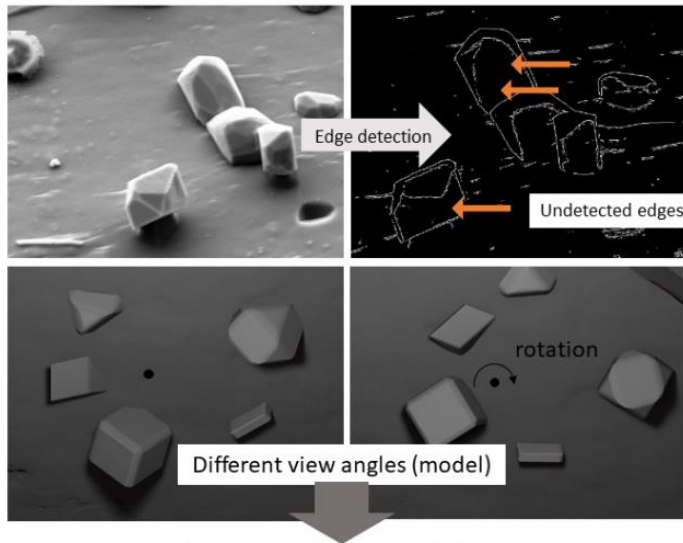


Project / Master Thesis

Development of an automated tool for 3D Shape recognition of faceted crystals



Get 3D polygonal representation of the precipitates

Motivation:

Interfaces are one of the governing phenomena in heterogeneous materials. On the path to their thermodynamic equilibrium many crystals show a preference of certain lattice planes during growth and thus forming shapes dominated by certain facets. From this faceting, one can derive interesting properties such as relative interfacial energies. It is in our interest to thoroughly analyse the 3D morphology of those faceted crystals to get more insights about which shape is favoured above others. The aim of this thesis is therefore to develop a tool which does the very same thing based on inclined SEM images.

Tasks:

- Literature Research on Wulff shape / Faceting
- Method development of a 3D shape recognition algorithm based on SEM images under different viewing angles
- Application of the method to the Mg-Al-Ca alloy + possibly SEM imaging

What we offer:

- Work in an enthusiastic team of material engineers
- Possibility to work with a modern Scanning Electron Microscope

The ideal candidate will:

- Have a high motivation to analyse 3d morphology of faceted crystals
- Have some experience with image processing / computer vision
- Have any STEM background and is willing to learn new methods

Earliest projected starting date:

Anytime (as soon as possible)

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