Answer on the question #50050, Chemistry, Other

Question:

Compute the relative rate of diffusion of argon (Ar) to helium (He).

Answer:

According to the Graham's law of diffusion, the rate of diffusion is inversely proportional to the square root of the molecular mass. The relative diffusion rate for two different molecular species is then given by:

$$\frac{R_A}{R_B} = \sqrt{\frac{MM_B}{MM_A}}$$

$$\frac{R_{Ar}}{R_{He}} = \sqrt{\frac{MM_{He}}{MM_{Ar}}} = \sqrt{\frac{40}{4}} = 3.16$$