

## Mini-Thesis

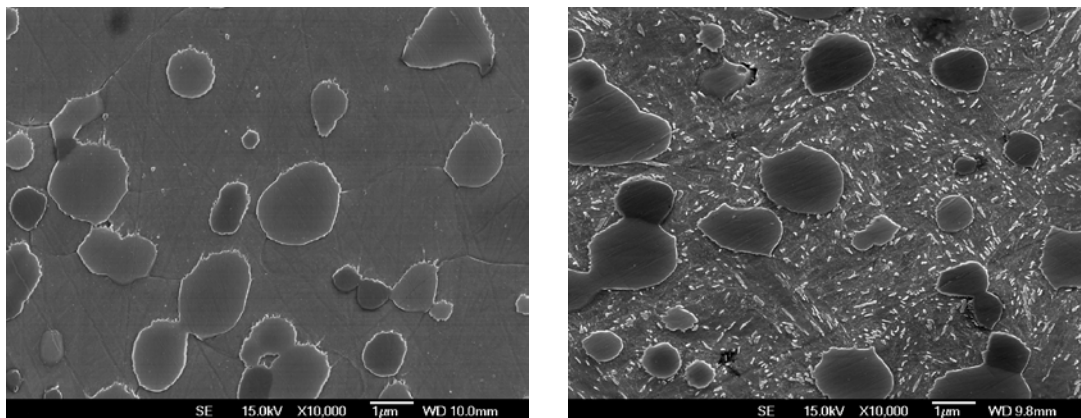
### Simulation of Carbide Evolution during the Process Chain of Tool Steels

#### Motivation:

In recent years, the demand on producing lighter, harder and stronger products with utilizing new materials is so high as never before. The production of these components is a great technological challenge not only for the manufacturer but also for the die and tool maker and the tool steel producer. The traditionally well known tool steels with appropriate heat treatment are still the good candidates to fulfill the requirements of these tools and dies.

#### Objective:

The objective of the study is to simulate the process chain of a powder metallurgically produced cold work tool steel and two hot work tool steel in order to predict the carbide evolution during these processes. The heat treatment process will be optimized to achieve the required mechanical properties of the dies for the production of the high-end products.



SEM micrograph of quenched (left) and quenched and tempered (right) specimen

#### What we offer:

- Well-structured, interesting task in an interdisciplinary area.
- Duration will not definitely exceed 3 months of working hours.
- Possibility to have practical experience with Matcalc, Abaqus
- Nice & international working atmosphere.
- Hiwi position after the successful completion of the thesis is possible.

#### Your Profile:

- Student of Metallurgical Engineering, Material Science or Mechanical Engineering.
- Theoretical knowledge of the heat treatment of steels and physical metallurgy.
- Ability to work with self-initiative.

#### Contact:

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