$$\lambda_{\text{peak}} \quad = \quad \frac{0.0029\ \text{m} \cdot \text{K}}{T}$$

$$e^{-\frac{h\nu}{kT}} \qquad \text{dominates when} \qquad h\nu > kT$$

$$E(n) \quad = \quad \left(Z^2\right)\,(-13.6\ \text{eV})\left(\frac{1}{n^2}\right)$$

$$E_i \quad = \quad KE \quad = \quad \frac{1}{2}(Nm_H)v^2$$

$$E_f \quad = \quad KE\ +\ \text{thermal E} \quad = \quad \frac{1}{2}(Nm_H)\left(\frac{1}{4}v^2\right)\ +\ \frac{3}{2}kT\,(N\ +\ 10N)$$

$$T \quad = \quad \left(\frac{\frac{15}{16}\,m_H\,v^2}{33\,k}\right)$$