

# Masterthesis

## Modelling the microstructure of high silicon alloyed nodular cast iron

### Project

High silicon alloyed nodular cast iron is an innovative material offering both, high ductility and strength. Therefore, it is suitable for wind energy applications. The influence of the microstructure on the mechanical properties of the components needs to be accounted for in the design process. A suitable method to investigate effective macroscopic properties is an RVE approach. Here, the microstructure is modelled as an FE-Model from either 2D or 3D-Data or generated artificially from statistical data. In this work, a 3D-Model shall be generated using open source software and compared to the existing 2D/2.5D models.

### Tasks

- Model 3D-Microstructure
- Investigate effective material properties of 2D and 3D models
- Compare results

### Requirements

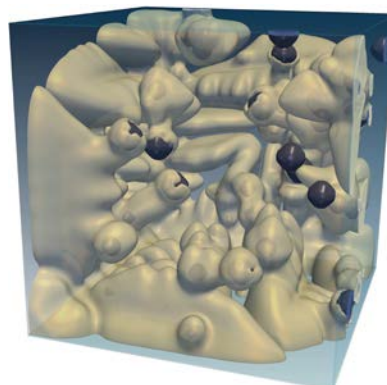
- Self-initiative and independent work
- Highly motivated
- Experience with Python

### We are offering

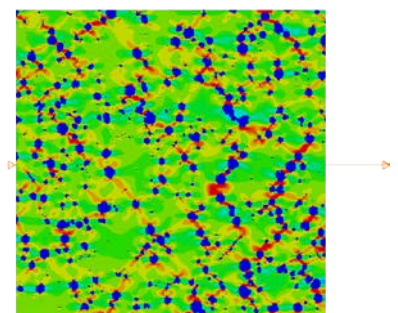
- Very productive work environment and continuous support
- Chance to recommend for a PhD- or HiWi-position
- Coffee, workplace and helpful team

### Contact

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2D-RVE