Q4001 Thermodynamics of Materials **September, 2019**
Homework 6

1. Read Chapter 2 of "Chemical Thermodynamics of Materials" of Sølen and Grande.
2. Read the paper "Gibbs–Helmholtz equation and entropy" by Ernő Keszei.
3. Starting from the Gibbs–Helmholtz equation, demonstrate that the following equation for the standard free energy at a temperature T can be derived

$$\Delta G^0(T) = \Delta G^\theta \frac{T}{T^\theta} - \Delta H^\theta \left(1 - \frac{T}{T^\theta}\right)$$

4. Determine the temperature at which the following decomposition reaction

$$\mathrm{HgO}_{\,(s)} \longrightarrow \mathrm{Hg}_{\,(l)} + \frac{1}{2}\,\mathrm{O_2}_{\,(g)}$$

becomes spontaneous.

Due date: Monday, september 24th.