Thermochemistry Stations

1. Compute the heat changes associated with the following transitions:
	1. 49.2 g acetic acid from 24.1ºC to 67.3 ºC.
	2. 9.61 g toluene from 19.6 ºC to 75.0 ºC
	3. 2.47 g kerosene from 17.1 ºC to 46.7 ºC
2. Compute the heat changes associated with the following transitions:
	1. 31.9 g chalk from 83.2 ºC to 55.5 ºC
	2. 63.6 g glass from 95.5 ºC to 42.3 ºC
3. Calculate the standard enthalpy change, ΔHo, for the formation of 1 mol of strontium carbonate (the material that gives the red color in fireworks) from its elements.

 

1. The combination of coke and steam produces a mixture called coal gas, which can be used as a fuel or as a starting material for other reactions. If we assume coke can be represented by graphite, the equation for the production of coal gas is

 

***This one is challenging! (If you get stuck, move to another problem)***

1. One reaction involved in the conversion of iron ore to the metal is

 

1. Compound A is burned in a bomb calorimeter that contains 2.50 liters of water. If the combustion of 0.175 moles of this compound causes the temperature of the water to rise 45.00 C, what is the molar heat of combustion of compound A? The heat capacity of water is 4.184 J / g0C.
2. When 15.3 g of sodium nitrate, NaNO3, was dissolved in water in a calorimeter, the temperature fell from 25.00°C to 21.56°C. If the heat capacity of the solution plus the calorimeter is 1071 J/g°C, what is the enthalpy change when one mole of NaNO3 dissolves?