Preliminary Program (November 30, 2023)

Innovative Materials & Methods for Additive Manufacturing II (IM²AM)

January 8 - 13, 2024 Tomar, Portugal

Conference Chairs:

Daniel Schmidt, Luxembourg Institute of Science and Technology (LIST) Nikhil Gupta, New York University Eric Eastwood, KCNSC/Honeywell FM&T Brett Compton, University of Tennessee, Knoxville Gary Gladysz, Los Alamos National Laboratory





Engineering Conferences International 369 Lexington Avenue, 3rd Floor #389 New York, NY 10017, USA www.engconfintl.org - info@engconfintl.org

<u>Monday, January 8, 2024</u>

17:00 – 19:30	Open check-in
18:00 – 19:30	Welcome reception (with music)
19:30 – 21:30	Dinner

Tuesday, January 9, 2024

07:30 - 08:30	Breakfast
	Session 1
08:45 – 09:30	<u>Invited</u> Radically-accessible approach to 3D printing of full-density aluminum alloys Keng Hsu, Arizona State University, USA
09:30 – 10:00	Additive manufacturing of anisotropic graphene-based composites for thermal management applications Oren Regev, Ben-Gurion University of the Negev, Israel
10:00 – 10:30	Comparison of HDPE manufactured via compression molding versus selective laser sintering Joseph Torres, Los Alamos National Lab, USA
10:30 - 11:00	Coffee Break
	Session 2
11:00 – 11:45	<u>Invited</u> 3D-printing liquid crystal polymers to replicate the anisotropic complexity of wood Kunal Masania, TU Delft, Netherlands
11:45 – 12:15	<u>Invited</u> The development of high temperature organic materials for SLS at Sandia National Laboratories C. Garrett Campbell, Sandia National Laboratories, USA
12:15 – 12:45	Direct ink writing of custom UV curable rubbers with radiation absorbing particles and its challenges Jacob Mingear, Los Alamos National Lab, USA
12:45 – 13:15	Kinetic modeling of cure behavior to enable simulation of material extrusion AM of reactive thermoset polymers Madeline Wimmer, University of Tennessee, Knoxville, USA
13:15 – 14:30	Lunch
14:30 – 17:00	Networking
	Session 3
17:00 – 17:45	<u>Invited</u> Additive manufacturing of elastomer, ceramic and metal multi-functional structures Eric MacDonald, UTEP, USA
17:45 – 18:15	Enabling digital manufacturing cyber-physical system for future manufacturing Nikhil Gupta, New York University, USA

Tuesday, January 9, 2024 (continued)

18:15 – 18:45	The thermoresponsive character of biopolymers and its impact on the scaffold performance in 3D bioprinting Tijana Kavrakova, Ecole Centrale Nantes, France
18:45 – 19:15	Invited Novel rheological measurements to understand structural stability of DIW- printed epoxy composites during thermal curing Stian Romberg, National Institute of Standards and Technology, USA
19:30 – 21:30	Dinner followed by Social Hour

Wednesday, January 10, 2024

07:30 – 08:30 Breakfast

Session 4

08:45 – 09:30	<u>Invited</u> Focus on some peculiar behaviors of polymers in the context of additive manufacturing processes René Fulchiron, Universite Claude Bernard Lyon 1, France
09:30 – 10:00	3D and 4D printing of polypropylene having different content of copolymer Joamin Gonzalez-Gutierrez, Luxembourg Institute of Science and Technology, Luxembourg
10:00 – 10:30	Understanding AM feedstock recyclability using small angle X-ray scattering Samantha Talley, Honeywell FM&T, USA
10:30 – 11:00	Coffee Break
	Session 5
11:00 – 11:45	<u>Invited</u> 4D printing of hybrid materials with material extrusion method Mika Salmi, Aalto University, Finland
11:45 – 12:30	Invited Material extrusion additive manufacturing of thermoset-based short fiber composites Brett Compton, University of Tennessee Knoxville, USA
12:30 – 13:00	3D printing of lightweight sandwich composites Mrityunjay Doddamani, Indian Institute of Technology, Mandi, India
13:00 – 13:30	Tensile, fracture, and damage resistance characterization of 3D printed PLA with Morse code architectures Deepesh Yadav, Indian Institute of Technology, Bombay, India
13:30 – 18:00	Excursion – Guided walking Tour of Covento de Cristo
18:00	Dinner on your own

Thursday, January 11, 2024

07:30 - 08:30 Breakfast

Session 6

08:45 – 09:30	Invited
	Directed assembly of ceramic particle microstructures to realize emergent
	mechanical and thermal properties
	Randy Erb. Northeastern University, USA

- 09:30 10:00 Binder jet additive manufacturing of functional 4D components from NiMnGa magnetic shape memory alloy powders C. Virgil Solomon, Youngstown State University, USA
- 10:00 10:30 Lunar regolith as a feedstock for selective laser melting Joris Kadok, Luxembourg Institute of Science and Technology, Luxembourg
- 10:30 11:00 Coffee Break

Session 7

- 11:00 11:45
 Invited

 3D/4D printing of high-performance nanocomposites and AI/ML strategies

 Rigoberto Advincula, University of Tennessee, USA
- 11:45 12:15 Mapping the light scattering distribution in a three-phase photopolymer resin system to predict cured dimensions Darshil Shah, University of Massachusetts Lowell, USA
- 12:15 12:45 Phase evolution and high temperature compressive strength of Ti-based alloy developed by micro-plasma powder additive manufacturing Pradyumn Kumar Arya, Indian Institute of Technology, Indore, India
- 12:45 13:15 Anchoring-based control of dissimilar material interface for multi-material laser direct energy deposition Wookjin Lee, Pusan National University, South Korea
- 13:15 14:30 Lunch
- 14:30 17:30 Networking
- 17:30 18:15 **Invited Tailor made polymeric feedstocks for additive manufacturing using polymer science principles** Mark Dadmun, University of Tennessee, USA
- 18:15 19:30 **Poster Session**
- 19:30 21:30 Dinner followed by Social Hour

Friday, January 12, 2024

07:30 - 08:30 Breakfast

Session 8

08:45 – 09:30	Invited
	Additive manufacturing of Oxide Dispersion Strengthened (ODS) alloys
	Christian Leinenbach, Empa-Swiss Federal Laboratories for Materials Science
	and Technology, Switzerland

- 09:30 10:00 Effect of Co-content on microstructure and phases of laser additive manufactured Cox(CrNi)100-x alloy Poonam Deshmukh, Indian Institute of Technology, Indore, India
- 10:00 10:30Multipurpose ABS composites for fused filament fabrication
Shelbie Legett, Los Alamos National Laboratory, USA
- 10:30 11:00 Coffee Break

Session 9

- 11:00 11:45
 Invited

 Field-assisted assembly and printing of functional composites

 Matthew Begley, University of California, Santa Barbara, USA
- 11:45 12:15**3D printed ceramics structures Challenges and applications**
Pedro Cortes, Youngstown State University, USA
- 12:15 12:45 Enhanced thermal conductivity and fracture toughness in additive manufacturing through graphene-diamond composites Shani Ligati Schleifer, Ben Gurion University of the Negev, Israel
- 12:45 13:15 From pre-ceramic polymer to high-toughness ceramic: An SLA 3D printing approach Hamidreza Yazdani Sarvestani, National Research Council Canada, Canada
- 13:15 14:30 Lunch
- 14:30 17:00 Networking

Session 10

17:00 – 17:45 Invited Multi-material printing of thermoplastic and highly filled resin materials Christopher Hansen, University of Massachusetts Lowell, USA 17:45 – 18:15 Nanostructuring of an additively manufactured CoCrFeNi multi-principal element alloy using severe plastic deformation Kamilla Mukhtarova, Eötvös Loránd University, Hungary

18:15 – 18:45Adapting new materials for SIs: A case study
Daniel Schmidt, Luxembourg Institute of Science and Technology (LIST),
Luxembourg

Friday, January 12, 2024 (continued)

18:45 – 19:15	Conformal and custom radiation shielding composites for human extremity
	protection enabled by non-planar additive manufacturing Nicholas Baumann, Los Alamos National Lab, USA

19:30 – 21:30 Banquet followed by Social Hour

Saturday, January 13, 2024

07:30 – 08:30	Breakfast
09:00 – 10:00	Conference Summary
10:00 – 11:30	IM ² AM III Conference Planning
12:00	Lunch and departures

Poster Presentations

Thursday, January 11, 2024 (18:15 – 19:30)

- 1. CNT-free ESD DIW silicone development Mechanical & dissipative response Luke Urry, AWE, United Kingdom
- 2. Geopolymeric matrix for addiive manufacturing: Influence of the morphology of waste foundry sand (WFS) on yield stress and flexural strenght Oscar Khoiti Ueno, University of Santa Catarina State (CEPLAN), Brazil
- 3. Additive manufacturing of a martensitic chromium steel: Process parameters, microstructure and mechanical properties Nicole Käfer, Montanuniversität Leoben, Austria
- 4. Optimisation of pre-print processing and thermal treatment of DIW printed silicone pads Gabrielle Davies, AWE, United Kingdom
- Utilizing small angle X-ray scattering to understand material failures and improve material lifetime Bethany Wilburn, Kansas City National Security Campus - Department of Energy (KCNSC), USA
- 6. Mechanical behaviour analysis of interface dominated multilayered 3D printed polymers Pragyesh Bajpai, Indian Institute of Technology, Bombay, India