# The Use of Thermochemical Calculation for Better Understanding the Impact of Alloying Elements to the Solidification and Transition at Al

KONRAD WEISS

*RWP Gesellschaft Beratender Ingenieure, Germany*

## Abstract

Inside the framework of the funded project *In situ Erzeugung von High Performance Iron (HPI) durch gezielte Beeinflussung von Zusammensetzung und Abkühlung*, the necessity came up to get more knowledge about the transition behavior at A1. Here the most important part is the movement of the stable and instable region around the eutectoid temperature. To know the field when the ferrite will be stable and where the carbon will not transform to martensite and/or perlite is the area where we like to place the composition inside of this project.

After a short introduction of the project the multi-phase composition where calculated to learn about the stability of the different phases during the solidification of the alloy. The impact of the alloying elements on the temperature regime during solidification and on the temperatures passing A1 was shown. With the help of the simulation, the process temperatures are determined. The executed samples show mechanical properties right in the desired working window.