Phase Changes

1. Silicon tetrachloride, SiCl4, has a melting point of -69.0 °C and a heat of fusion, ΔH_{fus}, of 7.72 kJ/mol. What is the entropy of fusion, ΔS_{fus}, in J/(K·mol) for $SiCl_4$?

2. Octane has an enthalpy of vaporization, ΔH_{fus}, of 20.7 kJ/mol and an entropy of fusion, ΔS_{fus}, of 95.7 J/(K·mol). What is the melting point, in °C, for octane?

3. Name each of the following transitions. Indicate the sign of both ΔS and ΔH.

a) $H_2O\ (g) \rightarrow H_2O\ (l)$

b) $NH_3\ (l) \rightarrow NH_3\ (g)$

c) $CH_3OH\ (s) \rightarrow CH_3OH\ (l)$

d) $CH_3OH\ (l) \rightarrow CH_3OH\ (s)$

e) $C_4H_{10}\ (g) \rightarrow C_4H_{10}\ (l)$