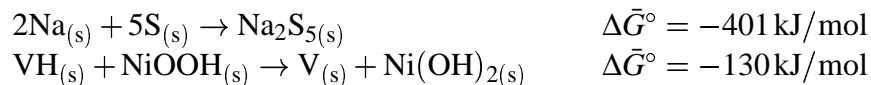


Chemistry 2720 Fall 2003 Quiz 3

Name: _____

The following reactions have been used in voltaic cells (batteries):



1. What is the standard free energy of formation of Na_2S_5 ?
2. Battery designers don't generally care about the amount of electrical work per mole.¹ What they really care about is the work per unit mass, heavy batteries having a number of obvious disadvantages. Assuming a stoichiometric mixture of the reactants in each case, batteries based on which of the above reactions will store the most energy for a given mass?
3. The reactions shown above involve solid reactants and products only. This makes the calculations required for the last question much more straightforward than they would otherwise be. Why? What additional complication(s) would arise if some of the reactants or products were solutes?

Species	Molar mass (g/mol)
$\text{Na}_{(s)}$	22.989 770
$\text{NiOOH}_{(s)}$	91.7001
$\text{S}_{(s)}$	32.066
$\text{VH}_{(s)}$	51.9494

¹Besides, we might legitimately ask "moles of what"?