Answer on Question #73294 - Chemistry – Other

Question

Derive an expression for calculating energy values corresponding n = 3 for a particle in one dimensional box.

Answer:

The energy of a particle in one dimensional box is:

$$E_n = \frac{n^2 h^2}{8mL^2}$$

where n is quantum number;

h – Planck constant, h = $6.626 \cdot 10^{-34}$ J·s;

m – is the mass of particle;

L – length of box.

Then we have:

$$E_3 = \frac{3^2 h^2}{8mL^2} = \frac{9h^2}{8mL^2}$$