Homework Assignment 1

Kinetic Theory of Gases

Required reading, no lectures: Oxtoby section 4.2, pp 101-103 (pressure units), problems 4.5, 4.6, 4.9, 4.10; and section 4.3, pp 108-110 (units for R)

Lectures cover pages 113-123 in Oxtoby (Sections 4.5, 4.6), and pages 206-214 (Sections 7.2, 7.3)

Do Oxtoby Chapter 4 Problems: 4.41-4.43; 4.48,4.49 and 4.52, 4.53. In problems 4.52, 4.53 you may ignore the part of the question having to do with diffusion. Also do Oxtoby Chapter 7 Problems: 7.1, 7.2.

In addition calculate the collision frequency for:
(a) a sample of oxygen at 1.00 atm. Pressure and 25° C
(b) a molecule of hydrogen in a region of interstellar space where the number density is 1.0x10¹⁰ molecules per cubic meter and the temperature is 30 K. [Take the diameter of oxygen to be 2.92x10⁻¹⁰ meter and that of hydrogen to be 2.34x10⁻¹⁰ meter.]

Suggested date for completion of above assignment: 9/20/99

Binary Collision Model

Lectures cover pages 472-473 in Oxtoby (Section 13.6), and pages 468-472 (Section 13.5)

Do Oxtoby Chapter 13 Problems: 13.43, 13.44

Suggested date for finishing: 9/27/99

This ends the material for exam 1.