

Exercise set 1

- 1 For the FCC, BCC and HCP crystal structures find the number of first neighbors Z_1 , second neighbors Z_2 and their respective distances d_1 and d_2 . In the case of HCP, you first need to find the ratio c/a which realizes the close-packing of the atoms.

Find the packing fractions for these structures as well as the simple cubic and the diamond structure.

Do you see any relation between the packing fractions and the coordination numbers?

Summarize your results (structure, Z_1, Z_2, d_1, d_2 , packing fraction) in a table

- 2 Kittel Chapter 2, problem 1 (page 43)
- 3 Kittel Chapter 2, problem 5 (page 44)
- 4 Kittel Chapter 2, problem 7 (page 45)