

Preliminary Program
(December 15, 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
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Monday, January 8, 2024

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 **Invited**
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 **Invited**
3D-printing liquid crystal polymers to replicate the anisotropic complexity of wood
Kunal Masania, TU Delft, Netherlands

11:45 – 12:15 **Invited**
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 **Invited**
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

Invited

Focus on some peculiar behaviors of polymers in the context of additive manufacturing processes

René Fulchiron, Université 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

Invited

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 Co_x(CrNi)_{100-x} alloy

Poonam Deshmukh, Indian Institute of Technology, Indore, India

10:00 – 10:30

Multipurpose 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 – 18:45

Adapting new materials for SLS: A case study

Daniel Schmidt, Luxembourg Institute of Science and Technology (LIST), Luxembourg

Friday, January 12, 2024 (continued)

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| 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

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| 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 additive manufacturing: Influence of the morphology of waste foundry sand (WFS) on yield stress and flexural strength**
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
5. **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