



# Foreword

Research activity related to transport mechanisms for heat and mass during solidification is the key to efficient and intelligent manufacturing process. Gaining fundamental understanding of the transport phenomena in various processes will enhance predictive capabilities and understanding of the solidification process and its effect on the final physical and mechanical properties of the manufactured component. Papers contained in this symposium volume address heat and mass transfer issues in solidification of metals, binary solutions, polymers and composites. A wide collection of current research activities that include topics such as modeling and simulation techniques and novel characterizations in processes such as welding, casting and molding is presented in this volume.

The first eleven papers from the Symposium identify and address important heat and mass transfer issues in welding and casting. The last nine papers, which are published in this issue, discuss the role of solidification in polymer processing and in polymeric composite manufacturing. All twenty papers in this volume were presented in four sessions on *Heat and Mass Transfer in Solidification Processing* at the ASME Winter Annual Meeting, December 1-6, 1991 in Atlanta, Georgia.

This symposium was jointly sponsored by the K-15 Committee on Heat Transfer in Manufacturing and Material Processing of the Heat Transfer Division and the Polymer Committee of the Materials Division of the ASME.

We wish to extend our thanks and appreciation to the authors for their contributions and to the reviewers (listed on the following page) for their effort in evaluating the manuscripts.

**Suresh G. Advani**  
**Christoph Beckermann**

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