% Composition by Mass

tells the % of each element in a compound by mass

$$\%\ \text{element} = \frac{\text{mass element}}{\text{molar mass}} \times 100$$

Ex) Find the % of C in sucrose, $C_{12}H_{22}O_{11}$.

MM

12 C × 12.01 g = 144.12 g
22 H × 1.01 g = 22.22 g
11 O × 16.00 g = + 176.00 g

342.34 g

$$\%C = \frac{144.12\ g}{342.34\ g} \times 100 = 42.098\%$$

Find the % H in $C_{12}H_{22}O_{11}$.

$$\%H = \frac{22.22\ g}{342.34\ g} \times 100 = 6.491\%$$

Find the % O in $C_{12}H_{22}O_{11}$

$$\%O = \frac{176.00\ g}{342.34\ g} \times 100 = 51.411\%$$