0.1 g of a substance dissolved in 22 g of benzene lowers the freezing point of benzene by 0.2 degree celsius. Calculate the molecular mass of the substances (K_f= 12 degree / celsius mol).

Answer:

$\Delta T_f = K_f$ x Cm

0.2 = 12 x m

Cm = 0.2 / 12 = 0.017 molal

Cm = $n_{(solute)}$ / $m_{(solvent)}$ $n_{(solute)}$ = $n_{(solute)}$ x $m_{(solvent)}$

$n_{(solute)}$ = 0.017 x 22/1000 = 0.0004 mol

n = m/M   M = m/n

$M_{(substance)}$ = 0.1 / 0.0004 = 250 g/mol

Answer provided by www.AssignmentExpert.com