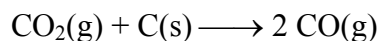
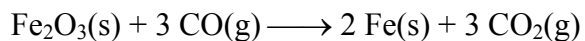


CHEM 111 Challenge Problem Six

The overall reaction that occurs in a blast furnace, used for the reduction of iron from iron ore, is the combination of Fe_2O_3 and solid carbon to form iron metal and carbon dioxide.

- Write a balanced equation for this process, and calculate ΔH° , ΔS° and ΔG° for the reaction.
- Is this reaction product-favored or reactant favored at 25°C ?
- Does the reaction become more product-favored or more reactants-favored as the temperature increases?
- Major reactions in a blast furnace occur in the following way:



Calculate ΔH° , ΔS° and ΔG° for each reaction and then show that coupling, or combination, of these reactions is equivalent to the reaction in part a) of this problem.