PREFACE

The Twenty-First Annual International Solid Freeform Fabrication (SFF) Symposium – An Additive Manufacturing Conference, held at The University of Texas in Austin on August 9-11, 2010, was attended by almost 150 researchers from 11 countries. Papers addressed additive manufacturing issues in computer software, machine design, materials synthesis and processing, and integrated manufacturing. The diverse domestic and foreign attendees included industrial users, machine manufacturers, university researchers and representatives from the government.

The Symposium was again organized in a manner to allow the multi-disciplinary nature of the SFF research to be presented coherently, with various sessions emphasizing process development, modeling, applications and materials. We believe that documenting the changing state of the art in additive manufacturing through this Proceedings will serve both those presently involved in this fruitful technical area as well as new researchers and users entering the field.

A special session on government issues in additive manufacturing was held Monday morning. Participants discussed various aspects of additive manufacturing from the perspectives of users, funding agencies, standards producers and customers. Speakers were **William Frazier** (NAVAIR), **Karen Taminger** (NASA Langley), **Mary Kinsella** (AFRL) and **Albert Wavering** (NIST).

This year's best oral presentation was given by **Adriaan Spierings, Nikolaus Herres** and **Gideon Levy** from inspire AG, St.Gallen, Switzerland and the Hochschule für Technik Buchs, Switzerland. Selection is based on the overall quality of the paper, the presentation and discussion at the meeting, the significance of the work and the manuscript submitted to the proceedings. The paper title was, "Influence of the Particle Size Distribution on Surface Quality and Mechanical Properties in Additive Manufactured Stainless Steel Parts". Selected from 88 oral presentations, this presentation appears on Page 397 of this Proceedings. The best poster presentation selected from 22 posters was given by **Shyam Barua, Todd Sparks** and **Frank Liou** from the Missouri University of Science and Technology. The paper title was, "Development of a Low Cost Imaging System for a Laser Metal Deposition Process" and appears on Page 121.

This is the second year we have presented awards recognizing an outstanding junior and senior researcher in the field of additive manufacturing. The recipient of the International Outstanding Young Researcher in Freeform and Additive Manufacturing Award was **Dr. Peter Mercelis**, Managing Director of LayerWise, NV in Belgium. **Dr. Gideon Levy**, Research Manager and Head of the Institute for Rapid Product Development at iRPD-Inspire AG in St. Gallen, Switzerland, won the International Freeform and Additive Manufacturing Excellence (FAME) Award.

The proceedings papers are stored individually on a thumb drive in pdf format by primary author last name. The Table of Contents file has links to all the papers. We have sequentially numbered the pages of the papers to facilitate citation.

The editors would like to extend a warm "Thank You" to Rosalie Foster for her detailed handling of the logistics of the meeting and the Proceedings, as well as her excellent performance as registrar and problem solver during the meeting. We would like to thank the Organizing Committee, the session chairs, the attendees for their enthusiastic contributions, and the speakers both for their significant contribution to the meeting and for the relatively prompt delivery of the manuscripts comprising this volume. We look forward to the continued close cooperation of the SFF

community in organizing the Symposium. We also want to thank the Office of Naval Research (N00014-10-1-0528) and the National Science Foundation (#CMMI-1028881) for supporting this meeting financially. The meeting was co-organized by the University of Connecticut at Storrs, and the Mechanical Engineering Department and the Laboratory for Freeform Fabrication at The University of Texas at Austin.

The editors.