Answer on Question #62149 – Physics – Molecular Physics – Thermodynamics

Question:

The mean speed of oxygen molecule is 450 m/s. If the radius of an oxygen molecule is 1.8 x 10^-10m, calculate mean time between two successie collisions and mean free path. Take n = 3 x 10^25 m.

Answer:

$$l = \frac{1}{\sqrt{2}\pi d^2 n} = \frac{1}{4\sqrt{2}\pi r^2 n} = 5.789 \cdot 10^{-8} \, m;$$

$$t = \frac{l}{v} = 1.286 \cdot 10^{-10} sec;$$