2020 conference program: Innovative Materials For Additive Manufacturing (IMAM)

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Program

Innovative Materials For Additive Manufacturing (IMAM)

March 8 – 12, 2020
Santa Ana Pueblo
New Mexico

Conference Co-Chairs

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Sunday, March 8, 2020

18:00 – 18:40  Conference Check-in (Foyer of Tamaya BC)
18:40 – 19:00  Opening Remarks (Tamaya BC)
19:00 – 20:00  Opening Reception (with heavy hors d’oeuvres) (Tamaya Veranda)

Room locations and notes

• General Sessions will be held Tamaya BC except for Thursday morning. The session on Thursday morning will be in the Wolf Room.
• Breakfasts will be the Rio Grande Lounge. Lunches and dinners will be in the Wolf Room (with the exception of lunch on Thursday in the Rio Grande Lounge).
• The ECI office is in Badger C.
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Monday, March 9, 2020

07:00 – 08:30  Breakfast

Session: AM with Thermosets
Chairs: Brett G. Compton, University of Tennessee Knoxville, USA
       Gary Gladysz, Dixie Chemical Company

08:30 – 09:15  Approaches to thermoset resins for direct-ink-write additive manufacturing
Leah Appelhans, Sandia National Laboratories, USA

09:15 – 09:45  Cure behavior and thermo-mechanical properties of dual-cure thermoset resins containing functionalized fillers
Jessica Kopatz, Sandia National Laboratories, USA

09:45 – 10:15  New developments in dual cure epoxies
Daniel F. Schmidt, Luxembourg Institute of Science & Technology, Luxembourg

10:15 – 10:45  Controlled conversion approaches to selective laser sintering (SLS) printing of high $T_g$ thermosets
Christopher G. Campbell, Sandia National Laboratories, USA

10:45 – 11:15  Coffee Break

Session: Guiding AM with AI

11:15 – 11:45  AI driven identification and parameter adjustment of self-supporting direct-write features
Marshall Johnson, Georgia Institute of Technology, USA

11:45 – 12:15  Mechanical metamaterials by DLP printing
Christopher Hansen, University of Massachusetts Lowell, USA

12:15 – 12:45  Additive manufacturing in pharmaceutical formulation - Development of biodegradable printed dosage forms for oral drug delivery
Matej Novak, University of Chemistry and Technology Prague, Czech Republic

12:45 – 14:00  Lunch

14:00 – 18:30  Discussion, ad hoc sessions

18:30 – 20:00  Dinner

Session: Upscaling Reactive AM
Chairs: Daniel F. Schmidt, Luxembourg Institute of Science & Technology, Luxembourg

20:00 – 20:30  Extrusion deposition additive manufacturing utilizing high glass transition temperature latent cured epoxy systems
Gary Gladysz, Dixie Chemical Company, USA

20:30 – 21:00  Large-format 3D printing enabled by dual-curing urethane elastomers
Brian Howell, Lawrence Livermore National Laboratory, USA

21:00 – 21:30  Large scale reactive additive manufacturing and what to expect when scaling up
Christopher J. Hershey, Oak Ridge National Laboratory, USA

21:30 – 22:00  Discussion
Tuesday, March 10, 2020

07:30 – 09:00  Breakfast

**Session: AM with Composites**
Chairs: Gary Gladysz, Dixie Chemical Company
       Daniel F. Schmidt, Luxembourg Institute of Science & Technology, Luxembourg

09:00 – 09:45  **Printing criteria for material extrusion of high temperature thermoplastic composites**
Chad Duty, University of Tennessee Knoxville, USA

09:45 – 10:15  **Understanding print stability in material extrusion additive manufacturing of thermoset composites**
Stian K. Romberg, University of Tennessee Knoxville, USA

10:15 – 10:45  Coffee Break

10:45 – 11:15  **Assessment of reactive thermoplastic composite pultrusion for continuous-fibre reinforced 3D printing**
Régis Vaudémont, Luxembourg Institute of Science & Technology, Luxembourg

11:15 – 11:45  **Development of porous composite filament for additive manufacturing of lightweight components**
Nikhil Gupta, New York University, USA

11:45 – 12:30  **Extrusion-based additive manufacturing of polymer-derived ceramic composites**
Brett G. Compton, University of Tennessee Knoxville, USA

12:30  Boxed lunch available

13:15  Bus departs hotel for excursion

14:15 – 15:15  Tour and tasting at the Santa Fe Brewing Company

15:15  Transfer to Santa Fe for guided walking tour and free time to explore and have dinner
       (Note: Dinner is “on your own” this evening)

20:00  Bus departs for return to hotel (by about 21:00)
Wednesday, March 11, 2020

07:30 – 09:00  Breakfast

Session: Field-Controlled Printing & Properties
Chairs: Daniel F. Schmidt, Luxembourg Institute of Science & Technology, Luxembourg
       Nikhil Gupta, New York University

09:00 – 09:45  Field-assisted 3D printing of multi-functional materials
Matthew Begley, University of California Santa Barbara, USA

09:45 – 10:30  Field-assisted printing for electronic devices
Tyler R. Ray, University of Hawaii at Manoa, USA

10:30 – 11:00  Coffee Break

11:00 – 11:45  Beyond intuitive microstructures for 3D printed composites
Jessica Faust, Northeastern University, USA

Session: Process Integration
Chairs: Nikhil Gupta, New York University

11:45 – 12:15  Functionalizing surfaces of 3D printed objects with an integrated low-cost atmospheric pressure micro plasma torch
Joris Kadok, Luxembourg Institute of Science & Technology, Luxembourg

12:15 – 14:00  Lunch

14:00 – 18:00  Discussion, ad hoc sessions

Session: Process Integration (continued)
Chairs: Nikhil Gupta, New York University

18:00 – 18:45  3D Printing of multi-functional structures
Eric MacDonald, Youngstown State University, USA

18:45 – 19:15  Perspectives on the future of additive manufacturing
Daniel F. Schmidt, Luxembourg Institute of Science & Technology, Luxembourg

19:30 – 21:30  Conference Dinner
Thursday, March 12, 2020

07:30 – 09:00  Breakfast

**Session: AM with Inorganic Materials (Wolf Room)**
Chairs: Nikhil Gupta, New York University
        Brett G. Compton, University of Tennessee Knoxville, USA

09:00 – 09:30  Additive manufacturing of multi-metals and multi-materials by electrohydrodynamic redox printing – towards 3D gradient materials with submicrometer resolution
Maxence Menétrey, ETH Zürich, Switzerland

09:30 – 10:00  Metal additive manufacturing and powder metallurgy
Tom Pelletiers, Kymera International, Germany

10:00 – 10:30  Coffee Break

10:30 – 11:15  Additive manufacturing and the Kansas City national security campus
Eric Eastwood, Kansas City National Security Campus, USA

11:15 – 11:45  Additive manufacturing of stainless steel via fused deposition
Marius Wagner, ETH Zürich, Switzerland

11:45 – 12:15  New lightweight alloys for additive manufacturing a powder producers approach
Tom Pelletiers, Kymera International, Germany

12:15 – 14:00  Lunch / Conference Review / IMAM II Planning

Departure