

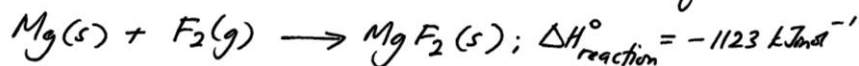
LATTICE ENERGY,  $\Delta H_{\text{lattice}}^{\circ}$

REVIEW QUESTIONS

Q<sub>1</sub>: Calculate the overall energy change for the formation of calcium bromide from calcium metal and liquid bromine.

Given: Lattice energy of CaBr<sub>2</sub> is 2176 kJmol<sup>-1</sup>; the bond energy of Br<sub>2</sub> is 224 kJmol<sup>-1</sup>; bromine's energy of vaporization is 30.9 kJmol<sup>-1</sup>; calcium's energy of vaporization is 178 kJmol<sup>-1</sup>; IE<sub>1</sub> of Ca = 589.8 kJmol<sup>-1</sup>; IE<sub>2</sub> of Ca = 1145 kJmol<sup>-1</sup>; EA of Br = -324.6 kJmol<sup>-1</sup>.

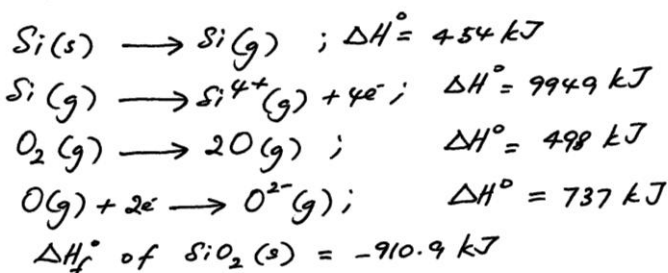
Q<sub>2</sub>: Magnesium fluoride forms from the elements as follows:



The energy of vaporization of Mg is 148 kJmol<sup>-1</sup> and the bond energy of F<sub>2</sub> is 155 kJmol<sup>-1</sup>. Use this information and data below to calculate the lattice energy of MgF<sub>2</sub>.

IE<sub>1</sub> for Mg = 737.7 kJmol<sup>-1</sup>; IE<sub>2</sub> for Mg = 1451 kJmol<sup>-1</sup>;  
EA for F = -328.0 kJmol<sup>-1</sup>

Q<sub>3</sub>: Solid silicon dioxide has one of the highest  $\Delta H_{\text{lattice}}^{\circ}$  values due to its network structure. Silicon dioxide is found in pure crystalline form as transparent rock quartz. Using the following data, calculate the  $\Delta H_{\text{lattice}}^{\circ}$  of SiO<sub>2</sub>.



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