MSE 305 Bonding, Crystallography & Crystal Defects

Reading Assignment 1
Due 30 August 2012

Syllabus
De Graef & McHenry chapters 2.1, 2.2, 2.3.1-2.3.7, 2.4, 17.2, 17.3.1, 22.4, 25.1
Tilley chapters 2.1, 2.2.4

Think about:
1. What element did Mendeleev predict in 1870?
2. How accurate were Mendeleev’s predictions of the atomic weight, density, and oxide density of that element?
3. What are primary and secondary bonds?
4. What is an ionic bond?
   How does the electronegativity correlate with the Periodic Table?
   What is the ionic fraction of a bond?
5. What are Pauling’s rules?
   What is a coordination polyhedron?
   How are they linked?
   What is bond valence/strength?
6. What is the difference between Van der Waal’s forces and hydrogen bonding?
7. What are StrukturBericht symbols?
8. What are Pearson symbols? How are they used?