

### Question #62725, Chemistry / Physical Chemistry

When  $5.15 \times 10^{-4}$  kg of an organic compound was dissolved in  $3.50 \times 10^{-2}$  kg of chloroform, the boiling point of chloroform was raised by 0.320 K. Calculate the molar mass of the organic compound. Molar elevation constant for chloroform is  $3.90 \text{ K kg mol}^{-1}$ .

**Answer:**

$$\Delta T = k_e c_m = \frac{k_e \times m}{m(\text{solvent}) \times M_r}$$
$$M_r = \frac{k_e \times m}{m(\text{solvent}) \times \Delta T}$$
$$M_r = \frac{3.9 \times 0.515 \text{ g}}{0.035 \times 0.32} = 179.33$$

**179.33 g/mol**