

Answer on Question #46418, Chemistry, Other

Task:

Calculate the molecular formula of a compound that contains 34.5 g of carbon and 5.76 of hydrogen and has a molecular weight of 56.

Answer:

M (C)=12 g/mol

M (H)=1 g/mol

$$C = \frac{34,5 \text{ g}}{12 \text{ g / mol}} = 2,875 \text{ mol}$$

$$H = \frac{5.76 \text{ g}}{1 \text{ g / mol}} = 5.76 \text{ mol}$$

The calculated ratio on a compound is H:C=2:1. So, the empirical formula is CH₂.

The molar mass of this fragment will be: M(CH₂)=14 g/mol.

As it had been said, molecular weight of a compound is 56.

So, the amount of fragments will be: n=56/14=4.

The molecular formula of a compound is C₄H₈.