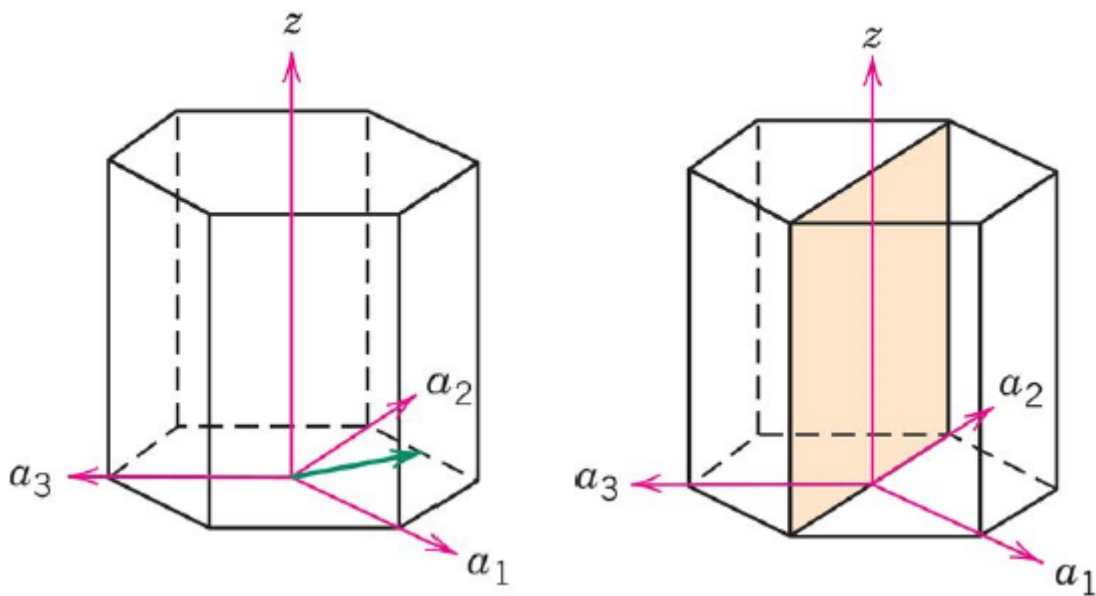


Fundamentals of Energy Materials

HW#1 (energy Ch.2~4) Ex. Probs.

1. (25 points) Please answer to the following questions about electrons in atoms.
 - (a) List up and explain four quantum numbers characterizing electron states in an atom.
 - (b) Explain the meaning of valence electrons.
 - (c) Write down the electron configuration of Argon (atomic number = 18) and explain why Argon is a very stable element.

2. (25 points) Determine indices for the directions and planes shown in the following hexagonal unit cells.



3. (25 points) For FCC and BCC crystal structures, determine

- (a) the number of atoms per unit cell, N ,
- (b) atomic packing factor (APF),
- (c) coordination number,
- (d) the theoretical density, ρ .

4. (25 points) Explain the close-packed crystal structures in FCC and HCP crystal structures.

