

Answer on Question #67811 - Chemistry - Physical Chemistry

Question:

Estimate the freezing point if 150 cm³ of water sweetened with 7.5 g of sucrose

Solution:

$$\Delta t_{freezing} = K_{cr} \cdot m = K_{cr} \cdot \frac{m_{sucrose}}{M_{sucrose} \cdot m_{water}};$$

$$K_{cr}(\text{water}) = 1.86;$$

$$M(\text{sucrose}) = 342.30 \text{ g/mol};$$

$$\Delta t_{freezing} = 1.86 \cdot \frac{7.5 \cdot 1000}{342.30 \cdot 150} = 0.287 \text{ }^\circ\text{C};$$

That is, under given conditions of the problem, the freezing point of water will change by 0.287 °C.

Answer: 0.287°C.

