

Problem 13-16 Boiling point elevation of electrolyte solutions

1.5 mol of NaCl, 1.3 mol of Na₂SO₄, 2.0 mol of MgCl₂, and 2.0 mol of KBr were dissolved, each in 10 litres of water. Array these solutions according to the decreasing boiling temperature.

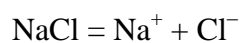
[MgCl₂ - KBr - Na₂SO₄ - NaCl]

Solution:

$$n_2 = 2.8$$

$$m_1 = 1.69 \text{ kg}$$

$$\underline{m_2} = \frac{n_2}{m_1} = \frac{2.8}{1.69} = 1.6568$$



$$i = 2$$

$$\Delta T_b = i \cdot K_K \cdot \underline{m_2} = 2 \cdot 0.513 \cdot 1.6568 = 1.7^\circ$$

$$t_b = 101.7^\circ\text{C}$$