

"Modeling of Phase Transformation Kinetics in Welds"

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invited seminar to be presented at MPI für Eisenforschung,  
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The welding research program on phase transformation behavior within the welding group in the Metals and Ceramics Division at ORNL will be reviewed. Current activities on predicting transformation behavior using computational thermodynamics and kinetics will be discussed. A new capability for considering para-equilibrium behavior during transformation in steels will be highlighted. A comparison between ortho-equilibrium and para-equilibrium kinetics will be examined. Additional calculations applied to understanding non-equilibrium solidification behavior will also be discussed. Finally, the application of neural network modeling to aid in the prediction of ferrite number prediction in stainless steel welds will be highlighted, including discussion of a new model that includes cooling rate effects.

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