

# Preface

This is a collection of manuscripts presented at the 4th World Congress on Integrated Computational Materials Engineering, a specialty conference organized by The Minerals, Metals & Materials Society (TMS) and the seven conference organizers, and held in Ypsilanti, Michigan, USA, on May 21–25, 2017.

Integrated computational materials engineering (ICME) has received international attention as it has been proven to shorten product and process development time, while lowering cost and improving outcomes. Building on the great success of the first three World Congresses on Integrated Computational Materials Engineering, which started in 2011, the 4th World Congress convened researchers, educators, and engineers to assess the state-of-the-art ICME and determine paths to further the global advancement of ICME. More than 200 authors and attendees from all over the world contributed to this conference in the form of presentations, lively discussions, and manuscripts presented in this volume. The international advisory committee members representing 11 different countries actively participated and promoted the conference.

The specific topics highlighted during this conference included integration framework and usage, ICME design tools and application, microstructure evolution and phase field modeling, mechanical performance using multiscale modeling, ICME success stories and applications, and a special focus on additive manufacturing. The conference consisted of integrated all-conference plenary talks, invited talks, contributed presentations, and a number of excellent poster presentations.

The 34 papers presented in this volume represent a cross section of the presentations and discussions from this congress. It is our hope that the 4th World Congress on ICME and these proceedings will further the global implementation of ICME, broaden the variety of applications to which ICME is applied, and ultimately help industry design and produce new materials more efficiently and effectively.

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Proceedings of the 4th World Congress on Integrated  
Computational Materials Engineering (ICME 2017)

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2017, XVI, 381 p. 200 illus., Hardcover

ISBN: 978-3-319-57863-7