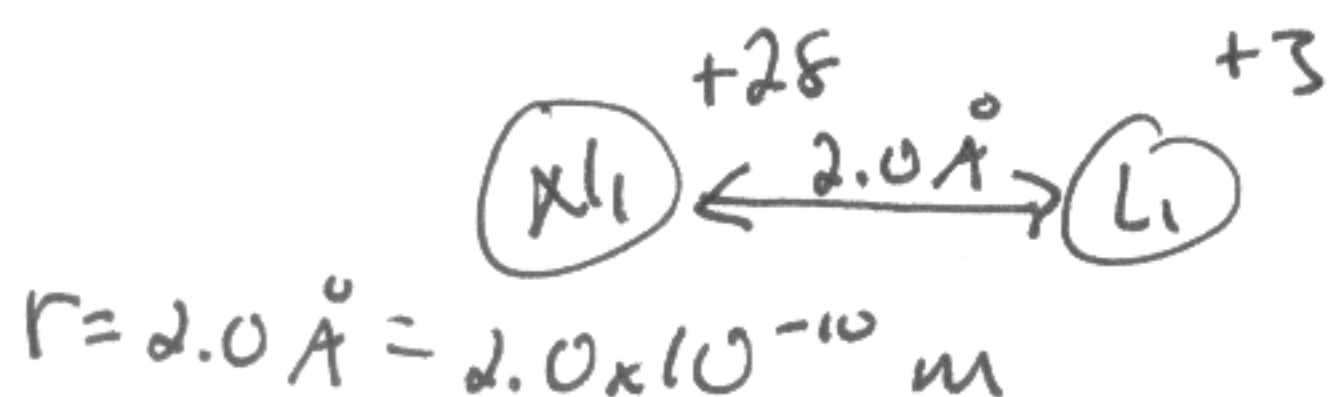


CH301H – Principles of Chemistry I: Honors  
Fall 2012, Unique 51390

Quiz 1, 6 September 2012

A lithium nucleus is brought to a position 2 Å away from a nickel nucleus. Determine the force between the two nuclei and the potential energy of the system.

$$e = 1.602 \times 10^{-19} \text{ C}$$
$$\epsilon_0 = 8.854 \times 10^{-12} \text{ C}^2 \text{ J}^{-1} \text{ m}^{-1}$$



$$F = \frac{q_1 q_2}{4\pi \epsilon_0 r^2} = \frac{(28)(3)(1.602 \times 10^{-19} \text{ C})^2}{4\pi (8.854 \times 10^{-12} \text{ C}^2 / \text{J m}) (2.0 \times 10^{-10} \text{ m})^2}$$

$$F = 4.8 \times 10^{-7} \text{ N}$$

$$V = \frac{q_1 q_2}{4\pi \epsilon_0 r} = \frac{(28)(3)(1.602 \times 10^{-19} \text{ C})^2}{4\pi (8.854 \times 10^{-12} \text{ C}^2 / \text{J m}) (2.0 \times 10^{-10} \text{ m})}$$

$$V = 9.7 \times 10^{-17} \text{ J}$$