Coupling WinCast® to ChemApp® for the Calculation of Final Microstructure Distribution

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Abstract

Simulation tools that predict the microstructure growth during solidification appeared in the market some years ago. Different models where developed at that stage depending on their calculation accuracy or computation-time cost. Nowadays, the coupling of Calphad based models to those micro-models has supposed another step on improving the calculations.

This work presents a coupling between the FEM based *WinCast*® solidification simulation tool to a micro-model and to *ChemApp*®.

The die casting of an AZ91 Mg alloy at several cooling rates has been computed. The critical temperatures for the growth of present phases are calculated including the resulting energy release and appearing phases with their amount are discussed. The influence of diffusion effects on the resulting solid fraction is shown and the composition evolution of the solid phases is also given.

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