Answer on the question #50053, Chemistry, Other

Question:

What is the ratio of the velocity of neon (Ne) atoms to the velocity of krypton (Kr) atoms when both gases are at the same temperature?

Answer:

From the kinetic energy formula it can be shown that the speed of the molecules is inversely proportional to the Molar Mass (MM) of the gas:

$$v = \sqrt{\frac{3RT}{M}}$$

Then, the ratio of the velocities can be derived:

$$\frac{v(Ne)}{v(Kr)} = \sqrt{\frac{M(Kr)}{M(Ne)}} = \sqrt{\frac{83.8}{20.179}} = 2.04 \approx 2$$