

Program

Innovative Materials For Additive Manufacturing (IMAM)

March 8 – 12, 2020

**Santa Ana Pueblo
New Mexico**

Conference Co-Chairs

Daniel Schmidt

Luxembourg Institute of Science & Technology, Luxembourg

Brett G. Compton

University of Tennessee Knoxville, USA

Nikhil Gupta

New York University, USA

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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.
- Audio, still photo and video recording by any device (e.g., cameras, cell phones, laptops, PDAs, watches) is strictly prohibited during the technical sessions, unless the author and ECI have granted prior permission.
- Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).
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- Please do not smoke at any conference functions.
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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 **Segregation phenomenon during co-deposition of ceramics and metal**
Indumini Jayasekara, National Energy Technology Laboratory, USA
- 10:00 – 10:30 Coffee Break
- 10:30 – 11:15 **Additive manufacturing and the Kansas City national security campus**
Jamie M. Messman, 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**
Bernhard Mais, Kymera International, Germany
- 12:15 – 14:00 Lunch / Conference Review / IMAM II Planning
- Departure