



Crystallography

2. Homework "2D crystal lattice, Reciprocal lattice, Miller indices"

1. For given 2D lattice with following lattice parameters:

- a) $a=5$, $b=5$, $\alpha=90^\circ$
- b) $a=5$, $b=5$, $\alpha=120^\circ$
- c) $a=7$, $b=8$, $\alpha=105^\circ$

to define \mathbf{a}^* , \mathbf{b}^* (the reciprocal basis vector) and to draw corresponding reciprocal lattice.

2. Depict the lattice planes, which have the following Miller indices h, k

- a) (1,0)
- b) (3,1)
- c) (2,1)
- d) (1,2)
- e) (1,-3)

3. Calculate the Miller indices h, k for the lattice planes shown in Figures 1-4 (see below).

4. Define the Miller indices of all crystal facets, which are depicted in Figures 5 and 6 (see below). Draw the system of the Miller planes corresponding to each of the crystal facets.

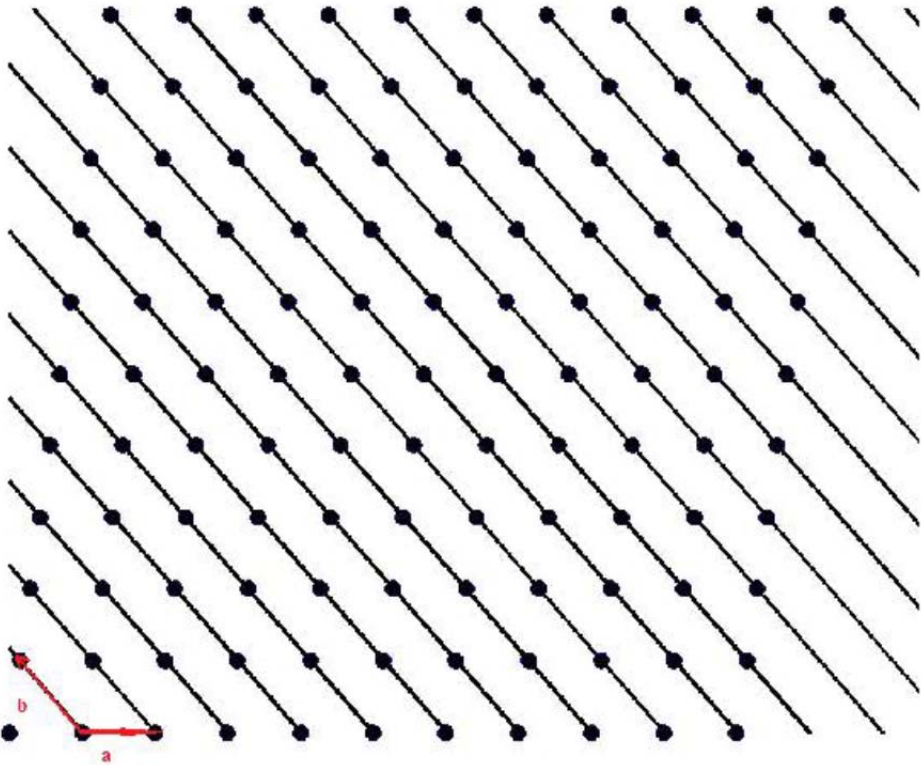


Fig. 1

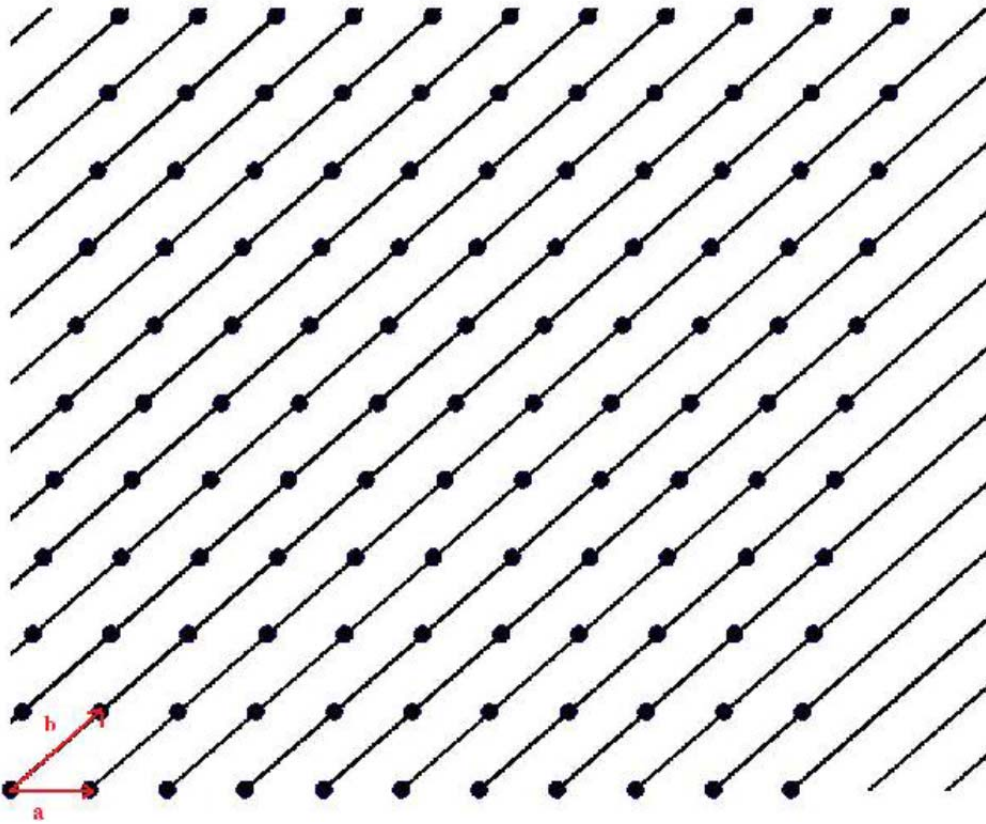


Fig. 2

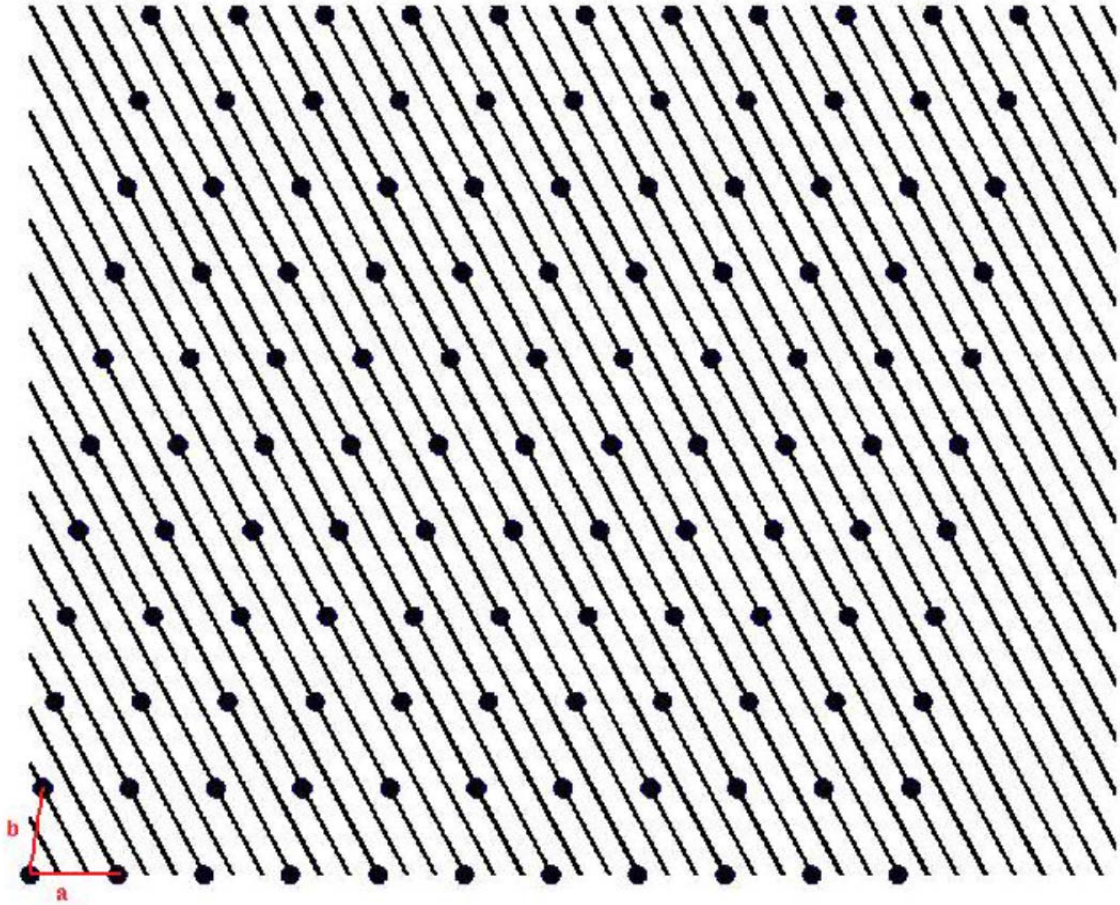


Fig. 3

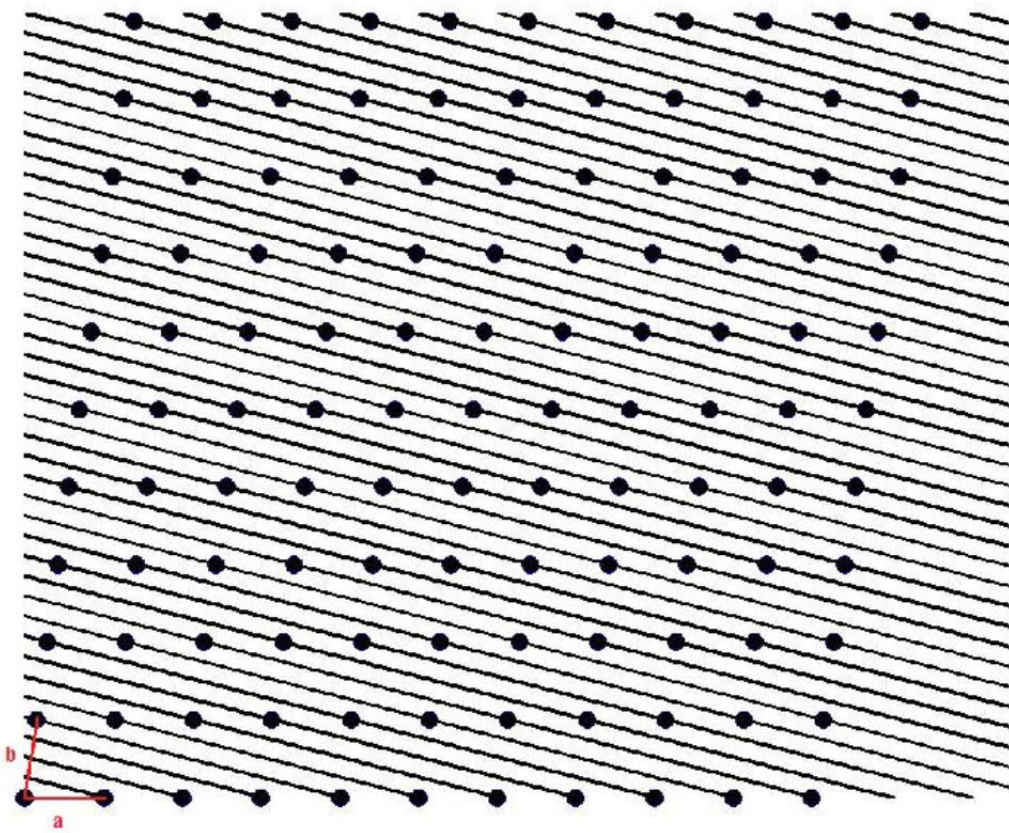


Fig. 4

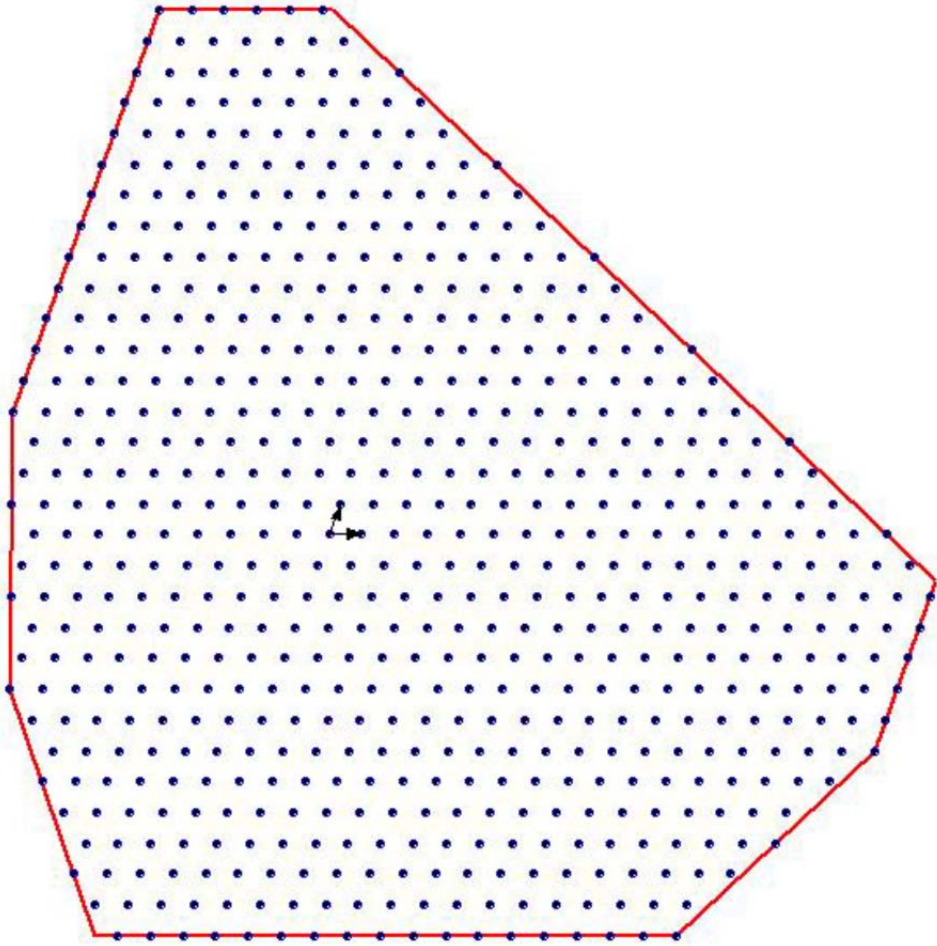


Fig. 5

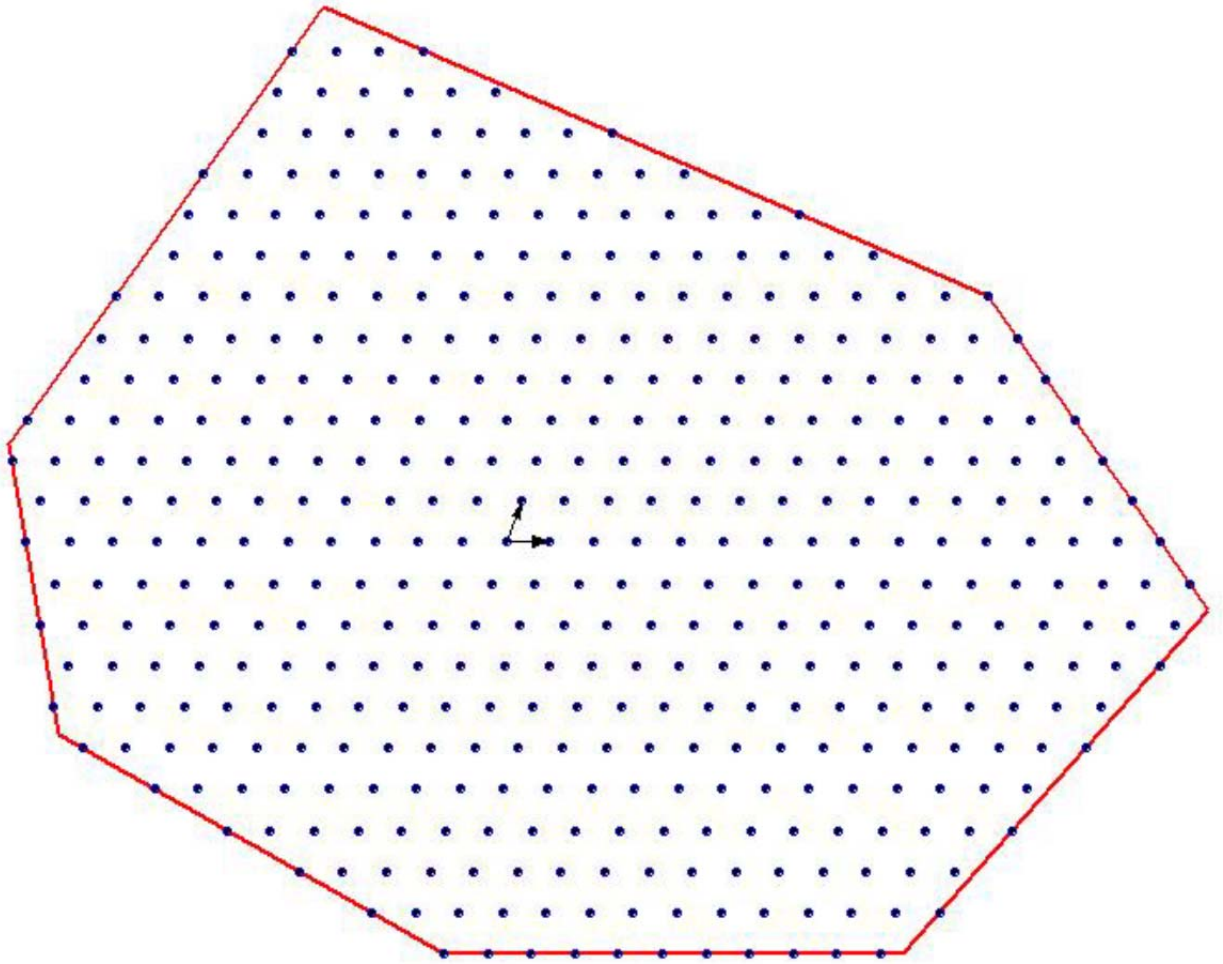


Fig. 6