SOLID FREEFORM FABRICATION

Solid Freeform Fabrication

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The 2017 Annual International Solid Freeform Fabrication (SFF) Symposium—An Additive Manufacturing (AM) Conference—was held 7–9 August 2017 in Austin, Texas, USA. It was attended by 650 researchers who presented almost 470 technical presentations. Ten articles in this issue represent outstanding papers from the conference and demonstrate the variety and richness of the field. The 2018 SFF Symposium is set for 13–15 August 2018 in Austin, Texas, USA. The abstract submission deadline is 15 April 2018. The conference website is <http://sffsymposium.engr.utexas.edu/>.

Like all indicators of AM, participation and interest in the SFF Symposium has grown phenomenally over the last 10 years. The SFF Symposium has skyrocketed in attendance. The conference attendance 5 years ago was only 170 participants. This growth is evident in both technical and non-technical AM meetings around the world. Patent applications, journal submissions, machine sales, and materials sales all show similar increases.

The ten papers included in this special issue deal with a wide variety of materials within AM. Table I summarizes the processes, materials, and specific emphases of the articles included as part of this special topic. The process abbreviations are proposed from the ISO/ASTM 52900 standard on Terminology for AM.

The following papers are published under the topic “Solid Freeform Fabrication” in the March 2018 issue (vol. 70, no. 3) of *JOM* and can be accessed via the *JOM* page at <http://link.springer.com/journal/11837/70/3/page/1>.

- “Qualification of Ti6Al4V ELI Alloy Produced by Laser Powder Bed Fusion for Biomedical Applications” by Igor Yadroitsev, Pavel Krakhmalev, I. Yadroitsava, and Anton Du Plessis

- “Using Laser Ultrasound to Detect Subsurface Defects in Metal Laser Powder Bed Fusion Components” by Sarah Everton, Phill Dickens, Chris Tuck, and Ben Dutton
- “Long-term Effects of Temperature Exposure on SLM 304L Stainless Steel” by Tarak Amine, Caitlin S. Kriewall, and Joseph W. Newkirk
- “Elucidating the Relations Between Monotonic and Fatigue Properties of Laser Powder Bed Fusion Stainless Steel 316L” by Meng Zhang, Chen-Nan Sun, Xiang Zhang, Phoi Chin Goh, Jun Wei, Hua Li, and David Hardachre
- “Selective Laser Melting of Pure Copper” by Toshi-Taka Ikeshoji, Kazuya Nakamura, Makiko Yonehara, Ken Imai, and Hideki Kyogoku
- “Effect of Bed Temperature on the Laser Energy Required to Sinter Copper Nanoparticles” by Nilabh K. Roy, Obehi G. Dibua, and Michael A. Cullinan
- “Supportability of A High-Yield-Stress Slurry in a New Stereolithography-Based Ceramic Fabrication Process” by Li He and Xuan Song
- “Achieving Functionally Graded Material Composition Through Bicontinuous Mesostructural Geometry in Material Extrusion Additive Manufacturing” by Brant Stoner, Joseph Bartolai, Dorcas Kaweesa, Nicholas A. Meisel, and Timothy Simpson
- “Adjustment of Part Properties for an Elastomeric Laser Sintering Material” by Andreas Wegner and Timur Ünlü
- “Thermoplastic Elastomer Part Color as Function of Temperature Histories and Oxygen Atmosphere During Selective Laser Sintering” by Christine Kummert, Stefan Josupeit, and Hans-Joachim Schmid

Table I. General information on selected articles from the 2017 SFF Symposium arranged according to feedstock material

First author	Process	Feedstock material	Emphasis
Yadroitsev	PBF	Ti alloy	Biomedical
Everton	PBF	Ti alloy	Defect identification
Amine	PBF	Stainless steel	Aging effects
Zhang	PBF	Stainless steel	Microstructural effects on fatigue
Ikeshoji	PBF	Copper	Process optimization
Roy	PBF	Copper	Nanoparticles
He	VPP	SL resin and alumina	Indirect ceramic processing
Stoner	MEX	ABS	Functionally graded materials
Wegner	PBF	ROWAK Rolaserit PB elastomer	Processing-property effects
Kummert	PBF	Thermoplastic elastomer	Processing-property effects

PBF powder bed fusion, *VPP* vat polymerization, *MEX* material extrusion.