1. (a) This is computed in part (a) of Sample Problem 40-1.

   (b) With $m_p = 1.67 \times 10^{-27}\,\text{kg}$, we obtain

$$E_1 = \left(\frac{h^2}{8mL^2}\right) n^2 = \left(\frac{(6.63 \times 10^{-34}\,\text{J}\cdot\text{s})^2}{8m_p(100 \times 10^{12}\,\text{m})^2}\right)(1)^2 = 3.29 \times 10^{-21}\,\text{J} = 0.0206\ \text{eV}\ .$$