A 4.702 g sample of pure gas occupies 1.50 Liters of space and exerts 150.0 kPa pressure at 49.8°C. If the gas is entirely composed of carbon and hydrogen with a makeup of 85.63% carbon (by mass), what is the molecular formula of the gas?

$PV = nRT$

$MM = m/n$

$R = 8.314 \text{ L kPa / K mole}$

$$(150.0 \text{ kPa})(1.50 \text{ L}) = n\left(8.314 \frac{\text{L kPa}}{\text{K} \cdot \text{mol}}\right)($$

$$T = 273.15 + 49$$