

Chemistry CP

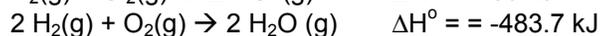
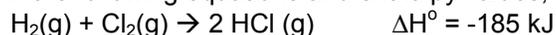
Name: _____

Hess' Law Problems

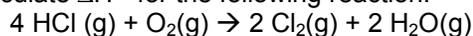
Date: _____

Level 2

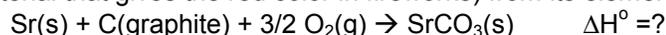
1. From the following equations and enthalpy values,



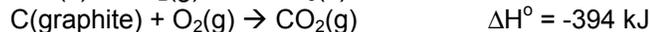
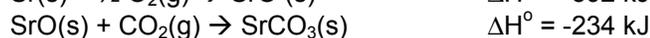
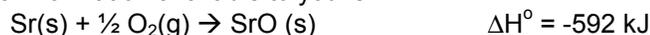
calculate ΔH° for the following reaction:



2. Calculate the enthalpy change, ΔH , for the formation of 1 mole of strontium carbonate (the material that gives the red color in fireworks) from its elements.



The information available to you is:



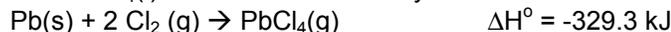
3. We want to know the enthalpy change for the reaction of lead(II) chloride with chlorine to give lead (IV) chloride:



We already know that $\text{PbCl}_2(\text{s})$ can be formed from the metal and $\text{Cl}_2(\text{g})$:



and that $\text{PbCl}_4(\text{l})$ can be formed directly from the elements:

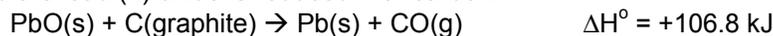


Calculate the unknown ΔH° from this information.

4. Lead has been known and used since ancient times. To obtain the metal, the ore PbS (galena), is first heated in air to form PbO ,



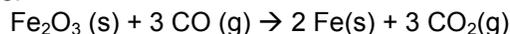
and the lead (II) oxide is reduced with carbon.



To obtain the lead from 1.00 kg of pure PbS , how much heat energy is required or evolved (at constant pressure)?

CHALLENGE PROBLEM (Optional)

5. The following reaction is one that occurs in a blast furnace when iron is extracted from its ores.



Evaluate ΔH° for this reaction at 298 K given the following enthalpy changes at 298K.

