3. Homework 3D-lattice, 3D-lattice planes, crystal morphology

1. Calculate the reciprocal basis vectors, {**a*, b*, c*}** and draw the reciprocal lattice for the 3D-lattice, which has the following lattice constants:

a) a = b = c = 3.56 A, α=β=γ=90 deg (***Diamond***)
b) a=7.42 A, b=5.73 A, c=10.01 A, α=β=γ=90 deg (***Potassium Sulphate***)
c) a=b=4.9 A, c=5.4 A α=β=90 deg, γ=120 deg ***(α-Quartz***)

and calculate the reciprocal lattice constants.

2. Find the distance between lattice planes having the following Miller indices in Diamond und α-Quartz crystals (see exercise 1):
a) (100)
b) (120)
c) (112)

3. Calculate the angle between the crystal planes in
Diamond und α-Quartz crystals (see exercise 1):

a) (100) and (010)
b) (100) and (101)
c) (101) and (011)