**South Dakota School of Mines and Technology**

**Department of Materials and Metallurgical Engineering**

MET 624 HMWK #6 Due: March 6

1. Show by thermodynamic data the direction of the following vapor transport reaction with increasing temperature and the temperature where the equilibrium constant is unity. (Use of ThermoCalc or other database.)

Solid/Gas/Gas

Ni/CO/Ni(CO)4

W/Cl2/WCL6

C/CO2/CO

Mo/MoO3/MoO2

Al/Al2S3/Al2S

Si/SiX4/SiX2 x = I, Ci, Br, F

1. Select a rare earth metal and see if you can find a vapor transport pair involving either oxygen or a halogen and data described for problem 1 for the transport reaction.
2. Prepare slides and present of your findings on March 6.