UNIVERSITÄT SIEGEN

FESTKÖRPERPHYSIK

4. Homework „ Cubic forms. Crystal growth. Wulff's theorem".

1. Calculate the angle between the neighboring surfaces of a rhombododecahedron {110} (see Fig. 1).

2. Find the Miller indices for the facets of the following cubic forms (see Figs. 2-3). Calculate the angle between the neighboring surfaces.

3. A cubic crystal growth has started from a seed crystal with the facets {100} and {110} and has a form depicted in Fig. 3. The specific surface energy of the (100) and (110) plane corresponds to σ_1 and σ_2 ($\sigma_1 \neq \sigma_2$). What is a maximum of the σ_2/σ_1 ratio in order to obtain both surface types in the balance during the crystal growth?

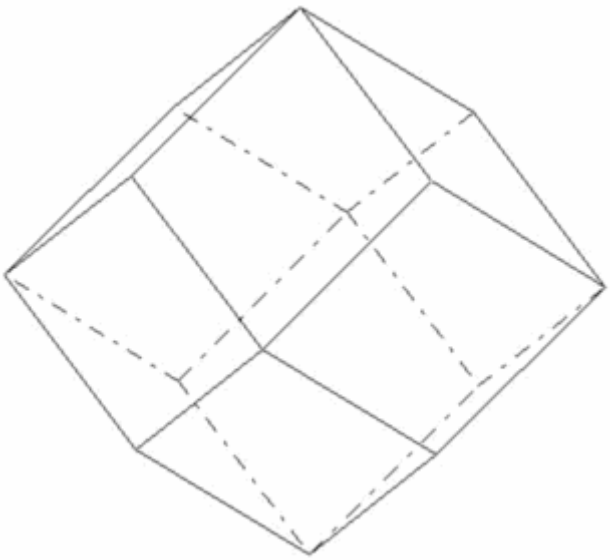

Fig. 1 Rhombododecahedron

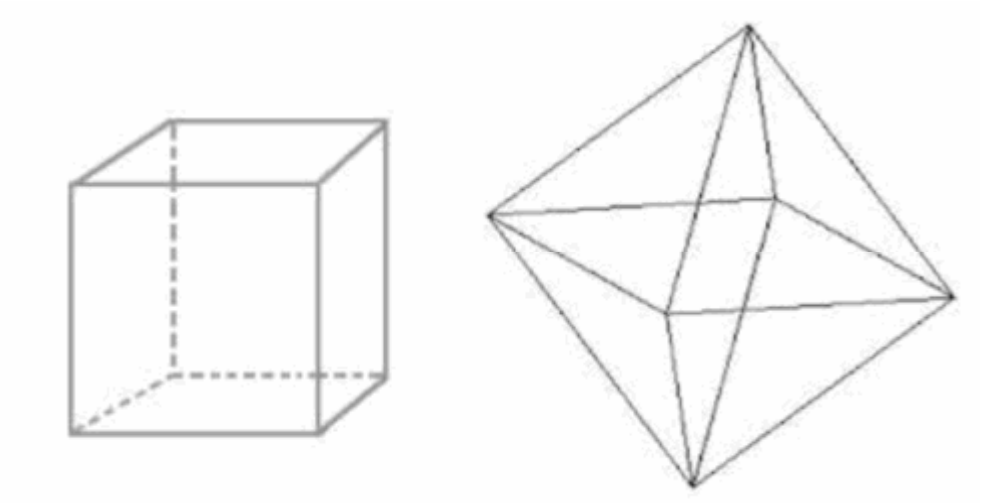

Fig 2. Cubic forms: cube and octahedron

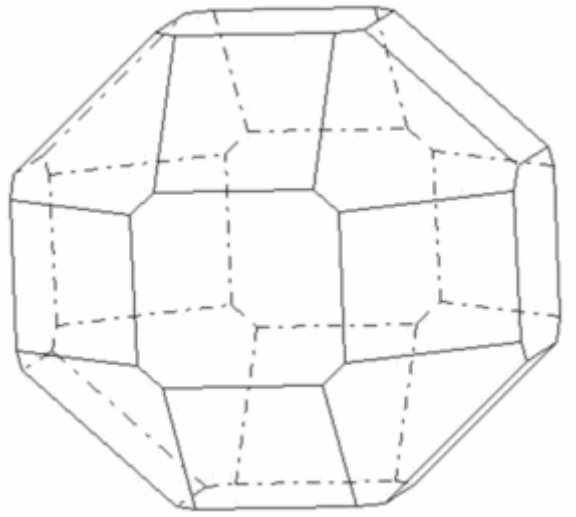

Fig. 3 Cubic form