

Problem 3

Find the ionization energy required to remove an electron from the $n=4$ level of hydrogen, the $n=2$ level of He^+ , and the $n=3$ level of Li^{++} .

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

$$\text{H: } n=4, Z=1 \quad E = -\frac{13.6}{16} = -0.85 \text{ eV}$$

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

$$\text{Li}^{++} : n=3, Z=3 \quad E = -13.6 \left(\frac{3}{3} \right)^2 = -13.6 \text{ eV}$$