

AS

46TH ANNUAL MEETING The Adhesion Society

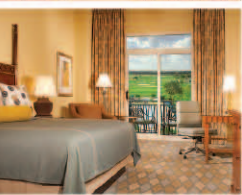
FEBRUARY 19-22, 2023

Omni Orlando Resort
at ChampionsGate
ORLANDO, FLORIDA



FINAL PROGRAM

Hotel Accommodations



Omni Orlando Resort at ChampionsGate

1500 Masters Blvd.
ChampionsGate, FL 33896
Phone: 1-800-THE-OMNI

DEADLINE: Thursday, January 26, 2023

Discount Group Rate

\$199 single/double

IMPORTANT: *Adhesion Society works directly with the Omni Orlando and does not work with third parties working on behalf of the resort and/or the Society. Be sure you contact the Omni Orlando at ChampionsGate directly to make your reservations.*

The group rate is available until 5:00 p.m. EDT on Thursday, January 26, 2023.

Reserve your room as soon as possible as the group rate will not be available if the room block sells out prior to the deadline. Reservation requests received after January 26 will be charged standard rates as rooms are available.

You can make your reservation on the Adhesion Society website at www.adhesionsociety.org or contact the hotel directly at 1-800-THE-OMNI. To secure the discounted group rate, please mention that you are attending the Adhesion Society Annual Meeting.

The Society kindly asks that you only reserve the number of rooms you need, so other attendees will not be turned away because the hotel room block is full. We appreciate your consideration.

Registration Info

Register today and save! *Registration for the Annual Meeting includes attendance at the technical meeting, all receptions and breaks, meeting proceedings and **one year membership** to the Adhesion Society.*

Annual Meeting • February 19-22, 2023

Standard Registration	\$725
Standard Registration after January 15	\$825
Standard Registration with Off-site Lodging	\$900
Fellow Registration	\$525
Retiree	\$300
Student & Postdoc Registration	\$350
Regular One-Day Registration	\$350
Student One-Day Registration	\$225
Guest Registration	\$200



Adhesion Science and Technology SHORT COURSE 

FEBRUARY 17-18, 2023
Omni Orlando Resort at ChampionsGate • ChampionsGate, Florida

The Adhesion Science & Technology Short Course provides an introduction and overview to a variety of critically important topics in the field of adhesion. Highlighting the significant contributions that surfaces, adhesive chemistry, polymer behavior, and mechanics make to measured adhesion, the course provides strategic insights for bonding success ranging from structural to soft matter adhesion.

Adhesion Science & Technology Short Course Only • February 17-18, 2023 (PRIOR to the Annual Meeting)

Standard Registration	\$975
Standard Registration with Offsite Lodging	\$1,075
Student & Postdoc Registration	\$325
Student & Postdoc Registration with Offsite Lodging	\$525

Exhibition/Tradeshow February 19-21, 2023

This fee includes dedicated exhibit space and registration for one person from your company to attend the Annual Meeting and staff the tabletop. All others should register to attend the technical program. You may exhibit on the tabletop, use a backdrop and/or pop-up displays.

Single Exhibit Space	\$1,200
Double Exhibit Space	\$1,800

How to Register

Registration for the Annual Meeting, Short Course and the Exhibition can be found online at www.adhesionsociety.org. Register by January 15th for a \$100 discount.

Pre-registration ends on January 31, 2023. After that date, rates increase by 20 percent.



If you have any questions regarding registration, please contact Malinda Armstrong, Logistics & Home Office Manager at (301) 986-9700 x1106 or adhesionsociety@ascouncil.org.

Welcome

GENERAL INFORMATION

Final Program Content

Executive Committee & General Information	page 3
Sunday Schedule	page 4
Monday Schedule	page 5
Award Sponsors	page 12
Poster Session & Reception	page 13
Tuesday Schedule	page 15
Wednesday Schedule.....	page 23

Registration/Information Hours

Grand Salon Foyer, Osceola County Conference Center

Sunday, February 19	Noon – 5:00 p.m.
Monday, February 20	7:00 a.m. – 5:00 p.m.
Tuesday, February 21	7:00 a.m. – 5:00 p.m.
Wednesday, February 22	7:00 a.m. – 8:00 a.m.

EXECUTIVE COMMITTEE

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Amy Peterson, *University of Massachusetts
Lowell (Chair)*

Michael Bortner, *Virginia Tech (Co-Chair)*

Chelsea Davis, *Purdue University (Co-Chair)*

Adhesion Science and Technology EXHIBITION

(Available Sunday through Tuesday)

Grand Salon Foyer, Osceola
County Conference Center

2023 EXHIBITORS

- ASI Magazine
- DataPhysics Instruments
USA Corp
- Hadland Imaging
- Photron USA, Inc.



Sunday, February 19

Noon to 5:00 p.m. **Registration**
Grand Salon Foyer, Osceola County Conference Center

1:30 to 4:45 p.m. **2023 Award for Excellence in Adhesion Society Symposium**

sponsored by:



Michael Thouless, University of Michigan
Session Chair: David Dillard, Virginia Tech
Grand Salon, Osceola County Conference Center

1:30 p.m. **Introductory Remarks**
Joelle Frechette, University of California, Berkeley & David Dillard, Virginia Tech

1:45 p.m. **Optimal Asymmetric Loading Configurations for Extracting Mixed-Mode Cohesive Laws from Interacting Beams**
Kenneth Liechti, University of Texas at Austin

2:25 p.m. **Use of Cohesive Laws to Describe Failure of Adhesive Joints in Composites Structure**
Bent Sørensen, Technical University of Denmark

3:05 p.m. **AWARD PRESENTATION: Beyond Griffith and Irwin: Cohesive Lengths and Fracture**
Michael Thouless, University of Michigan & 2023 Award of Excellence Recipient

4:00 p.m. **BREAK**

4:15 p.m. **Microscale Wetting and Friction of Soft or Swollen Interfaces**
Jonathan Pham, University of Cincinnati & 2023 Early Career Adhesion Scientist Award Recipient

1:30 – 6:00 p.m. **Exhibition**
Grand Salon Foyer, Osceola County Conference Center

5:00 – 6:15 p.m. **Business Meeting**
Grand Salon, Osceola County Conference Center

6:30 – 8:30 p.m. **President's Reception & Dinner**
Grand Salon Patio, Osceola County Conference Center

Monday, February 20

7:00 a.m. – 5:00 p.m. **Registration**
Grand Salon Foyer, Osceola County
Conference Center

7:00 – 7:45 a.m. **Networking Continental
Breakfast**
Grand Salon Patio, Osceola County
Conference Center

8:00 – 8:45 a.m. **PLENARY TALK I:
Fast, Strong, and Reversible
Hydrogel Adhesives**
Shu Yang, University of Pennsylvania
*Session Chair: Amy Peterson, University
of Massachusetts Lowell*
Grand Salon, Osceola County
Conference Center

MORNING TECHNICAL SESSIONS 9:00 a.m. to 12:05 p.m.

Reversible, Smart, or Switchable Adhesives

Lanier A, Osceola County Conference Center

*Session Chairs: Chelsea Davis, Purdue University & Dohgyu
Hwang, Virginia Tech*

9:00 to 9:25 a.m. **PEEBLES**

Soft Adhesive Latches to Control the Kinematic Response of a Recoiling Band
Meredith Taghon, University of Massachusetts Amherst

9:25 to 9:50 a.m. **PEEBLES**

Characterizing the Adhesive Behavior of Polymeric Photo-switchable
Adhesives
Brandon Clarke, University of Texas at Austin

9:50 to 10:15 a.m.

Metamaterial Adhesives Through Reverse Crack Propagation
Michael Bartlett, Virginia Tech

10:15 to 10:45 a.m.

BREAK

10:45 to 11:00 a.m.

Salicylhydroxamic Acid as a Novel and Reversible Underwater Adhesive
Molecule
Bruce Lee, Michigan Technological University

11:00 to 11:15 a.m.

Octopus-inspired Adhesive Skins for Intelligent and Rapidly Switchable
Underwater Adhesion
Chanhong Lee, Virginia Tech

11:15 to 11:30 a.m.

Effects of Geometry on Tunable Dry Adhesion of Capped Soft Hollow Pillars
Farshad Goodarzi, Syracuse University

11:30 to 11:45 a.m.

Tunable Dry Adhesion of Soft Hollow Pillars through Sidewall Buckling under
Low Pressure
Guangchao Wan, Syracuse University

11:45 a.m. to Noon

The Fabrication and Characterization of Plant-inspired Microhook Structures
for Directional Adhesion
Melika Farzam, Tulane University

Bioadhesion and Sustainability

Lanier B, Osceola County Conference Center

Session Chairs: Francisco Cedano, Saint-Gobain Research, Paris & Alex Nyarko, Avery Dennison

9:00 to 9:25 a.m.

Research Strategies on Sustainability for Adhesives and Sealants
Grace Wan, Dow Chemical Company

9:25 to 9:50 a.m. **KEYNOTE**

Two Biomimetic Systems for Bringing Sustainable Adhesives Within Commercial Reach
Jonathan Wilker, Purdue University

9:50 to 10:15 a.m.

Deep Eutectic Solvents as Environmentally Friendly Solvents for Processing of Polymers and Polymer Complexes
YuLing Chen, Northwestern University

10:15 to 10:45 a.m.

BREAK

10:45 to 11:00 a.m.

Can Chemical Compatibility of Minor Packaging Components with PE be Predicted?
Gavin Lu, Dow Chemical Company

11:00 to 11:15 a.m.

Sustainable Hot Melt Adhesives
Thomas Kauffman, H.B. Fuller Company

11:15 to 11:30 a.m.

Cashew NutShell Liquid-based Epoxy Resins: Their Utility as Renewable Options for Epoxy Adhesives and Sealants
Yun Mi Kim, Cardolite Corporation

11:30 to 11:45 a.m.

Plant-based Sustainable Raw Materials for Adhesive Applications
Fengqiu Fan, Primient

11:45 a.m. to Noon

Meso-scale Model for Virus-cell Adhesion: Spike-like Protein and Meshless Membrane
Luke Wang, Lehigh University

Addressing Adhesion and Fracture in Additive Manufacturing

Seminole A, Osceola County Conference Center

Session Chair: Hadi Noori, Oklahoma State University

9:00 to 9:25 a.m.

Fracture Path in 3D-printed Materials
Hadi Noori, Oklahoma State University

9:25 to 9:50 a.m.

Scan Strategy and Post-processing for Powder Bed Fusion of UHMWPE
Jackson Bryant, Virginia Tech

9:50 to 10:15 a.m. **KEYNOTE**

Effect of Fibers and Processing on Interlayer Adhesion in Large Area Additive Manufacturing Polymer Composite Deposition
Douglas Smith, Baylor University

10:15 to 10:45 a.m.

BREAK

Monday, February 20

10:45 to 11:00 a.m.

Investigating the Rheological and Interlayer Adhesion effects of Stimuli-responsive Cellulose Nanocrystal Polymer Composites in Graded 3D Printing
Yimin Yao, Virginia Tech

11:00 to 11:15 a.m.

Effect of Crystallization, Rheology, and Processing on Interlayer Properties of 3D Printed Semicrystalline Polymers
Arit Das, University of Minnesota-Twin Cities

11:15 to 11:30 a.m.

Improving Warp Deformation of 3D Printed High-Density Polyethylene (HDPE) Parts
Mehrab Ali, University of Alberta

11:30 to 11:45 a.m.

Challenges of Real-time Property Prediction in Material Extrusion Additive Manufacturing
Ahmed Adisa, University of Massachusetts Lowell

11:45 a.m. to Noon

Surface Interactions Between Support Materials and Curved Additively Manufactured Structures
Olorunfemi Esan, University of Massachusetts Lowell

Elasticity, Capillarity, and Wetting

Seminole B, Osceola County Conference Center

Session Chairs: Andrew Croll, North Dakota State University & Jonathan Pham, University of Cincinnati

9:00 to 9:25 a.m. **KEYNOTE**

Soft Materials at Surfaces and Interfaces: Elastocapillarity
Kari Dalnoki-Veress, McMaster University

9:25 to 9:50 a.m.

Kuttsukugami
Andrew Croll, North Dakota State University

9:50 to 10:15 a.m.

A Screening Method Developed for Hot Sauce Packaging Materials Based on Contact Angle and Principal Component Analysis
Tahamina Nasrin, University of Massachusetts Lowell

10:15 to 10:45 a.m.

BREAK

10:45 to 11:00 a.m.

Direct Strain Measurements of Two-Phase Interfacial Mechanics in Elastic Microchannels
Shalini Sundar, University of Delaware

11:00 to 11:15 a.m.

Meniscus Formation in a Vertical Capillary Tube
Chuck Extrand, AceMarga

11:15 to 11:30 a.m.

Low Voltage Electrowetting System for Radiative Cooling Applications
Asad Asad, University of Alberta

11:30 to 11:45 a.m.

Crosslinking Omniphobic Liquidlike Polydimethylsiloxane Brushes
Kevin Golovin, University of Toronto

11:45 a.m. to Noon

Rational Design of Perfluorocarbon-free Oleophobic Textiles
Sadaf Shabani, University of British Columbia Okanagan

PSAs and Viscoelasticity

Heritage Park B, Osceola County Conference Center

Session Chairs: Dohgyu Hwang, Virginia Tech & Michelle Seitz, AAAS Science and Technology Policy Fellow

9:00 to 9:25 a.m.

Temperature-Switchable Adhesives Enabled by Thermo-Responsive Soft Active Materials

Ruobing Bai, Northeastern University

9:25 to 9:50 a.m.

Ball Drop Testing for Impact Resistance in Optically Clear PSAs

Joel Abrahamson, 3M Company

9:50 to 10:15 a.m.

Effect of Crosslinker Concentration on Shear Resistance and Failure Mechanisms in PSAs

Anthony Arrowood, University of Texas at Austin

10:15 to 10:45 a.m.

BREAK

10:45 to 11:00 a.m.

Tape Peel Adhesion on Extreme Substrates: From Roadways to Human Skin

Jared Gohl, Purdue University

11:00 to 11:15 a.m.

Peeling on Textured Interfaces - Interactions and Dissipation

Etienne Barthel, CNRS/ESPCI/Sorbonne Université

11:15 to 11:30 a.m.

Numerical Modeling of Fibrillation and Cavitation in PSA Tapes

Krupal Patel, SIMM Lab, ESPCI PARIS

11:30 to 11:45 a.m.

Soft and Stretchable Pressure-Sensitive Adhesives Using Bottlebrush Polymer

Mo-Beom Yi, Seoul National University

Noon to 1:15 p.m.

Lunch on Your Own

12:15 to 1:15 p.m.

Bioadhesion Division Meeting

Heritage A, Osceola County Conference Center

Soft Adhesives Division Meeting

Poinciana B, Osceola County Conference Center

Structural Adhesives Division Meeting

Poinciana A, Osceola County Conference Center

Monday, February 20

AFTERNOON TECHNICAL SESSIONS 1:30 to 5:00 p.m.

Reversible, Smart, or Switchable Adhesives II Lanier A, Osceola County Conference Center

Session Chair: Wanliang Shan, Syracuse University

1:30 to 1:55 p.m.

Design and Performance of DASA-conjugated Materials for Actuation
Megan Valentine, University of California, Santa Barbara

1:55 to 2:20 p.m.

Dynamic Liquid Crystal Elastomers as Adaptive Adhesives
Charlie Lindberg, University of Chicago

2:20 to 2:45 p.m.

Adaptive Structural Adhesives: How Do You Design Rapid Response in a Polymer Glass or Composite?
Joseph Dennis, DEVCOM Army Research Laboratory

2:45 to 3:10 p.m.

Micropillar Arrays with Enhanced and Switchable Adhesion realized via Stiffness Tuning
Christopher Stabile, University of Pennsylvania

3:10 to 3:35 p.m.

Photoswitchable Polymer for Scalable 2-step Dry Transfer of 2D Materials
Yudian Wu, University of Texas at Austin

Ice, Insects, Marine, and other Contaminants Lanier B, Osceola County Conference Center

Session Chairs: Hossein Sojoudi, University of Toledo & Gelareh Momen, University of Quebec at Chicoutimi

1:30 to 1:55 p.m.

Facilitating Snow Removal from Photovoltaic Modules Using a Multilayered Snowphobic Coating
Abdel Hakim Abou Yassine, University of Toledo

1:55 to 2:20 p.m.

Fracture-controlled Surfaces as Extremely Durable Ice-shedding Materials
Sina Nazifi, University of Houston

2:20 to 2:45 p.m. **PEEBLES**

Smart Low Interfacial Toughness Coating for Large-scale De-icing without Interface Melting
Zahra Azimi Dijejin, University of British Columbia

2:45 to 3:10 p.m.

Super-adhesive Biomimetic Dust Filter using Liquid Thin Films
Sanghyuk Wooh, Chung-Ang University

Adhesives in Transportation

Seminole A, Osceola County Conference Center

Session Chair: Ajay Krishnamurthy, Eaton Corporation

1:30 to 1:55 p.m.

Experimental Investigation of the Fatigue Behavior and Calculation of the Service Life of Adhesively Bonded Joints

Karina Tews, Paderborn University

1:55 to 2:20 p.m.

Leak Tightness of Bonded Joints in Battery Housings Under Mechanical and Corrosive Loads

Tobias Schmolke, University of Paderborn

2:20 to 2:45 p.m.

UV Curable, Thermally Conductive Coating for Battery Pack Cooling Plates

David Stenzel, H.B. Fuller Company

2:45 to 3:10 p.m.

The Dow VORATRON™ High Thermal Conductive PU Adhesive for Battery

Haiying Li, Dow Chemical (China) Investment Company Ltd

Gels, Elastomers, and Hybrids

Seminole B, Osceola County Conference Center

Session Chair: Michelle Seitz, AAAS Science and Technology Policy Fellow

1:30 to 1:55 p.m.

A General Theory for Cavitation in Elastomers

Aditya Kumar, Georgia Institute of Technology

1:55 to 2:20 p.m.

Tailoring Rate- and Temperature-Dependent Fracture of Polyether Networks with Organo-Aluminum Catalysts

Gabriel Sanoja, University of Texas at Austin

2:20 to 2:45 p.m.

Depth-dependent Adhesion of Hydrogel Molded Against Different Materials, Measured Using AFM Nano-indentation

Md Mahmudul Hasan, University of Illinois at Urbana Champaign

2:45 to 3:10 p.m.

Highly Resilient 3D-printed Polymer Foams Retain Stiffness and Energy Dissipation Under Cyclic Loading

Younghoon Kwon, University of California, Santa Barbara

3:10 to 3:35 p.m.

Designing and Characterization of Novel Hot Melt Adhesives for Application in Lining of Old Paintings

Dharamdeep Jain, University of Akron

Biomedical Adhesives

Heritage Park B, Osceola County Conference Center

*Session Chairs: Bruce Lee, Michigan Technological University
& Zhenwei Ma, McGill University*

1:30 to 1:55 p.m.

Electroadhesion of Hydrogels to Tissues: A Simple Way to Perform Suture-Less Surgical Repair

Leah Borden, University of Maryland, College Park

1:55 to 2:20 p.m. **KEYNOTE**

Probing Reversible Noncovalent Molecular Interactions Toward Developing Multifunctional Self-healing Materials and Bioadhesives

Hongbo Zeng, University of Alberta

2:20 to 2:45 p.m.

Dopamine-modified Dynamic Crosslinker for Highly Resilient Injectable Hydrogel Adhesives

Gi-Yeon Han, Seoul National University

2:45 to 3:10 p.m.

H₂O₂-Releasing Catechol-Functionalized Gelatin Microgels for Promoting Healing of Diabetic Wounds

Bruce Lee, Michigan Technological University

3:10 to 3:35 p.m.

Development of New Methods for Screening Biologically-inspired Adhesives

Mark Kozlowski, DEVCOM Army Research Laboratory

3:35 to 4:00 p.m.

Afternoon Break

4:00 to 5:00 p.m.

Diversity, Equity, and Inclusion Session

Grand Salon, Osceola County Conference Center

Session Chairs: Kim Felix, Virginia Tech, Niels Holten-Andersen, Lehigh University, & Chelsea Davis, Purdue University

ANNUAL MEETING SPONSORS

A special “THANK YOU” to our generous sponsors:

- **Adhesion Society Award for Excellence in Adhesion Science** *sponsored by 3M Company*



- **The Robert L. Patrick Fellowship Award** *sponsored by The Adhesion Society*



- **Distinguished Paper Award** *sponsored by the Henkel Corporation*



- **Peebles Awards for Graduate Student Research in Adhesion Science** *sponsored by the Adhesion Society*



- **Alan Gent Distinguished Student Paper Award** *sponsored by Henkel Corporation*



- **Best Poster Award** *sponsored by Avery Dennison*



- **Adhesion Society Early Career Scientist Award** *sponsored by the Adhesive & Sealant Council*



5:30 to 8:30 p.m.

Poster Session & Reception

Allendale, Osceola County Conference Center

Session Chair: Chuck Williams, Avery Dennison

- 1. Mussel Inspired Nanoparticles for Mucosal Drug Delivery**
Arianna Avellan Jaramillo, University of California, Berkeley
- 2. Towards Renewable Adhesives Presenting Thiol-catechol Connectivities (TCCs)**
Keven Walter, Humboldt-Universität zu Berlin (Germany)
- 3. Improvement of Dentin Bonding via Incorporation of Self-complementary Multiple Hydrogen-bonding Moieties into a Methacrylate-based Polymer Network**
Denghao Fu, Michigan State University
- 4. Capturing Droplets with Oil-Impregnated Fibers**
Ashley Cornish, Virginia Tech
- 5. Fuel Cell Electrode Design - Using a Specially Modified Force Tensiometer for Gas Bubble Adhesive Force Measurements on Nanostructured Copper Electrodes Submerged in a Liquid**
Robert Fidler, DataPhysics Instruments USA Corp
- 6. Penetration of Cell Surface Glycocalyx by Enveloped Viruses is Aided by Weak Multivalent Adhesive Interaction**
Xinyu Cui, University of Massachusetts Amherst
- 7. Multiphase Magnetorheological Stiffness Tuning**
Ella Williams, Virginia Tech
- 8. Sliding Friction Through Dislocation Glide in Shape Complementary Soft Interfaces**
Jasreen Kaur, Lehigh University
- 9. Measuring PDMS Gel Rheology during Aging**
Rose Tchuengkam, Williams College
- 10. Coated Fabric Adhesion Force Testing**
Stephanie Hughes, Dow Chemical Company
- 11. Rigid-Soft Hybrid Gripper System Using and Active Membrane-Foundation Adhesive**
Yeunhee Kim, Virginia Tech
- 12. Gecko-Inspired Hierarchically Rough Surface Used as a Reprintable Paper**
Animangsu Ghatak, Indian Institute of Technology
- 13. Complex and Hierarchical Surface Patterning Achieved Though Metal Templates Facilitating Bulk Phase Separation and Surface Wrinkling**
Sabrina Curley, Michigan State University

- 14. Dry Capillary Extraction: A New Approach to Quantify a Gel's Fluid Phase**
Isabel Bushway, Williams College
- 15. Radiation Sensitivity of Adhesives and Potting Materials for Space Environments**
Jamie Kropka, Sandia National Laboratories
- 16. Marchantia Polymorpha Gemmae Interact as Capillary Multipoles on Fluid Interfaces**
Katie Nath, Williams College
- 17. Adhesion in Several Model Anti-fouling and Anti-icing Coatings**
Kurt VanDonselaar, North Dakota State University
- 18. Crack Speed in Shear Adhesion Tests of Soft Materials**
Leo-Stanley Ndunagum, North Dakota State University
- 19. Development of Commercial Proteins as Barnacle-Inspired Underwater Adhesives**
Jackson Fuller, United States Naval Academy
- 20. Sticking Before Curing: case study of a new clear moisture cure adhesive**
Anne Dussaud, Momentive
- 21. Mechanoluminescent inspection method of local fracture toughness and weak bond area on aircraft CFRP-epoxy adhesive sheet**
Nao Terasaki, National Institute of Advanced Industrial Science & Technology
- 22. Controlling release force of PSA liners at varied peel velocities**
Sruthi Lalitha, University of Minnesota-Twin Cities
- 23. Impact dynamics and adhesiveness of snowflakes**
Farshad Barghi, University of Toledo

Tuesday, February 21

6:00 – 7:00 a.m.

5K Run

Attendees should meet in the lobby at 5:45 a.m. Maps will be provided.

7:00 a.m. – 5:00 p.m.

Registration

Grand Salon Foyer, Osceola County Conference Center

7:00 – 7:45 a.m.

Networking Continental Breakfast

Grand Salon Patio, Osceola County Conference Center

8:00 – 8:45 a.m.

PLENARY TALK II: Hierarchical Interfaces as Fracture Propagation Traps in Natural Layered Composites

H. Daniel Wagner, Weizmann Institute of Science

Session Chair: Amy Peterson, University of Massachusetts Lowell

Grand Salon, Osceola County Conference Center

8:45 – 9:00 a.m.

Early Career Scientist Award Presentation, Best Poster Award Presentation, Distinguished Paper, & Patrick Fellow Awards Presentation

Grand Salon, Osceola County Conference Center

MORNING TECHNICAL SESSIONS 9:00 a.m. to Noon

Fracture Mechanics of Structural Adhesives and Composites

Lanier A, Osceola County Conference Center

Session Chairs: Alex Arzoumanidis, Psylotech, Inc. & Chris Jackson, Virginia Tech

9:00 to 9:25 a.m. **PEEBLES**

Controlling PA6/PET Adhesion to Facilitate Interfacial Fracture
Zvikomborero Machikiti, North Carolina State University

9:25 to 9:50 a.m.

Experiments and Modeling of Viscoelastic Delamination Through a Transition in Validity of Small-scale-yielding

Brandon Clarke, Sandia National Laboratories

9:50 to 10:15 a.m.

Leveraging Disorder in Structures for Enhanced Adhesion

Sumukh Shankar Pande, University of Pennsylvania

10:15 to 10:45 a.m.

BREAK

10:45 to 11:00 a.m.

Effects of Dynamic Bonds on the Fatigue Properties in Epoxy-amine Matrix

Qihua Chen, Northwestern University

11:00 to 11:15 a.m.

Imaging Molecular Damage in Dynamic, Disulfide-containing Structural Adhesives

Broderick Lewis, Northwestern University

11:15 to 11:30 a.m.

Time-Temperature Superposition for Structural Adhesives: How Far does the Principle Extend?

Evan Breedlove, 3M Company

11:30 to 11:45 a.m.

Thermoplastic-titanium Welding as a Step Towards Integrated Manufacturing of Composite-metal Joints

Charline van Innis, Université Catholique de Louvain (Belgium)

11:45 a.m. to Noon

How to Maximize the Enhancement on the Fracture Resistance of Adhesively-bonded CFRTP-related Dissimilar Joints Via Air Plasma Surface Treatment?

Kevin Simmons, Pacific Northwest National Laboratory

Soft Tribology

Lanier B, Osceola County Conference Center

Session Chairs: Katharine Jensen, Williams College & Andrew Croll, North Dakota State University

9:00 to 9:25 a.m.

Dramatic, Tunable Friction Transition with Humidity of a Polyelectrolyte Brush

Stephen Merriman, University of Akron

9:25 to 9:50 a.m.

Controlling Hydrogel Surface Structure and Properties Through Polymerization Kinetics and Interfacial Oxygen

Allison Chau, University of California, Santa Barbara

9:50 to 10:15 a.m. **PEEBLES**

Controlling Fine Touch Sensations with Polymer Tacticity and Crystallinity

Abigail Nolin, University of Delaware

10:15 to 10:45 a.m.

BREAK

10:45 to 11:00 a.m.

Controlling Human Fine Touch Through Materials Chemistry

Charles Dhong, University of Delaware

11:00 to 11:15 a.m.

A Taste of Rheology and Texture of Animal and Plant-based Mayo Emulsions

Nadia Nikolova, University of Illinois at Chicago

11:15 to 11:30 a.m.

Underwater Friction for Soft-hard Contacts

Utkarsh Patil, University of Akron

11:30 to 11:45 a.m.

Transition from Elastohydrodynamic to Mixed Regimes in Lubricated Friction of Soft Solid Surfaces

Hao Dong, Lehigh University

11:45 a.m. to Noon

Adhesion and Frictional Slippage of Elastomer Disks Compressed Between Rigid Platens and Subjected to Torsion: Implications for Rheometry

David Dillard, Virginia Tech

Gels, Elastomers, and Hybrids II

Seminole A, Osceola County Conference Center

Session Chairs: Hyun-Joong Chung, University of Alberta & Gabriel Sanoja, ESPCI Paris

9:00 to 9:25 a.m.

Multicomponent Elastomer Composites for Next Generation Electronics and Robotics

Edward Barron, Virginia Tech

Tuesday, February 21

9:25 to 9:50 a.m.

Structure-Property Relationships and Design of Tough Hybrid Silicone Elastomers
Anthony Silvaroli, Northwestern University

9:50 to 10:15 a.m. **KEYNOTE**

Contact Mechanics of Hydrogels

Yuhang Hu, Georgia Institute of Technology

10:15 to 10:45 a.m.

BREAK

10:45 to 11:00 a.m.

Adhesion and Mechanical Properties of PDMS Bottlebrush Elastomers
Hyemin Kim, University of Massachusetts Amherst

11:00 to 11:15 a.m.

Poroelasticity and Adhesion of Fluid Infused Silicone Elastomers
Joelle Frechette, University of California, Berkeley

11:15 to 11:30 a.m.

Flaw Tolerance of Adhesives
Helen Minsky, Carleton College

11:30 to 11:45 a.m.

Polyurethane Elastomers with Amphiphilic ABA Tri-block Co-polymers as the Soft Segments Showing Record-high Tensile Strength and Simultaneously Increased Ductility
Adam Grzesiak, Dow Chemical Company

11:45 a.m. to Noon

Two-phase Composite Adhesive with Viscoelastic Inclusions
Animangsu Ghatak, Indian Institute of Technology

Novel Tools and Methods for Characterization Seminole B, Osceola County Conference Center

Session Chair: Anne Dussaud, Momentive

9:00 to 9:25 a.m.

Molecular Structures at Buried Solid/Solid Interfaces and Polymer Adhesion
Zhan Chen, University of Michigan

9:25 to 9:50 a.m.

The Heterogeneous Chemistry of Real Surfaces and Its Effects on Adhesion
Ian Smith, Brighton Science

9:50 to 10:15 a.m.

Power Amplified Dynamic Mechanical Analysis (PADMA) Characterizing Elastomers and Adhesives
Yue Zheng, University of Massachusetts Amherst

10:15 to 10:45 a.m.

BREAK

10:45 to 11:00 a.m.

Revealing Adhesion Promotion Mechanism by Probing Covalent Interactions at a Silicone Adhesive/Nylon Interface
Ting Lin, University of Michigan

11:00 to 11:15 a.m.

Developing a Fundamental Understanding of HMA Properties During Application via Thermal Modeling and Rheology
Edward Tomlinson, Bostik

11:15 to 11:30 a.m.

Carbon Fiber Prepregging with Fine Polyetherimide Particles; Influence of Fiber Treatment, Suspension Formulation and Post-processing Conditions on Carbon Fiber Thermoplastic Prepregs Made with Sub-micrometer Polyetherimide Particles
Martin Etemadi, Virginia Tech

11:30 to 11:45 a.m.

PLATech Overview -Radiation-Heat Tailored VOC-free, Bio-Renewable Poly(lactic Acid) Polymer Formulated Technology for Multiple Industrial Adhesion Applications
Rusi Taleyarkhan, Purdue University

11:45 a.m. to Noon

Damping Properties of Bonded Structures Under Dynamic Loading
Johannes Goeddecke, Paderborn University

Sustainability and Adhesion

Heritage Park B, Osceola County Conference Center

Session Chairs: Joseph Dennis, DEVCOM Army Research Laboratory & Grace Wan, Dow Chemical Company

9:00 to 9:25 a.m.

Interfacial and Brittle/Ductile Layer Effects in Biobased Composite Overlays
Stephen Merriman, University of Akron

9:25 to 9:50 a.m. KEYNOTE**Strategies in Sustainable Material Development**

YuanQiao Rao, Dow Chemical Company

9:50 to 10:15 a.m.

Fluoropolymer Sustainability: Modeling Fluorosurfactants during Processing
Chris White, Exponent

10:15 to 10:45 a.m.**BREAK****10:45 to 11:00 a.m.**

Novel Finishing Treatments of Synthetic Textiles to Mitigate the Formation of the Microplastic Fibers
Sudip Kumar Lahiri, University of Toronto

11:00 to 11:15 a.m.

Laminating Adhesive Sustainability and Their Assessment
Yinzhong Guo, Dow Chemical Company

11:15 to 11:30 a.m.

Sustainable Coatings: UV Curable Silicone Conformal Coatings
Junyong Liu, Dow Silicones Corporation

11:30 to 11:45 a.m.

Bio-Based Materials in Structural Adhesive Development
Marvin Pollum, PPG

Noon to 1:30 p.m.

2024 Program Planning Meeting

Heritage, A, Osceola County Conference Center

Lunch on Your Own

AFTERNOON TECHNICAL SESSIONS 1:30 to 5:00 p.m.

Fracture Mechanics of Structural Adhesives and Composites II

Lanier A, Osceola County Conference Center

Session Chairs: Joann Hilman, Brighton Science, & Chris Jackson, Virginia Tech

1:30 to 1:55 p.m.

An Experimental Procedure for Extracting Free Energy Density Functions for Fracture

Alex Arzoumanidis, Psylotech, Inc.

1:55 to 2:20 p.m.

Experimental Characterization of Normal and Shear Deformations in Bonded Arcan Specimens using Digital Image Correlation (DIC)

Bilel Aidi, Virginia Tech

2:20 to 2:45 p.m.

MIL-PRF-32662: The Evolution and Modernization of Legacy Adhesive Test Standards

Robert Jensen, DEVCOM Army Research Laboratory

2:45 to 3:10 p.m.

Fracture Testing of Adhesive Joints in Mixed-mode I+III

Stephan Marzi, Technische Hochschule Mittelhessen

3:10 to 3:35 p.m.

Stress-based Lifetime Prediction of Structural Adhesive Bonds with Elastoplastic Deformation Behavior Under Multiaxial Fatigue Loading

Serkan Çavdar, Henkel Corporation

Ice, Insects, Marine, and other Contaminants II

Lanier B, Osceola County Conference Center

Session Chairs: Hossein Sojoudi, University of Toledo, & Gelareh Momen, University of Quebec at Chicoutimi

1:30 to 1:55 p.m.

Comparison Between a JKR and Shear Test Technique to Evaluate the Adhesion Properties of PDMS-based Polymers for Anti-icing Applications

Daniel Angel Bellido Aguilar, North Dakota State University

1:55 to 2:20 p.m.

Smart Low Interfacial Toughness Materials for On-demand De-icing Without Melting

Kevin Golovin, University of Toronto

2:20 to 2:45 p.m.

Design and Study of an Automated Device to Measure the Adhesion Force Needed to Remove Icy Contaminants

Jean-Denis Brassard, Anti-icing Materials International Laboratory - Universite du Quebec à Chicoutimi

2:45 to 3:10 p.m.

An Experimental and Numerical Approach for the Measurement of the Cohesive and Adhesive Strength of Ice in Centrifuge Adhesion Tests

Derek Harvey, Anti-icing Materials International Laboratory - Universite du Quebec à Chicoutimi

3:10 to 3:35 p.m.

Investigation of the Effect of Different Icing Parameters on the Adhesion of Ice to Different Substrates

Eric Villeneuve, Anti-icing Materials International Laboratory - Universite du Quebec à Chicoutimi

Gels, Elastomers, and Hybrids III

Seminole A, Osceola County Conference Center

Session Chair: Jonathan Pham, University of Cincinnati

1:30 to 1:55 p.m.

Self-Healing in Elastomeric Materials
Anil Bhowmick, University of Houston

1:55 to 2:20 p.m.

Elastomeric Tubes with Self-Regulated Distension under Pulsatile Flow
Hyun-Joong Chung, University of Alberta

2:20 to 2:45 p.m. PEEBLES

Programming Hydrogel Adhesion with Engineered Network Topology
Zhen Yang, McGill University

2:45 to 3:10 p.m. PEEBLES

Architecturally Encoding Adhesion in UV-cured and Hot-melt Brush Networks
Mitchell Maw, University of North Carolina

3:10 to 3:35 p.m.

Effect of Surface Stress on Roughness and Adhesion of Soft Solids
Preetika Karnal, Lehigh University

Complex Coacervates

Seminole B, Osceola County Conference Center

Session Chairs: Francisco Cedano, Saint-Gobain Research, Paris & Mehdi Vahdati, CNRS Institut Charles Sadron

1:30 to 1:55 p.m.

Towards Engineering the Surfaces of Biomolecular Condensates
Amal Narayanan, HHMI & Princeton University

1:55 to 2:20 p.m. KEYNOTE

Bioinspired Coacervate-based Materials: Effect of Hydrophobicity and Charge Stoichiometry on Adhesion Performance
Marleen Kamperman, University of Groningen

2:20 to 2:45 p.m.

Polysaccharide Complex Coacervates as Multifunctional Underwater Adhesives
Mehdi Vahdati, CNRS Institut Charles Sadron

2:45 to 3:10 p.m.

Zero Waste Production of Complex Coacervates
Francisco Cedano, Saint Gobain

3:10 to 3:35 p.m.

Confinement Induced Alteration of Morphologies of Oil-water Emulsion
Animangsu Ghatak, Indian Institute of Technology

Novel Tools and Methods for Characterization II Heritage Park B, Osceola County Conference Center *Stephanie Hughes, Dow Chemical Company & Junying Liu, Dow Silicones Corporation*

1:30 to 1:55 p.m. **KEYNOTE**

Autonomous Platform (Polybot) for Polymer Processing

Jie Xu, Argonne National Laboratory

1:55 to 2:20 p.m.

Characterizing hydrophobicity of Superhydrophobic Surfaces by Friction Force Measurements

Mohamadreza Beitollahpoor, Tulane University

2:20 to 2:45 p.m.

Contact Angle and Surface Tension Measurements: Easy Method to Evaluate Wetting, Work of Adhesion and Stability of Liquids on Surfaces

Raymond Sanedrin, KRUSS USA

2:45 to 3:10 p.m.

Ink Adhesion Methods: Importance in Processing & Print Quality

Aaron Forster, National Institute of Standards & Technology

3:10 to 3:35 p.m.

Mechanoluminescent Visualization of Dynamic Strain Distribution During Lap Shear Test - Effect of Bond Thickness, Overlap Length and Surface Laser Treatment

Nao Terasaki, National Institute of Advanced Industrial Science & Technology (AIST)

3:35 to 4:00 p.m.
Afternoon Break

4:00 to 5:00 p.m. **PANEL DISCUSSION**

Career Panel Discussion

Chair: Michael Bortner, Virginia Tech

Grand Salon, Osceola County Conference Center

Panelists: Mary Gilliam, General Motors; Dong Wei, 3M Company; Michelle Seitz, AAAS Science and Technology Policy Fellow; Ngon Tran, DEVCOM Army Research Laboratory; Leo Lopez, Dow Chemical Company

5:30 to 7:00 p.m.

2023 Women's Networking Reception

Chair: Katharine Jensen, Williams College

Hotel Lobby Bar, Ground Level

7:00 to 8:30 p.m.

Young Researcher Networking Event

Chair: Arit Das, University of Minnesota-Twin Cities

Hotel Lobby Bar, Ground Level

46th Annual Adhesion Society
Meeting Presents

2023 YOUNG RESEARCHER NETWORKING EVENT

Tuesday, February 21, 2023

Location: Hotel Lobby Bar,
Ground Level

7:00 to 8:30 p.m.

*Chair: Arit Das, University of
Minnesota-Twin Cities*

For information visit:
www.adhesionsociety.org

Wednesday, February 22

- 7:00 – 8:00 a.m. Registration**
Grand Salon Foyer, Osceola County
Conference Center
- 7:00 – 7:45 a.m. Breakfast on Your Own**
- 8:00 – 8:45 a.m. PLENARY TALK III:
Mechanics-guided 3D Assembly
of Complex Mesostructures and
Functional Devices**
Yonggang Huang, Northwestern University
Session Chair: Amy Peterson, University of
Massachusetts Lowell
Grand Salon, Osceola County
Conference Center
- 8:45 – 9:00 a.m. Peebles Awards Presentations**
Grand Salon, Osceola County
Conference Center

MORNING TECHNICAL SESSIONS 9:00 a.m. to Noon

Novel Tools and Methods for Characterization III Lanier A, Osceola County Conference Center *Session Chair: Ajay Krishnamurthy, Eaton Corporation*

9:00 to 9:25 a.m.

Calibrating Cohesive Zone Models for Structural Adhesives Bonded to Plastic
Scott Grindy, Veryst Engineering

9:25 to 9:50 a.m.

Using Digital Image Correlation (DIC) to Advance Property Characterization of Bonded Joints
Christopher Jackson, Virginia Tech

9:50 to 10:15 a.m.

A Novel Rheological Approach to Assess Printability Improvements for UV-assisted Direct Ink Write Processes
John Reynolds, Virginia Tech

10:15 to 10:45 a.m.

BREAK

10:45 to 11:00 a.m.

Interpretation of Fatigue Damage in Pressure Sensitive Adhesives
Evan Breedlove, 3M Company

11:00 to 11:15 a.m.

Determination of The Shear Strength of Adhesive Bonds using Modified Block Shear Test Fixture
Aisha Ahmed, Indian Institute of Technology Delhi

11:15 to 11:30 a.m.

Characterization of Rate-Dependent Yield and Strength Properties of Structural Adhesives
Michael Wald, 3M Company

11:30 to 11:45 a.m.

Failure Mechanisms in Adhesively Bonded CFRP joints - Analysis and Simulation at Micrometer-Scale
Joerg Gregor Diez, Universität der Bundeswehr München

11:45 a.m. to Noon

Chemical and Physical Aging in Diglycidylether of Bisphenol A (DGEBA) Epoxy Thermosets and Predicting Structural Implications of the Aging
Jamie Kropka, Sandia National Laboratories

Underwater Adhesion and Testing

Lanier B, Osceola County Conference Center

Session Chairs: Amal Narayanan, HHMI & Princeton University & Michael Wilson, U.S. Naval Research Laboratory

9:00 to 9:25 a.m.

Thiol-catechol Connectivities (TCCs) as Key Functionalities for Designing Salt-water Tolerant Adhesives: From Artificial Mussel Glue Proteins to Sustainable 2K-adhesives
Hans Boerner, Humboldt Universität zu Berlin

9:25 to 9:50 a.m.

Barnacle-Inspired Adhesives that Cure Underwater Using Off-The-Shelf Components
Michael Wilson, U.S. Naval Research Laboratory

9:50 to 10:15 a.m.

Exploiting Elasto-hydrodynamic Phenomena for in Situ Stiffness Sensing in Disease Modeling
Charles Dhong, University of Delaware

10:15 to 10:45 a.m.

BREAK

10:45 to 11:00 a.m.

Mesoscale Polymer Ribbon Arrays: Biofilm-Inspired, Flexible, Fibrillar Adhesives
Demi Moed, University of Massachusetts Amherst

11:00 to 11:15 a.m.

Optics-free and in-situ Gr/Pd Sensor Platform for Measuring Interfacial Swelling Mechanics in Osteoarthritic Cartilage
Shalini Sundar, University of Delaware

11:15 to 11:30 a.m.

Evaluation of Polyol Additives in Epoxy Resin for Structural Adhesive Applications
Ngon Tran, DEVCOM Army Research Laboratory

11:30 to 11:45 a.m.

Galloyl-functionalized Methacrylic Pressure-sensitive Adhesives
Seong-Ju Lee, Seoul National University

11:45 a.m. to Noon

pH Dependent Interfacial Adhesion of Hydroxypyridinone Based Siderophore Analog as Wet Adhesives
Syeda Tajin Ahmed, University of California, Merced

Formulation, Processing and Surface Preparation for Adhesion

Seminole A, Osceola County Conference Center

Ngon Tran, DEVCOM Army Research Laboratory & Joann Hilman, Brighton Science

9:00 to 9:25 a.m.

Process Evaluation and Surface Effects of Laser Ablation of Aluminum in Structural Bonding
Mary Gilliam, General Motors

9:25 to 9:50 a.m.

Remediation of Contaminated Carbon Fiber Reinforced Polymer Surfaces through Laser Ablation
Joann Hilman, Brighton Science

9:50 to 10:15 a.m.

Ensuring Surface Cleanliness for Bonding using Water Contact Angle in Industrial Applications

Rose Roberts, Brighton Science

10:15 to 10:45 a.m.

BREAK

10:45 to 11:00 a.m.

Mechanism of Adhesion Durability Improvement of Aluminum Alloy by Silane Treatment

Yusuke Takahashi, Kobe Steel, Ltd.

11:00 to 11:15 a.m.

Thermal Stress Relieving Adhesive Structure with Epoxy Monolith Sheet

Yoshiyuki Kamo, Mitsubishi Electric Corporation

11:15 to 11:30 a.m.

Controlling Local Distribution of Hydrogen-bonding and Crosslinking Units in Adhesive Materials through Differential Reactivity Ratios

Hyunki Kim, 3M Company

11:30 to 11:45 a.m.

Production and Characterization of Melt Electro-spun Polymer Composites by Multilayer Extrusion

Justin Anderson, Virginia Tech

11:45 a.m. to Noon

Depositing Polymer Particles on Metal Targets Using the Cold Spray Additive Manufacturing Technique

Kashyap Sundara Rajan, University of Massachusetts Amherst

Soft Technologies

Seminole B, Osceola County Conference Center

Session Chairs: Abhishek Srivastava, 3M Company & Katharine Jensen, Williams College

9:00 to 9:25 a.m. **KEYNOTE**

Shape-shifting Soft Robots that Adapt to Changing Tasks and Environments

Rebecca Kramer-Bottiglio, Yale University

9:25 to 9:50 a.m.

Impact and Energy Absorption with Sticky Crumpled Matter

Wathsala Amadoru Jayawardana, North Dakota State University

9:50 to 10:15 a.m.

Stiffness and Shape Tuning Composites via Reversibly Adhered Kirigami Springs

Dan Sameoto, University of Alberta

10:15 to 10:45 a.m.

BREAK

10:45 to 11:00 a.m.

Icephobic Kirigami Metamaterial with the Application for Scalable Structures

Zahra Azimi Dijevejin, University of British Columbia

11:00 to 11:15 a.m.

Tough Bonding of Liquid Metal-Elastomer Composites for Multifunctional Adhesives

Tyler Pozarycki, Virginia Tech

11:15 to 11:30 a.m.

Compliant Manipulation through Dynamically Tunable Dry Adhesion

Wanliang Shan, Syracuse University

11:30 to 11:45 a.m.

On-Demand Programming of Liquid Metal-Composite Microstructures through Direct Ink Write 3D Printing

Gwyneth Schloer, Virginia Tech

11:45 a.m. to Noon

Pick-and-place of Small Lightweight Objects Using Miniaturized Untethered Buckli-Grippers with Low-Pressure Actuation
Yanbing Tang, Syracuse University

Contact Mechanics

Heritage Park B, Osceola County Conference Center

Session Chairs: Jamie Booth, California State University, Northridge & Evan Breedlove, 3M Company

9:00 to 9:25 a.m.

The Effect of Temperature and Humidity on Gecko Adhesion and Locomotion
Alyssa Stark, Villanova University

9:25 to 9:50 a.m.

The Strength of Micropatterned Adhesive Contacts Subject to Variation in Interfacial Defect Characteristics
Jamie Booth, California State University, Northridge

9:50 to 10:15 a.m.

Effect of Thin Film on Adhesion of Layered Materials with Randomly Rough Surfaces
Shubhendu Kumar, University of Akron

10:15 to 10:45 a.m.

BREAK

10:45 to 11:00 a.m.

Adherence of a Hyperelastic Shell on a Rigid Planar Substrate
Chenxu Zhao, Syracuse University

11:00 to 11:15 a.m.

Contact Mechanics of a Prestretched Soft Substrate
Yue Zheng, University of Massachusetts Amherst

11:15 to 11:30 a.m.

Normal and Shear Cutting of Soft Solids
Preetika Karnal, Lehigh University

11:30 to 11:45 a.m.

Coupled Adhesion and Friction of Graphene Nanoribbons
Rui Huang, University of Texas at Austin

11:45 a.m. to Noon

Visualizing Transmitted Stress from Impact in Two-dimensional Network Mechanical Metamaterials
Marcos Reyes-Martinez, National Institute of Standards and Technology

Fundamentals and Applications of Adhesion Science

Grand Salon, Osceola County Conference Center

Session Chair: Yinzong Guo, Dow Chemical Company

9:00 to 9:25 a.m.

A Multiscale Cohesive Zone Model for Rate-dependent Fracture of Interfaces
Rui Huang, University of Texas at Austin

9:25 to 9:50 a.m.

Molecular Level Study on Adhesion Mechanism of Alumina/Epoxy Adhesive Interface: DFT calculations and Experimental Measurements
Yukihiro Shimoi, National Institute of Advanced Industrial Science and Technology (AIST)

9:50 to 10:15 a.m.

Puncturing of Soft Gel Using a Syringe Needle
Animangsu Ghatak, Indian Institute of Technology

Wednesday, February 22

10:15 to 10:45 a.m.

BREAK

10:45 to 11:00 a.m.

Hybrid Joint Concepts for Adhesive Bonding of Additively Manufacture Parts
Mark Oliver, Veryst Engineering

11:00 to 11:15 a.m.

Probing the Adhesion Chemistry at Buried Polyolefin/Nylon and Polyolefin/EVOH Interfaces in Co-extrusion Fabricated Multilayer Films Using Sum Frequency Generation Vibrational Spectroscopy
Daniel Rossi, University of Michigan

11:15 to 11:30 a.m.

Ultra-High-Speed Imaging: A Powerful Tool for New Insights to Adhesive Performance
Todd Rumbaugh, Hadland Imaging

11:30 to 11:45 a.m.

Unveiling the Effects of Adherend Surface Roughness, Adhesive, and Interface on Fracturing Adhesively-bonded Materials via Micro-scale Computational Modeling
Yao Qiao, Pacific Northwest National Laboratory

11:45 a.m. to Noon

Improving Layer Adhesion in 3D Printed Parts of Semicrystalline Polymer Blends
Arit Das, University of Minnesota-Twin Cities

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