Answer on Question #62268, Chemistry / General Chemistry

Assume that the electron in Li^{2+} ion is in third orbit. Calculate:

i) the radius of the orbit, and

ii) the total energy of the electron

Solution

1) Bohr radius

$$a_0 = \frac{0.529 \cdot n^2}{Z} = \frac{0.529 \cdot 3^2}{3} = 1.587 \text{ Å}$$

2) Electron energy

$$E = \frac{-13.6eV \cdot Z^2}{n^2} = \frac{-13.6eV \cdot 3^2}{3^2} = 13.6\ eV = 2.178 \cdot 10^{-18}\ J$$

Answer

$a_0 = 1.587$ Å and $E = 2.178 \cdot 10^{-18}\ J$