

# Prediction of Precipitation Kinetics in Al Alloys

E. Jannot, G. Gottstein

Institut für Metallkunde und Metallphysik  
RWTH Aachen University

## *Abstract*

For the metal industry, the prediction of the precipitation kinetics is of first concern. They require a tool which enables to know which phase will nucleate and how fast the nuclei will grow as function of the applied thermo-mechanical treatment.

To answer this need, the ClaNG model has been developed in collaboration with Hydro Aluminum Germany. This model is based on the classical nucleation and growth theory for precipitation. It follows the Kampmann and Wagner methodology to determine the evolution of the precipitate size distributions.

The specificity of the simulation tool is its direct coupling with the application ChemApp from GTT technologies. The Gibbs Energy Minimizer software allows the determination of the thermodynamic equilibrium toward which the system is driven at each time incremental step.

The prediction capability of the model will be assessed in case of the homogenization process during the aluminum sheet production of alloy AA3104.