT/2)}} = \frac{hc}{\sqrt{2(mc^2)kT}} \\ &= \frac{1240\,\text{eV}\cdot\text{nm}}{\sqrt{3(4)(938\,\text{MeV})(8.62\times10^{-5}\,\text{eV/K})(300\,\text{K})}} \\ &= 7.3\times10^{-11}\,\text{m} = 73\ \text{pm}\ .\end{aligned}$$

(b) The average separation is

$$\begin{aligned}d_{\text{avg}} &= \frac{1}{\sqrt[3]{n}} = \frac{1}{\sqrt[3]{p/kT}} \\ &= \sqrt[3]{\frac{(1.38\times10^{-23}\,\text{J/K})(300\,\text{K})}{1.01\times10^{5}\,\text{Pa}}} = 3.4\,\text{nm}\ .\end{aligned}$$

(c) Yes, since $\lambda_{\text{avg}} \ll d_{\text{avg}}$.