Answer on Question #82505, Chemistry/ Organic Chemistry

If 3.50 grams of neon gas is at a temperature 298 K and pressure of 722 mm Hg, what is the volume?

Solution

To answer this question we should use Ideal Gas Law

PV=nRT

P= 722 mmHg = 722 ×133.3 Pa = 96242.6 Pa

T = 298 K

R= 8.134 m^3·Pa/ K·mol

n = m/M ;

n(Ne) = 3.50 g / 20 g/mol = 0.175 mol

$$\therefore V = \frac{nRT}{P} = \frac{0.175\ mol \times 8.314\ \frac{m^3 Pa}{K\ mol} \times 298\ K}{96242.6\ Pa} = 0.0045\ m^3$$

Answer: 0.0045 m^3