CEM 913 Spring 2002 Kanatzidis

Homework #1

Due January 22, in class (100 points)

1. Write the Miller indices for planes that make the intercepts given below:

(a) a, $-b/5$, parallel to c	(d) 2a, -b/3, c/5
(b) $2/3a 4/5b 1/6c$	(e) a, parallel to b, $5/6c$
(c) -a, b, 3/4c	(f) -1/6a, -1/3b,-1/3c

2. Evaluate zone symbols for the pairs of planes given below:

(a) (122), (-320)	(d) (-1,-1,0), (-2,-2,0)
(b) (41-5), (310)	(e) (345), (123)
(c) (203), (204)	(f) $(-1,-2,1), (101)$

3. What *hkl* plane is common between the following zone pairs:

(a) [001], [221]	(d) [-221], [2-21]
(b) [1-10], [012]	(e) [-110], [01-2]
(c) [111], [239]	(f) [1-11], [2-31]

- 4. Prove why it is not possible to have a unique A-centered tetragonal lattice and a body centered triclinic lattice.
- 5. Is a unit cell with $a\neq b\neq c$ and $\alpha\neq\beta\neq90$, $\gamma=90$ an eighth crystal system called diclinic? Explain.
- 6. Index the faces a to g on the stereogram drawn below. Find the zone axis symbol of the zone containing these faces.

