

## Master- or Bachelor thesis

### Characterization of the resulting microstructure in microalloyed zirconium-steel

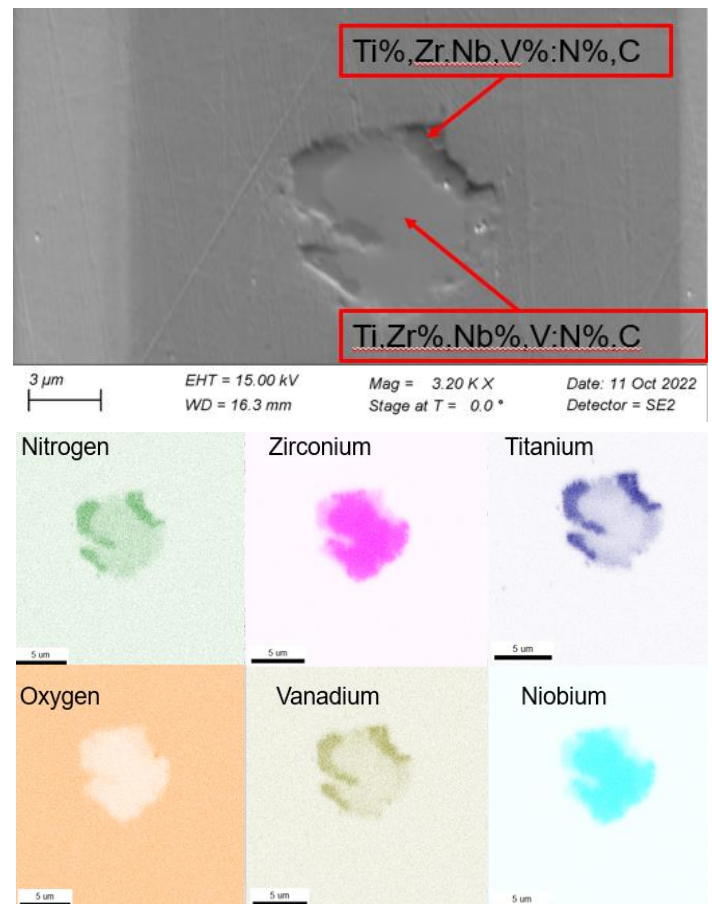
Zirconium, up to 100 ppm range, widely influences the resulting mechanical properties of the surface-near areas in microalloyed steel.

The alloying of Zirconium results in the formation of primary precipitates as  $ZrO_2$  and secondary precipitates as  $ZrN$ . These precipitates significantly influence the formation of other vital precipitates like  $TiN$  or  $BN$  and thus widely influence the microstructure and the mechanical properties.

In this work, we will investigate the microstructure and the occurring precipitates which follow varying heat treatments.

Applied Methods:

- dilatometric heat treatment
- metallographic characterization
- microscopy (optical, electron)
- thermodynamic equilibrium simulation



Start: February 2023, german or english

Do not hesitate to contact me in case of open questions!

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