Properties of Materials   
Home Work 3 (Due: 10/11/2010)

1. Find Bragg angles and indices of diffraction for the three lowest angle lines for an FCC crystal lattice with lattice parameter, a = 6Å with λ = 1.54 Å. (20)

(NB: Allowed h2+k2+l2 = 3, 4, 8; for first three reflections from FCC lattice)

1. Calculate Bragg angle at which electrons accelerated from rest through a potential difference of 80 V Will be diffracted from the (111) planes of an FCC crystal of lattice parameter = 3.5 Å. (10)

1. List types of bonds in materials and a brief account of mechanism of their action respectively. (20)

1. Assume that the potential energy of two particles in the field of each other is given by:

, where A and B are constants. (10x3)

1. Show that the particle form stable compound for 
2. Show that for stable configuration, the energy of attraction os nince time the enrgy of repulsion.
3. Show that the potential energy of the sustem under stavble configuration os 8A/9Re.
4. Calculate the potential energy of system of Na+Cl- ions when they are at 2 Å. Calculate in units of Joules as well as eV. (20)