

Answer on Question #50061 - Chemistry – Other

Question

Compute the relative rate of diffusion of nitrogen (N₂) to carbon monoxide (CO₂)

Answer:

CO₂ is carbon dioxide.

Graham's Law Rate of Diffusion (effusion) is:

$$\frac{\text{Rate } A}{\text{Rate } B} = \sqrt{\frac{\text{Molar Mass } B}{\text{Molar Mass } A}}$$

So, rate of diffusion of nitrogen (N₂) to carbon dioxide (CO₂) is:

$$\frac{\text{Rate } N_2}{\text{Rate } CO_2} = \sqrt{\frac{\text{Molar Mass } CO_2}{\text{Molar Mass } N_2}} = \sqrt{\frac{44}{28}} = 1.57$$

Answer: 1.57