

Homework
Adv. Inorganic Chemistry
Chapter 7

Read Chp 7 – pay close attention to discussion of Imperfections in crystals; Conductivity in Ionic Solids, Band Theory, High Temp Superconductivity

Answer the following questions:

1. What is the Meisner effect?
2. Give an example of a high temperature superconductor.
3. What is the Schottky defect?
4. How can an impurity give rise to a schottky defect?
5. What is an F-center?
6. What is a Frenkel defect?
7. What gives rise to conductivity in Ionic Solids?
8. What accounts for the conductivity of β -alumina? What uses does it have?
9. Explain how the conduction band and the valence band are related to the ‘classical’ bonding and anti-bonding orbitals of MO theory.
10. What is the Fermi level?
12. Band gap is an important parameter in semiconductors. Convert the Band gap energy of the material in the Table on page 272 to an equivalent wavelength in light.
13. Explain how a photocell works. Draw a diagram.
13. LED’s work in the ‘reverse direction’ to photocells. Explain. (You may need to look up this in another source.)
14. Doped semi-conductors exist as two types. Explain. What is the difference? Give Examples.