

Problem 1A.7

Molecular velocity and mean free path. Compute the mean molecular velocity \bar{u} (in cm/s) and the mean free path λ (in cm) for oxygen at 1 atm and 273.2 K. A reasonable value for d is 3 Å. What is the ratio of the mean free path to the molecular diameter under these conditions? What would be the order of magnitude of the corresponding ratio in the liquid state?

Answers: $\bar{u} = 4.25 \times 10^4$ cm/s, $\lambda = 9.3 \times 10^{-6}$ cm