Preconference Course: June 2, 2024
Conference: June 3-6, 2024
Exposition: June 3-5, 2024
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My dear friends and colleagues I am excited to personally welcome you all to Vancouver, Washington for the 2024 Society for Experimental Mechanics Annual Conference and Exposition on Experimental and Applied Mechanics.

Our full 4-day technical program contains over 380 presentations with tracks on the Mechanics of Biological Systems & Materials, Micro- and Nanomechanics, the Mechanics of Composite and Multifunctional Materials, Additive and Advanced Manufacturing, Advancement of Optical Methods in Experimental Mechanics, Dynamic Behavior of Materials, Fracture & Fatigue, Machine Learning and Data Science, Residual Stress, Thermomechanics and Infrared Imaging. This year’s meeting also showcases a special symposium to celebrate Prof. Cesar Sciammarella’s 100th anniversary and accomplishments and celebrates the 10th International Symposium on Composites.

A pre-conference course on the “Thermographic Non-Destructive Evaluation,” will be led by Prof. Janice Barton on Sunday, June 2nd. Also, be sure to attend the Springer Nature Young Investigator Lecture by Allison Beese on the “Mechanics of Additively Manufactured Metals,” and the William M. Murray Lecture by Ghatu Subhash on “Riding the Waves for Design of Innovative Experiments and Probing Material Behavior.” This year’s “coffee talk” will be on “Let’s Talk Postdoc,” organized by Kaitlynn Fitzgerald and Amy Englebrecht-Wiggans.

A welcome reception open to all members and attendees will be held on Sunday evening following the open SEM annual business meeting. I encourage all of you to attend both these events to learn more about the Society and network with friends old and new. The Technical Division and Focus Group meetings will be held on Tuesday. This is a great venue to exchange ideas, plan sessions and events for next year’s conference, and get involved. The TDs will report out at the Technical Activities Council meeting later on the same day with plans for the 2025 annual meeting to be held in Milwaukee, WI. The exposition opens on Monday afternoon. Please visit our exhibitors and sponsors, as you enjoy various coffee and dessert breaks, and the President’s reception on Tuesday evening. Finally, I personally believe that the future of our friendly society lies in our student and junior members. All students are invited to attend the Student Meet & Greet event Monday evening led by SEM’s Student Ambassadors. This is a great opportunity to network with other students and learn about how the society can serve your professional needs into the future.

Serving as SEM President this past year has been an honor and a privilege. I am humbled by the tremendous scope of work that the membership does through the Technical Divisions and various committees. I give my special thanks to the SEM staff, Executive Director Nuno Lopes, and Treasurer Kristin Zimmerman, and Treasurer-emeritus Jon Rogers for their extraordinary efforts and exemplary service. Their efforts along with yours make us “the friendly society.” I look forward to seeing you all once again.

Raman P. Singh | SEM President
### Schedule of Events

<table>
<thead>
<tr>
<th>Start</th>
<th>End</th>
<th>Event</th>
<th>Room</th>
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<tbody>
<tr>
<td><strong>Sunday, June 2, 2024</strong></td>
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<tr>
<td>8:30 a.m.</td>
<td>9:30 a.m.</td>
<td>Course-Only Registration</td>
<td>Heritage Pre-function</td>
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<tr>
<td>9:00 a.m.</td>
<td>10:00 a.m.</td>
<td>Closed - Nominating Meeting</td>
<td>Board Room</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>6:00 p.m.</td>
<td>Course: Thermographic Non-Destructive Evaluation: Janice Barton &amp; Geir Olafsson</td>
<td>Oak</td>
</tr>
<tr>
<td>10:30 a.m.</td>
<td>11:30 a.m.</td>
<td>SEMEF Meeting</td>
<td>Board Room</td>
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<tr>
<td>1:00 p.m.</td>
<td>2:00 p.m.</td>
<td>Finance Committee Meeting</td>
<td>Board Room</td>
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<tr>
<td>2:00 p.m.</td>
<td>6:00 p.m.</td>
<td>Closed - SEM Executive Board Meeting</td>
<td>Board Room</td>
</tr>
<tr>
<td>3:00 p.m.</td>
<td>6:30 p.m.</td>
<td>Conference Registration</td>
<td>Heritage Pre-function</td>
</tr>
<tr>
<td>5:00 p.m.</td>
<td>6:00 p.m.</td>
<td>Closed - Fellows Meeting</td>
<td>Ash</td>
</tr>
<tr>
<td>6:30 p.m.</td>
<td>7:30 p.m.</td>
<td>SEM Annual Business Meeting</td>
<td>Heritage C</td>
</tr>
<tr>
<td>7:30 p.m.</td>
<td>9:00 p.m.</td>
<td>Welcome Reception</td>
<td>Discovery Ballroom</td>
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<tr>
<td><strong>Monday, June 3, 2024</strong></td>
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<tr>
<td>7:30 a.m.</td>
<td>4:00 p.m.</td>
<td>Conference Registration</td>
<td>Heritage Pre-function</td>
</tr>
<tr>
<td>8:15 a.m.</td>
<td>8:45 a.m.</td>
<td>Speaker/Chair Briefing</td>
<td>Discovery Ballroom</td>
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<tr>
<td>8:30 a.m.</td>
<td>6:00 p.m.</td>
<td>Speaker’s Practice</td>
<td>Birch</td>
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<tr>
<td>9:00 a.m.</td>
<td>10:30 a.m.</td>
<td>Closed - Honors Committee Meeting</td>
<td>Board Room</td>
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<tr>
<td>9:00 a.m.</td>
<td>11:00 a.m.</td>
<td>01. Michael Sutton Int’l Student Paper Competition I</td>
<td>Heritage C</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>11:00 a.m.</td>
<td>02. Basics of ...</td>
<td>Heritage D</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>11:00 a.m.</td>
<td>03. 2D Materials</td>
<td>Heritage E</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>11:00 a.m.</td>
<td>04. Thermomechanics</td>
<td>Hemlock/Oak</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>11:00 a.m.</td>
<td>05. Fatigue, Fracture, and Inverse Methods</td>
<td>Cedar</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>11:00 a.m.</td>
<td>06. Session to Celebrate Prof. Wei-Chung’s Retirement</td>
<td>Heritage F</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>11:00 a.m.</td>
<td>07. Shock and Blast I</td>
<td>Pine/Spruce</td>
</tr>
<tr>
<td>11:00 a.m.</td>
<td>11:30 a.m.</td>
<td>Coffee Break</td>
<td>Heritage Pre-function</td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>12:30 p.m.</td>
<td>Springer/Nature Publishing Young Investigator Lecture: Allison Reese - Pennsylvania State University</td>
<td>Discovery Ballroom</td>
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<tr>
<td>12:30 p.m.</td>
<td>1:30 p.m.</td>
<td>Lunch - on own</td>
<td>on own</td>
</tr>
<tr>
<td>12:30 p.m.</td>
<td>1:30 p.m.</td>
<td>Education “Coffee Talk”: Let’s Talk Postdoc</td>
<td>Heritage D</td>
</tr>
<tr>
<td>1:15 p.m.</td>
<td>2:30 p.m.</td>
<td>EM Editorial &amp; IAB Meeting</td>
<td>Board Room</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>3:10 p.m.</td>
<td>08. Michael Sutton Int’l Student Paper Competition II</td>
<td>Heritage C</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>3:10 p.m.</td>
<td>09. Applied Research in Experimental Mechanics</td>
<td>Heritage D</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>3:10 p.m.</td>
<td>10. Micro and Nanoscale Experimental Methods</td>
<td>Heritage E</td>
</tr>
<tr>
<td><strong>Tuesday, June 4, 2024</strong></td>
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<td></td>
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<tr>
<td>7:30 a.m.</td>
<td>4:00 p.m.</td>
<td>Conference Registration</td>
<td>Heritage Pre-function</td>
</tr>
<tr>
<td>8:15 a.m.</td>
<td>8:45 a.m.</td>
<td>Speaker/Chair Briefing</td>
<td>Discovery Ballroom</td>
</tr>
<tr>
<td>8:30 a.m.</td>
<td>6:00 p.m.</td>
<td>Speaker’s Practice</td>
<td>Birch</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:40 a.m.</td>
<td>22. Fracture and Fatigue in Brittle Materials</td>
<td>Heritage C</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:40 a.m.</td>
<td>23. High Strain Rate Identification</td>
<td>Heritage D</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:40 a.m.</td>
<td>24. In-situ Experiments</td>
<td>Heritage E</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:40 a.m.</td>
<td>25. Industrial Applications of Thermography/Appplied Thermography: Case studies</td>
<td>Hemlock/Oak</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:40 a.m.</td>
<td>26. Applications in Residual Stress Analysis</td>
<td>Cedar</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:40 a.m.</td>
<td>27. DIC Challenges and Applications</td>
<td>Heritage F</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:40 a.m.</td>
<td>28. Novel Techniques I</td>
<td>Pine/Spruce</td>
</tr>
<tr>
<td>9:30 a.m.</td>
<td>10:30 a.m.</td>
<td>SEM Membership Committee Meeting</td>
<td>Board Room</td>
</tr>
<tr>
<td>10:00 a.m.</td>
<td>5:00 p.m.</td>
<td>Exposition Open</td>
<td>Heritage AB</td>
</tr>
<tr>
<td>10:40 a.m.</td>
<td>11:10 a.m.</td>
<td>Coffee Break in the Exhibit Hall</td>
<td>Heritage AB</td>
</tr>
<tr>
<td>11:10 a.m.</td>
<td>12:10 p.m.</td>
<td>William M. Murray Lecture: Ghatu Subhash – University of Florida</td>
<td>Discovery Ballroom</td>
</tr>
<tr>
<td>12:10 p.m.</td>
<td>1:40 p.m.</td>
<td>TD Meetings (&amp; lunch)</td>
<td>Discovery Ballroom</td>
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<tr>
<td>Start</td>
<td>End</td>
<td>Event</td>
<td>Room</td>
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<tr>
<td>12:40 p.m.</td>
<td>1:40 p.m.</td>
<td>Additive and Advanced Manufacturing</td>
<td>Ash</td>
</tr>
<tr>
<td>12:40 p.m.</td>
<td>1:40 p.m.</td>
<td>Biological Systems &amp; Materials</td>
<td>Discovery Ballroom</td>
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<tr>
<td>12:40 p.m.</td>
<td>1:40 p.m.</td>
<td>Composite, Hybrid &amp; Multifunctional Materials</td>
<td>Cedar</td>
</tr>
<tr>
<td>12:40 p.m.</td>
<td>1:40 p.m.</td>
<td>Dynamic Behavior of Materials</td>
<td>Pine/Spruce</td>
</tr>
<tr>
<td>12:40 p.m.</td>
<td>1:40 p.m.</td>
<td>Fracture &amp; Fatigue</td>
<td>Heritage C</td>
</tr>
<tr>
<td>12:40 p.m.</td>
<td>1:40 p.m.</td>
<td>Inverse Methods and Machine Learning</td>
<td>Heritage D</td>
</tr>
<tr>
<td>12:40 p.m.</td>
<td>1:40 p.m.</td>
<td>MEMS &amp; Nanotechnology</td>
<td>Heritage E</td>
</tr>
<tr>
<td>12:40 p.m.</td>
<td>1:40 p.m.</td>
<td>Optical Methods &amp; Applied Photoelasticity</td>
<td>Heritage F</td>
</tr>
<tr>
<td>12:40 p.m.</td>
<td>1:40 p.m.</td>
<td>Thermomechanics &amp; Infra-red Imaging</td>
<td>Hemlock/Oak</td>
</tr>
<tr>
<td>10:00 a.m.</td>
<td>12:30 p.m.</td>
<td>Time Dependent Materials</td>
<td>Beech</td>
</tr>
<tr>
<td>10:50 a.m.</td>
<td>12:10 p.m.</td>
<td>Mechanical Behavior of Additively Manufactured Materials I</td>
<td>Heritage C</td>
</tr>
<tr>
<td>10:50 a.m.</td>
<td>12:10 p.m.</td>
<td>Residual Stress</td>
<td>Board Room</td>
</tr>
<tr>
<td>10:20 a.m.</td>
<td>10:50 a.m.</td>
<td>Interface in Composites</td>
<td>Heritage C</td>
</tr>
<tr>
<td>10:45 a.m.</td>
<td>11:45 a.m.</td>
<td>Plasticity, Damage &amp; Stress Identification</td>
<td>Heritage D</td>
</tr>
<tr>
<td>1:40 p.m.</td>
<td>2:00 p.m.</td>
<td>29. Cesar Sciammarella's 100th Birthday</td>
<td>Heritage E</td>
</tr>
<tr>
<td>1:40 p.m.</td>
<td>2:00 p.m.</td>
<td>32. Cesar Sciammarella's 100th Birthday II</td>
<td>Hemlock/Oak</td>
</tr>
<tr>
<td>1:40 p.m.</td>
<td>2:00 p.m.</td>
<td>34. Optical Fiber Sensor and Miniaturized Devices</td>
<td>Heritage F</td>
</tr>
<tr>
<td>1:40 p.m.</td>
<td>2:00 p.m.</td>
<td>35. Novel Techniques II</td>
<td>Pine/Spruce</td>
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<tr>
<td>2:30 p.m.</td>
<td>3:30 p.m.</td>
<td>Technical Activities Council Meeting</td>
<td>Board Room</td>
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<tr>
<td>3:20 p.m.</td>
<td>4:00 p.m.</td>
<td>Dessert Break in the Exhibit Hall</td>
<td>Heritage AB</td>
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<tr>
<td>4:00 p.m.</td>
<td>5:30 p.m.</td>
<td>Editorial Council Meeting</td>
<td>Board Room</td>
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<tr>
<td>4:00 p.m.</td>
<td>5:40 p.m.</td>
<td>36. Fracture of Additively Manufactured Materials I</td>
<td>Heritage C</td>
</tr>
<tr>
<td>4:00 p.m.</td>
<td>5:40 p.m.</td>
<td>37. Material Parameters Identification</td>
<td>Heritage D</td>
</tr>
<tr>
<td>4:00 p.m.</td>
<td>5:40 p.m.</td>
<td>38. Composites and Interfaces</td>
<td>Heritage E</td>
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<tr>
<td>4:00 p.m.</td>
<td>5:40 p.m.</td>
<td>39. Cesar Sciammarella's 100th Birthday II</td>
<td>Hemlock/Oak</td>
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<tr>
<td>4:00 p.m.</td>
<td>5:40 p.m.</td>
<td>40. Technology Applications</td>
<td>Cedar</td>
</tr>
<tr>
<td>4:00 p.m.</td>
<td>5:40 p.m.</td>
<td>41. Acoustics, Image and Laser Novelty Applications</td>
<td>Heritage F</td>
</tr>
<tr>
<td>4:00 p.m.</td>
<td>5:40 p.m.</td>
<td>42. Quantitative Visualization</td>
<td>Pine/Spruce</td>
</tr>
<tr>
<td>5:45 p.m.</td>
<td>6:30 p.m.</td>
<td>43. Cesar Sciammarella Lecture</td>
<td>Discovery Ballroom</td>
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<tr>
<td>6:30 p.m.</td>
<td>8:00 p.m.</td>
<td>President’s Reception in the Exposition</td>
<td>Heritage AB</td>
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</tbody>
</table>

Wednesday, June 5, 2024

<table>
<thead>
<tr>
<th>Start</th>
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<th>Event</th>
<th>Room</th>
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<tbody>
<tr>
<td>8:00 a.m.</td>
<td>4:00 p.m.</td>
<td>Conference Registration</td>
<td>Heritage Pre-function</td>
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<tr>
<td>8:15 a.m.</td>
<td>8:45 a.m.</td>
<td>Speaker/Chair Briefing</td>
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</tr>
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<td>8:30 a.m.</td>
<td>6:00 p.m.</td>
<td>Speaker’s Practice</td>
<td>Beech</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:30 a.m.</td>
<td>Joint Meeting of the Applications, Education and Research Committees</td>
<td>Board Room</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:20 a.m.</td>
<td>Fracture of Additively Manufactured Materials II</td>
<td>Heritage C</td>
</tr>
</tbody>
</table>

9:00 a.m. | 10:20 a.m. | 44. Machine Learning-based Identification | Heritage D |
| 9:00 a.m. | 10:20 a.m. | 45. Viscoelasticity/Viscoplasticity         | Heritage E |
| 9:00 a.m. | 10:20 a.m. | 46. Cesar Sciammarella’s 100th Birthday III | Hemlock/Oak |
| 9:00 a.m. | 10:20 a.m. | 47. Mechanical Behavior of Multicellular Tissues in Organisms | Cedar    |
| 9:00 a.m. | 10:20 a.m. | 48. Advances in Composites                 | Heritage F |
| 9:00 a.m. | 10:20 a.m. | 49. High Rate Deformation of Energetic Materials | Pine/Spruce |
| 10:00 a.m. | 12:30 p.m. | Exposition Open                           | Heritage AB |
| 10:20 a.m. | 10:50 a.m. | Coffee Break in the Exhibit Hall          | Heritage AB |
| 10:45 a.m. | 11:45 a.m. | National Meetings Council Meeting         | Board Room |
| 10:50 a.m. | 12:10 p.m. | 50. Fracture and Damage of Highly Deformable Solids | Heritage C |
| 10:50 a.m. | 12:10 p.m. | 51. Machine Learning-based Identification II | Heritage D |
| 10:50 a.m. | 12:10 p.m. | 52. Viscoelasticity I                      | Heritage E |
| 10:50 a.m. | 12:10 p.m. | 53. Cesar Sciammarella’s 100th Birthday IV | Hemlock/Oak |
| 10:50 a.m. | 12:10 p.m. | 54. Cellular Force Generation and Mechanobiology | Cedar |
| 10:50 a.m. | 12:10 p.m. | 55. Multifunctional Composites I           | Heritage F |
| 10:50 a.m. | 12:10 p.m. | 56. Mechanics of Pore Collapse/Hot Spots in Energetic Materials | Pine/Spruce |
| 12:15 p.m. | 2:30 p.m. | All Society Awards Luncheon               | Discovery Ballroom |
| 2:30 p.m. | 3:30 p.m. | Open Executive Board Meeting               | Board Room |
| 2:30 p.m. | 3:50 p.m. | 57. Mechanics of Electrochemical and Electromechanical Materials | Heritage C |
| 2:30 p.m. | 3:50 p.m. | 58. Novel Testing Methods                  | Heritage D |
| 2:30 p.m. | 3:50 p.m. | 59. Viscoelasticity II                     | Heritage E |
| 2:30 p.m. | 3:50 p.m. | 60. Cesar Sciammarella’s 100th Birthday V  | Hemlock/Oak |
| 2:30 p.m. | 3:50 p.m. | 61. Mechanical Behavior in Biological Function and Disease | Cedar |
| 2:30 p.m. | 3:50 p.m. | 62. Fracture and Fatigue of Composites I   | Heritage F |
| 2:30 p.m. | 3:50 p.m. | 63. Architectied Materials                 | Pine/Spruce |
| 3:50 p.m. | 4:20 p.m. | Coffee Break                              | Heritage Pre-function |
| 4:20 p.m. | 6:00 p.m. | 64. 3D Characterization of Deformation, Damage and Failure | Heritage C |
| 4:20 p.m. | 6:00 p.m. | 65. Dynamic Behavior of AM Materials      | Heritage D |
| 4:20 p.m. | 6:00 p.m. | 66. Damage and Fracture of Polymers        | Heritage E |
| 4:20 p.m. | 6:00 p.m. | 67. Cesar Sciammarella’s 100th Birthday VI | Hemlock/Oak |
| 4:20 p.m. | 6:00 p.m. | 68. Mechanics of the Brain and Traumatic Brain Injury | Cedar |
| 4:20 p.m. | 6:00 p.m. | 69. AM of Composites                       | Heritage F |
| 4:20 p.m. | 6:00 p.m. | 70. Standardization of Dynamic Testing     | Pine/Spruce |

continued on next page
### Schedule of Events (cont)

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</tr>
<tr>
<td>8:30 a.m.</td>
<td>4:00 p.m.</td>
<td>Speaker’s Practice</td>
<td>Birch</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:40 p.m.</td>
<td>71. Optical Techniques and Fracture I</td>
<td>Heritage C</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:40 p.m.</td>
<td>72. Novel Structures and Design</td>
<td>Heritage D</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:40 p.m.</td>
<td>73. Cesar Sciammarella’s 100th Birthday VII</td>
<td>Heritage E</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:40 p.m.</td>
<td>74. Dynamic Behavior of AM Materials</td>
<td>Hemlock/Oak</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:40 p.m.</td>
<td>75. Experimental Techniques for Biological Materials I</td>
<td>Cedar</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:40 p.m.</td>
<td>76. Sustainable Constituent Composites I</td>
<td>Heritage F</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>10:40 p.m.</td>
<td>77. Composites</td>
<td>Pine/Spruce</td>
</tr>
<tr>
<td>10:40 a.m.</td>
<td>11:10 a.m.</td>
<td>Coffee Break</td>
<td>Heritage Pre-function</td>
</tr>
<tr>
<td>11:10 a.m.</td>
<td>12:30 p.m.</td>
<td>78. Optical Techniques and Fracture II</td>
<td>Heritage C</td>
</tr>
<tr>
<td>11:10 a.m.</td>
<td>12:30 p.m.</td>
<td>79. Process - Structure - Properties</td>
<td>Heritage D</td>
</tr>
<tr>
<td>11:10 a.m.</td>
<td>12:30 p.m.</td>
<td>81. Dynamic Time Dependent Materials</td>
<td>Hemlock/Oak</td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>12:30 p.m.</td>
<td>82. Biomechanics of Healthy and Diseased Tissue</td>
<td>Cedar</td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>12:30 p.m.</td>
<td>83. Multifunctional Composites II</td>
<td>Heritage F</td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>12:30 p.m.</td>
<td>84. Low Impedance</td>
<td>Pine/Spruce</td>
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<tr>
<td>12:30 p.m.</td>
<td>1:30 p.m.</td>
<td>Lunch - on own</td>
<td>on own</td>
</tr>
<tr>
<td>12:30 p.m.</td>
<td>1:30 p.m.</td>
<td>DIC Challenge Meeting</td>
<td>Heritage E</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>3:10 p.m.</td>
<td>85. Thermal and Environmental Effects in Fracture and Fatigue</td>
<td>Heritage C</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>3:10 p.m.</td>
<td>86. Metals</td>
<td>Heritage D</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>3:10 p.m.</td>
<td>88. Brittle Materials</td>
<td>Hemlock/Oak</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>3:10 p.m.</td>
<td>89. Experimental Techniques for Biological Material II</td>
<td>Cedar</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td>3:10 p.m.</td>
<td>90. Sustainable Constituent Composites II</td>
<td>Heritage F</td>
</tr>
<tr>
<td>3:10 p.m.</td>
<td>3:40 p.m.</td>
<td>Coffee Break</td>
<td>Heritage Pre-function</td>
</tr>
<tr>
<td>3:40 p.m.</td>
<td>5:40 p.m.</td>
<td>92. Vibrations and Cyclic Fatigue</td>
<td>Heritage C</td>
</tr>
<tr>
<td>3:40 p.m.</td>
<td>5:40 p.m.</td>
<td>93. Novel Methods</td>
<td>Heritage D</td>
</tr>
<tr>
<td>3:40 p.m.</td>
<td>5:40 p.m.</td>
<td>95. Geomaterials</td>
<td>Hemlock/Oak</td>
</tr>
<tr>
<td>3:40 p.m.</td>
<td>5:40 p.m.</td>
<td>97. Fracture and Fatigue of Composites II</td>
<td>Heritage F</td>
</tr>
</tbody>
</table>

**MARK YOUR CALENDARS!**

**2025 SEM ANNUAL CONFERENCE**

Society for Experimental Mechanics, Inc.  
7 School Street, Bethel, CT 06801 • www.sem.org

**HYATT REGENCY MILWAUKEE**  
333 W Kilbourn Avenue • Milwaukee, WI 53203  
**JUNE 2-5, 2025**
New to Annual?

Thank you for taking the time out of your busy schedule to attend our conference. We welcome you to a new experience, one we hope you use to learn, share, network and simply enjoy.

If you have questions, please find an SEM staff member who will be happy to help you. SEM has been described as the “friendly” society, so feel free to reach out to anyone who has many colorful ribbons on their badges, they’ll be happy to help too.

Events
As a paid conference attendee, we encourage you to attend the social events to enjoy refreshments, light fare and mingle with other attendees. If you’d like to learn or ask questions on a variety of topics ranging from Post Doc to Journals and the latest technology employed by vendors, we invite you to attend some of the Highlights.

Social Highlights
• Welcome Reception (refreshments/light fare)
• President’s Reception (refreshments/light fare)
• Awards Luncheon (lunch provided)
• Coffee Talks/Panels
• “Basics-Of” series
• Technical Division meetings (lunch provided)

Tips
• On the day of your presentation, attend the Speaker’s Breakfast and meet with your Session Chair.
• You’re finally at the conference—make the most of the time you have and be present.
• When you go into a session early, don’t just hop on your phone. Talk to people—it’s a great opportunity for networking.

It is our hope that this information aids you in preparing for a great conference experience before and during your time at Annual.
Course: **Thermographic Non-Destructive Evaluation**

**Sunday, June 2, 2024 | 9:00 a.m. - 6:00 p.m. | Oak**

### Course Description

The Thermomechanics and IR Imaging Technical Division of SEM is offering new a short course in thermographic component evaluation at the 2024 conference. The one day course covers a range of techniques based on the use of infra-red detectors to observe and quantify thermomechanical phenomena and relate to material and structural behaviour. The course focuses on the state of the art instrumentation and what can be achieved using advance image processing. The course is interactive, so delegates will have the opportunity to process thermal image data to gain some hands-on experience. In addition, time will be dedicated to the discussion of more generic signal processing methods applicable to all types of IR imaging and approaches for effective data visualisation and manipulation in software such as Matlab and Python. At the end of the course delegates will primed to make decision on suitable thermal NDE techniques and image processing approaches for their applications.

The course is open to anyone, and will be of interest to both researchers and practitioners alike.

### Course Instructor

**Janice Barton**

Janice M. Barton was appointed in May 2019 as a full Professor of Experimental Mechanics in the Bristol Composites Institute at the University of Bristol in the UK. Prior to this she worked at the University of Southampton for 20 years in the School of Engineering. She received her PhD from the University of Manchester in 1993 where she started her research on the topic now known as 'Thermoelastic stress analysis'. She has published around 320 papers with 120 in archival journals, edited 11 conference proceedings and produced 8 book chapters. Janice's expertise is in imaging for data rich materials characterisations and assessments of structural performance, with a focus on lightweight structural design particularly composite structures. She has won numerous grants that have allowed her to develop novel approaches in experimental mechanics, with a special focus on the development of infra-red imaging. Janice has been a member of SEM since 1994, she was awarded a fellowship of SEM in 2016 and received her silver certificate for 25 years of membership in 2019. She was chairman of the fellows committee and the Thermomechanics and Infra-red Imaging TD, as well as an Associate Editor of Experimental Mechanics. Janice has been very active in the European Experimental Mechanics community, notably chairing the British Society for Strain Measurement and serving on their National Council for 14 years, chairing and organising many conferences and technical seminars, including the 16th International Conference on Experimental Mechanics in Cambridge, attended by over 500 delegates. Janice is also active in training and mentoring early career researchers; she has supervised over 30 successful PhDs and her 5-day annual workshop on Experimental Mechanics for postgraduate students has run annually for the past 10 years and attracts around 25-30 delegates internationally.

### Tentative Schedule

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<tr>
<th>TIME (PST)</th>
<th>SESSION TITLE</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00 a.m. - 09:30 a.m.</td>
<td>Introduction</td>
<td>30min</td>
</tr>
<tr>
<td>09:30 a.m. - 10:30 a.m.</td>
<td>Physics, Theory, Cameras</td>
<td>1hr</td>
</tr>
<tr>
<td>10:30 a.m. - 11:00 a.m.</td>
<td>Coffee Break</td>
<td>30min</td>
</tr>
<tr>
<td>11:00 a.m. - 11:30 a.m.</td>
<td>Pulse Thermography</td>
<td>30min</td>
</tr>
<tr>
<td>11:30 a.m. - 12:15 p.m.</td>
<td>Pulse Phase Thermography and Other Image Processing</td>
<td>45min</td>
</tr>
<tr>
<td>12:15 p.m. - 1:00 p.m.</td>
<td>Lock-in Thermography</td>
<td>45min</td>
</tr>
<tr>
<td>1:00 p.m. - 2:00 p.m.</td>
<td>Lunch Break</td>
<td>1hr</td>
</tr>
<tr>
<td>2:00 p.m. - 3:00 p.m.</td>
<td>Thermoelastic Stress Analysis</td>
<td>1hr</td>
</tr>
<tr>
<td>3:00 p.m. - 3:30 p.m.</td>
<td>Low Cost TSA</td>
<td>30min</td>
</tr>
<tr>
<td>3:30 p.m. - 4:00 p.m.</td>
<td>Coffee Break</td>
<td>30min</td>
</tr>
<tr>
<td>4:00 p.m. - 5:00 p.m.</td>
<td>Data Fusion: DIC and TSA</td>
<td>1hr</td>
</tr>
<tr>
<td>5:00 p.m. - 5:30 p.m.</td>
<td>Wrap up and Summary</td>
<td>30min</td>
</tr>
</tbody>
</table>

### Course Fee

The regular course fee is $500 and the student fee is $250. Course fee includes lunch, course handout material, and refreshment breaks. Lodging and additional food or materials are not included.

### Cancellation Liability

If the course is cancelled for any reason, the Society for Experimental Mechanics’ liability is limited to the return of the course fees.
Abstract
Additive manufacturing (AM) of metals has potential applications in a number of areas, e.g., to address supply-chain issues, enable significant lightweighting of components, and provide a route for fabricating custom biomedical implants. However, the laser-based layer-by-layer AM processing of metal alloys results in microstructures that may contain phases, grain morphologies, or internal pores different from those seen in their conventionally processed counterparts. These microstructures dictate the resulting mechanical properties of the alloys; thus, to enable the adoption of AM for structural applications, an understanding of the links between microstructure and deformation and/or fracture is required to reliably design against failure. In this talk, I will present our work in three general areas: using in situ process monitoring to link processing signatures to defects and mechanical properties, unraveling the impact of internal defects on the multiaxial failure behavior of additively manufactured metallic materials, and the development of a framework for designing functionally graded materials in which the composition is spatially tailored to impart site-specific properties within a 3D component.

Biography
Allison Beese is a professor of Materials Science and Engineering at Penn State University. She serves as Director of Penn State’s Additive Manufacturing and Design graduate program, Associate Head for Diversity, Equity and Inclusion in Materials Science and Engineering, and co-director of Penn State’s additive manufacturing center (CIMP-3D). Her multiscale mechanics of materials research group uses experimental and computational methods to identify the links between microstructural features and deformation and failure of materials, with a focus on additively manufactured metallic materials. She received her B.S. in Mechanical Engineering from Penn State and M.S. and Ph.D. in Mechanical Engineering from MIT.
William M. Murray Lecture: Ghatu Subhash
Riding the Waves for Design of Innovative Experiments and Probing Material Behavior

Tuesday, June 4, 2024 | 11:10 a.m. - 12:10 p.m | Discovery Ballroom

Abstract
To unravel the constitutive behavior of materials under dynamic loads, a well-defined stress state is often imposed using the wave propagation phenomenon. In this talk, I will provide three examples of novel experimental techniques that have been developed in my research group using wave mechanics principles and present sample cases for the investigated material behavior. We have designed novel tensile and shear experiments to unravel the dynamic behavior of soft materials and create bubble collapse experiments to cause damage in the desired regions of a brain tissue. These experiments on soft materials have provided the very first physics-based bounds for the parameters of constitutive equations for hyperelastic materials, that were previously bounded using only empirical inequalities. This research highlighted the necessity of including all three primary modes of deformation (compression, tension, and shear) to ensure thermodynamic stability of a hyperelastic constitutive model. The experiments were shown to adhere to the classical continuum mechanics principles to provide accurate high strain rate constitutive response under desired stress state, stress equilibrium, and constant strain rate, the three necessary conditions for a valid test. An innovative design concept called "Millipede bar" (patents pending) is developed to investigate wave propagation through multiple 180° bend junctions and establish conditions for one-dimensional stress wave propagation with minimal dispersion. Based on this concept, innovative practical designs were proposed for compact test fixtures (e.g., Kolsky bar) and efficient construction tools, greatly reducing the footprint required for high-throughput and intermediate-rate dynamic tests. This research also resolved the unexplained "surprising" observation by Kolsky (1972) while studying the transmitted waves through a 90° bend junction. Finally, an on-line defect monitoring approach, employing physics-informed machine learning (PIML) and guided wave principles, is presented to extract ultrasonic spatial-spectral anisotropic and heterogeneous relationships within a material system. The proposed PIML framework extracts knowledge directly from experimental data without an underlying analytical basis and learns material characteristics from only the wave equation. Thus, the framework can adapt to many complex scenarios. An example application involving detection of manufacturing defects in highly heterogeneous SiCf/SiCm woven ceramic composite tubes for nuclear fuel cladding will be presented.

Biography
Professor Ghatu Subhash obtained his PhD from the University of California San Diego (1991) and conducted his post-doctoral research at California Institute of Technology (1992). He joined Michigan Technological University as an Assistant Professor in 1993 and moved to University of Florida (UF) in 2007. He is currently the Newton C Ebaugh Professor in Mechanical and Aerospace Engineering department. His research focuses on static and dynamic multiaxial behavior of advanced materials. His pioneering contributions in deciphering the complex deformation mechanisms in ceramics have been summarized in high impact journals such as Progress in Materials Science and in a monograph Dynamic Response of Advanced ceramics. Thus far, his research has resulted in 220 peer-reviewed journal articles, 85 conference proceedings, 2-books, and 8 book chapters. These publications have garnered more than 10,800 citations (in Google Scholar) and an h-index of 58.

Thus far, Prof. Subhash's innovative research has resulted in 7 patents on novel experimental techniques and processing methods. He has pioneered the concept of dynamic indentation hardness (2 patents) for rapid assessment of rate sensitivity of materials. His recent innovation on ‘Millipede Stress Waveguide’ has applications in design of machine tools, compact testing equipment, and efficient jack hammers (patented and licensed). For contributing to the fundamental understanding of the behavior of ceramics, he was recognized by the 2024 James I. Mueller Memorial Award and conference plenary lecture at the ICACC (Jan 2024) of the American Ceramic Society (ACerS). For his outstanding contributions to Experimental Mechanics, he received the 2021 Lazan Award from the Society for Experimental Mechanics (SEM). In addition, he also received the UF Technology Innovator Award (twice) and UF Research Foundation Professorship (twice). For development of rapid processing method for fabrication of net shaped UO2 ceramic fuel pellets he received 'Significant Contribution Award' from the American Nuclear Society.

Prof. Subhash has mentored 8 postdoctoral fellows and advised 41 PhD and 16 MS students. For his outstanding scholarship and mentorship of graduate and undergraduate students, he was awarded the University of Florida Doctoral Dissertation Advisor/
Mentoring Award (2021). He has served on the National Research Council’s National Academies of Engineering, Science and Medicine Panel, as the Chair of the SEM 75th Anniversary Program, Chair of the SEM ‘Committee of Fellows’, member of the ‘ASME Spirit of St. Louis Award’ committee, the ACerS Sosman Award committee, and the SEM Executive committee. His commitment to education was recognized by the SEM ‘Frocht Award’ for outstanding achievements as an educator, UF College of Engineering ‘Teacher/Scholar of the Year’, ASME Student Section Advisor Award, ‘SAE Ralph R. Teetor Educational Award,’ ‘ASEE Outstanding New Mechanics Educator’ award, and ‘Commendation Letters’ from the Michigan Legislature and the Governor. He has delivered 2-day specialized technical courses for practicing engineers/scientists on ‘Dynamic Response of Materials’ at General Motors, Johns Hopkins University, and ACerS. His research was showcased in a PBS documentary “Secrets of Spanish Florida” in the Series “Secrets of the Dead” (aired nationwide in Dec 2017) where he unraveled the mystery behind the impact-resistance of Coquina (the material with which the oldest fort in the USA – the Castillo de San Marcos, St. Augustine, FL, was built) against cannon ball impacts during the seize by the British army in the 1702.

Prof. Subhash is a Fellow of ASME, SEM, and ACerS, and serves as the Editor-in-Chief of ‘Mechanics of Materials’.

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<td>L. Ginsberg, Secretary</td>
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Technical Division (TD) Meetings
Tuesday, June 4, 2024 | 12:10 p.m - 1:40 p.m. | Discovery Ballroom

Participate in SEM Technical Divisions and Get the Most out of your Membership
The SEM Technical Divisions are the grass-roots building blocks of the Society for Experimental Mechanics. These divisions meet formally and informally at various Society events, address current practices and prepare action plans for communicating the activities in their technical area to the rest of the Society, and to groups outside the Society. This is very often accomplished by organization of technical sessions at SEM Conferences. Many of the SEM Technical Divisions have had a significant impact on SEM Conference Programs on a regular basis, i.e. Composite, Hybrid and Multifunctional Materials, Dynamic Behavior of Materials, MEMS and Nanotechnology at the SEM Annual Conferences and Modal Analysis/Dynamic Systems at IMAC.

Please plan to attend the Technical Committee Meetings scheduled at the 2024 SEM Annual Conference. Refer to the chart on opposite page to determine which Technical Division you may be interested in and then check the schedule for meeting time. NOTE: TDs highlighted in lighter gray met at IMAC-XLII.

12:10 p.m in Discovery Ballroom for light lunch and information. At about 12:40 p.m. - move to the rooms listed below for TD Meetings.

Additive and Advanced Manufacturing (Ash)
All SEM attendees interested in learning more about additive and advanced manufacturing of a wide variety of materials and methods are invited to join our Technical Division meeting. During this meeting we provide updates on the technical division, and begin the planning process for next year’s track. That includes identifying topics we wish to highlight in the call for abstracts, compiling a list of desired sessions, and identify keynote speaker candidates. As a relatively young technical division, we are excited to expand in the direction of new research fields (e.g. functionally graded materials, micro-scale systems, novel post processing methods, etc), so we strongly encourage students and first-time attendees to join us. SEM attendees interested in the cross-over between additive and advanced manufacturing with residual stresses, dynamics behavior of materials, and/or fracture and fatigue are also encouraged to attend.

Biological Systems & Materials (Discovery Ballroom)
All SEM attendees interested in learning more about experimental biomechanics are invited to join our technical division. We cover a broad spectrum of biomechanics and mechanobiology at all length scales (i.e., organism to cells and molecules) and time scales (e.g., quasi-static characterization to impact rates). This includes novel developments for soft matter systems generally applicable to biological systems. We meet to organize sessions, keynote talks, and panel discussions for the next SEM conference. All interested and curious persons are welcome to attend.

Composite, Hybrid & Multifunctional Materials (Cedar)
SEM attendees are invited to the annual meeting of the Composites, Hybrid, and Multifunctional Materials Technical Division. This division provides a forum for the exchange of information on composites and assists in the planning and coordination of the activities of the Society related to composites. The division welcomes volunteers to organize, promote, and chair sessions, short courses, and keynotes for next year’s SEM conference. If you want to share your ideas, or are just curious about composites, join us!

Dynamic Behavior of Materials (Pine/Spruce)
SEM attendees interested in learning more about dynamic behavior of a wide range of materials are invited to join our Technical Division meeting. During this meeting, we begin with brief introductions of all attendees followed by general updates from various SEM committees and our own Technical Division. Lastly, we start planning next year’s meeting and invite our members to organize the individual sessions in areas of dynamic response of additively manufactured materials, geomaterials, low impedance materials, standardization, shock and blast, extreme environments, quantitative visualization, and fracture and fragmentation.

Fracture & Fatigue (Heritage C)
The Fatigue and Fracture TD invites all attendees to our annual meeting during the SEM Annual Conference. Our TD members span broad interests in the general areas of plasticity, fatigue,
fracture, and damage, as applied to a wide variety of materials across temperature, time, and length scales. In this meeting, we will discuss session topics for next year’s conference and nominate keynote presenters. Volunteers to organize and/or chair sessions are always appreciated. Students and first-time attendees are welcome too!

**Inverse Methods and Machine Learning (Heritage D)**

If you are interested in learning more about inverse methods in experimental mechanics, including using full-field measurements, and machine-learning approaches applied to solid mechanics, then please join our technical division committee meeting. Our TD covers a broad spectrum of methods to identify mechanical constitutive parameters of materials, including Physics-Informed Neural Networks for materials mechanics, Bayesian inference, Material Testing 2.0 for calibration, Machine-learned material modeling, Virtual Fields Method (VFM), Finite Element Model Updating (FEMU) and Integrated Digital Image Correlation (IDIC), Inverse Methods for Plasticity and/or High Strain Rate Testing, full-field methods, data-driven modeling, and Data driven approaches. Application areas cover all areas where identification of (complex) constitutive behavior is materials is needed, for instance as input for advanced simulations and predictive modelling. We welcome volunteers to organize, promote, and chair sessions, short courses, and keynotes for next year’s SEM conference. If you’re interested in what we’re doing or want to share some ideas, then join our TD committee meeting. See you there!

**MEMS & Nanotechnology (Heritage E)**

The international symposium of MEMS and Nanotechnology eagerly organizes sessions on experimental nanotechnology, focusing on subjects such as unraveling deformation mechanisms in various materials type at the micro and nanoscale, mechanics of 1D and 2D nanomaterials, and development and application of microelectromechanical systems. The TD has served as a platform for sharing new findings on nanotechnology in the past 20 years. While the focus is on experiments, the TD welcomes theoretical and computational research that assist in interpreting experimental data. The TD welcomes volunteers to organize sessions.

**Optical Methods & Applied Photoelasticity (Heritage F)**

The Technical Division on Optical Methods seeks to advance optics, photonics, and all imaging-based methodologies and their application to challenging problems in experimental mechanics by providing a forum for the timely exchange of information.

At the technical division meetings, new methodologies and applications are discussed, including plans for organizing relevant sessions, pre-conference courses, keynote talks, and panel discussions for the annual track on “Advancement of Optical Methods in Experimental Mechanics.” As such, the optical methods division meetings welcome all attendees from multiple disciplines and backgrounds to attend, participate in, and share valuable opinions. Please see: www.sem.org/tdoptical.

**Residual Stress (Board Room)**

Residual stresses are the stresses present in a part free from external load, and they are generated by virtually any manufacturing process. Residual stresses are indistinguishable from in-service stresses in their ability to cause failures via fatigue, wear, stress-corrosion cracking, fracture, buckling and distortion. They can be particularly insidious because they are ubiquitous, offer no external evidence of their existence, and they are difficult to predict or measure. The mission of the Residual Stress Technical Division is to advance the state of knowledge in the area of experimental techniques for residual stress measurement and experimental characterization of residual stress effects on the performances of materials and engineering systems.

The RS Technical Division invites SEM attendees to attend the TD meeting to help organize sessions for future conferences. Join us for a discussion focused on identifying session topics covering both core experimental residual stress mechanics techniques and emerging research areas that may intersect with other TD subjects. We particularly encourage young society members interested in TD leadership or just participation to attend, and we will be electing new officers this year. We also encourage those with interest in organizing joint sessions with the Inverse Methods, Fracture and Fatigue, Additive Manufacturing, or Composites Technical Divisions.
Thermomechanics & Infra-red Imaging (Hemlock/Oak)
All SEM attendees eager to know more about thermography-based methods for Thermomechanical analysis, Stress Analysis, Non-Destructive evaluations and Structural Health Monitoring are invited to join the Technical Division meeting. The Technical Division also welcomes volunteers to organize or chair sessions in this track. This technical division organizes presentations that use Thermography-based methods for:
• Fatigue-fracture mechanics and damage detection and assessments
• structural integrity assessments
• an advanced data analysis on thermal parameters
• proposing new procedures for the mechanical characterisation via low cost sensors
New Thermoelastic and Thermomechanical formulations or updating are welcome.

Time Dependent Materials (Birch)
Are there aspects of time-dependence in the mechanical behavior of materials in your application of interest? The technical division on Time Dependent Materials organizes sessions, keynote talks, and activities of interest to measure and model time dependent mechanics of materials. Our sessions address problems in amorphous and crystalline polymers, metals, composites, active matter such as dynamic bonds, and mechanics in extreme environments. Sessions cover experimental, computational, and mechanistic approaches to address novel challenges in viscoelasticity, viscoplasticity, damage, and fracture. All interested are invited to attend sessions or visit https://sem.org/tdtime.
Meetings/Highlights

Closed - Nominating Meeting
Sunday, June 2, 2024 | 9:00 a.m. - 10:00 a.m. | Board Room

SEMEF Meeting
Sunday, June 2, 2024 | 10:30 a.m. - 11:30 a.m. | Board Room

Finance Committee Meeting
Sunday, June 2, 2024 | 1:00 p.m. - 2:00 p.m. | Board Room

Closed - SEM Executive Board Meeting
Sunday, June 2, 2024 | 2:00 p.m. - 6:00 p.m. | Board Room

Closed - Fellows Meeting
Sunday, June 2, 2024 | 5:00 p.m. - 6:00 p.m. | Ash

SEM Annual Business Meeting
Sunday, June 2, 2024 | 6:30 p.m. - 7:30 p.m. | Heritage C

All SEM members, annual conference attendees and guests are welcome to attend the Annual Business Meeting. Pertinent business activities will be discussed, including, but not limited to, financial standing, conference activities and future direction of the Society. A full printed Report of the Officers will be available and you will have a chance to meet the incoming Board members. Also during this meeting, 25 and 50-year SEM Members will be honored. See page 19 for a list of people who have reached these membership milestones. Please join us!

2024 SEM ANNUAL WELCOME RECEPTION

Sunday, June 2, 2024
7:30 p.m. - 9:00 p.m. | Discovery Ballroom

Everyone at 2024 SEM Annual is invited to attend the Welcome Reception. A staple at every Annual, this reception is a terrific chance to reacquaint yourself with fellow attendees, students, exhibitors, and guests, as well as meet those who are new. It is a wonderful way to begin the conference.

Michael Sutton Student Paper Competition
Monday, June 3, 2024 | Sessions 1, 8, 15 | Heritage C
Sponsored by Correlated Solutions, Inc.

The Michael Sutton International Student Paper Competition, formerly known as the SEM International Student Paper Competition, originated to encourage excellence in technical communication in the experimental mechanics field. A regional paper competition was initiated in 1984 in a joint effort by SEM’s Milwaukee Local Section and SEM’s Student Chapter of Michigan Technological University.

The first national competition was held during the 1991 SEM Annual Conference. The competition was sponsored by SEM’s Milwaukee Local Section along with the Education and Local Sections Committees of SEM. Twelve students from nine different schools participated in the competition. Beginning with the VIII International Congress in 1996, the Competition was sponsored by the SEM Education Foundation and expanded to include students from around the world. In 2009, Correlated Solutions, Inc. began sponsoring the competition.

The presentations are judged on the basis of technical content, organization of material, effectiveness of delivery, adherence to allotted presentation time and response to questions.

Awards to be presented Wednesday, June 5, 2024 at the All Society Awards Luncheon.
Meetings/Highlights (cont)

Closed - Honors Committee Meeting
Monday, June 3, 2024 | 9:00 a.m. - 10:30 a.m. | Board Room

SEM “Basics of …” Series
Monday, June 3, 2024 | 9:00 a.m. - 11:00 a.m. | Heritage D
Sponsor: Education Committee

Each “basics-of” presentation will provide a high-level overview of specific mechanics topics that appear in a wide range of conference talks at SEM. This session is intended for those who are relatively new to SEM or for those wishing to expand their technical background. These 30 minute talks focus on a single experimental or analytical technique and will quickly familiarize you with the approach. The speakers will also provide you with the information to learn more about their topic.

Education “Coffee Talk”: Let’s Talk Postdoc
Monday, June 3, 2024 | 12:30 p.m. - 1:30 p.m. | Heritage D
Organized by Kaitlynn Fitzgerald and Amy Englebrecht-Wiggans

The postdoc community is an essential component of the academic and scientific workforce. But how do you find the right postdoc position? How do you successfully prepare for your next career move while in a postdoc?

Graduate students and current postdocs are invited to this informal coffee session to hear from recent and current postdocs and discuss navigating the process of obtaining a postdoctoral position, productivity in this position, and how to be competitive on the job market.

EM Editorial & IAB Meeting
Monday, June 3, 2024 | 1:15 p.m. - 2:30 p.m. | Board Room

ET Editorial & IAB Meeting
Monday, June 3, 2024 | 2:45 p.m. - 4:00 p.m. | Board Room

JDBM Editorial & IAB Meeting
Monday, June 3, 2024 | 4:15 p.m. - 5:30 p.m. | Board Room

SEM Journals Panel
Monday, June 3, 2024 | 7:00 p.m. - 8:30 p.m. | Heritage F

Please join the Editors in Chief of the SEM’s three journals: Experimental Mechanics, Experimental Techniques and Journal of the Dynamic Behavior of Materials, for a panel discussion on publishing in the Society’s journals. The editors will each begin with an overview of their respective journals discussing the scope, criteria for acceptance, what reviewers look for as they assess papers, impact factor and acceptance rate. Following the overviews the panel will take questions from the audience on publishing in the SEM journals.

SEM Membership Committee Meeting
Tuesday, June 4, 2024 | 9:30 a.m. - 10:30 a.m. | Board Room

Technical Activities Council Meeting
Tuesday, June 4, 2024 | 2:00 p.m. - 3:30 p.m. | Board Room
All TDs are asked to send a representative to this meeting.

Editorial Council Meeting
Tuesday, June 4, 2024 | 4:00 p.m. - 5:30 p.m. | Board Room

Technology Applications
Tuesday, June 4, 2024 | 4:00 p.m. - 5:40 p.m. | Cedar

We are pleased to be able to offer “Technology Applications” at the 2024 SEM Annual Conference. Several Exhibitors will provide brief presentations highlighting their hardware and software applications and services. Come visit this extremely timely session, and then you will have the opportunity to obtain additional information from the Exhibitors during the Exposition hours.

continued on next page
Cesar Sciammarella Lecture: Digital Holographic Moiré Generalized- Nano-Fraction
Tuesday, June 4, 2024
5:45 p.m. - 6:30 p.m. | Discovery Ballroom

This article discusses Nano Fraction (NF), a system for retrieving spatial information with very high spatial and temporal resolutions. NF uses lasers with wavelengths between 400 and 700 nm to capture images of objects in the nanometer range. The NF system is an extension of earlier work by the authors in super-resolution. With NF, it is possible to visualize details that were previously only visible with transmission electron microscopy (TEM), but without the limitations of that technique. The authors demonstrate how the NF system can be applied to organic materials, such as the COVID-19 virus. For a hands-on approach of NF AI is utilized. The NF system has important implications for understanding the nanoworld.

PRESIDENT’S RECEPTION IN THE EXPOSITION
Tuesday, June 4, 2024
6:30 p.m. - 8:00 p.m. | Heritage AB

SEM President, Raman Singh, and members of the SEM Executive Board and SEM staff will welcome all conference attendees, students, exhibitors, and guests Tuesday evening at an open reception. This is intended to provide attendees the opportunity to meet with other conference attendees in a relaxed atmosphere while enjoying some refreshments and light fare.

National Meetings Council Meeting
Wednesday, June 5, 2024
10:45 a.m. - 11:45 a.m. | Board Room

Open Executive Board Meeting
Wednesday, June 5, 2024
2:30 p.m. - 3:30 p.m. | Board Room

DIC Challenge Meeting
Wednesday, June 5, 2024
12:30 p.m. - 1:30 p.m. | Heritage E
2024 Awards and Recipients

SEM Fellow: Cosme Furlong-Vazquez
William M. Murray Medal: Ghatu Subhash
Springer/Nature Publishing Young Investigator Lecture: Allison Beese
G.A. Brewer: Fabrice Pierron
J.W. Dally Young Investigator: Martha Grady
M.M. Frocht: Michael Keller
B.J. Lazan: Hongbing Lu
F.G. Tatnall: Wendy Crone
C.E. Taylor: Hugh Bruck
D.R. Harting: Matti Isakov; Oliver Rantalainen; Tuomo Saarinen; Arto Lehtovaara
M. Hetényi: Rephayah Black; Tomasz Garbowski; Christopher Bean; Anna Lena Eberle; Stephan Nickell; Damien Texier; Valery Valle; J.C. Stinville
R.E. Peterson: Daniel Casem; Emily Retzlaff

SEM Gold and Silver Certificate Members
The following SEM members have reached a Silver or Gold membership milestone. We sincerely thank them for their years of service and dedication to SEM. Seeing these certificates awarded is a wonderful way to show our appreciation to these longstanding SEM members.

50 Year Members
GOLD CERTIFICATE
Rodolfo Rasia
Hiroshi Uozato

25 Year Members
SILVER CERTIFICATE
Paul Gloeckner
Federico Sciammarella
Sigmund Stepaniak
Michael Todd

All Society Awards Luncheon
Wednesday, June 5, 2025
12:15 p.m. - 2:30 p.m. | Discovery Ballroom

Scan to visit the SEM Awards web page ➤
Track:
10th International Symposium on the Mechanics of Composite and Multifunctional Materials

Organizers:
Frank Gardea—US Army Research Laboratory
Kunal Mishra—Corning Inc
Michael Keller—The University of Tulsa

Organized by:
SEM Composite, Hybrid, and Multifunctional Materials Technical Division

This symposium is focused on advancements in the research, development, analysis, application, and manufacturing of composite, multifunctional, and hybrid materials. The scope includes experimental techniques; materials characterization; manufacturing, assembly, and repair; theoretical and numerical modeling; failure mechanisms and detection; and novel application development for these materials. A primary goal of the symposium is for participants to exchange ideas and promote collaboration to resolve fundamental and application problems. The symposium features the following sessions:

• Advances in Composites
• Multifunctional Composites I and II
• Mechanics of Fibers and Inclusions
• Sustainable Constituent Composites I and II
• Fracture and Fatigue of Composites I and II
• Additive Manufacturing of Composites

Track:
14th International Symposium on the Mechanics of Biological Systems and Materials

Organizers:
Karen Kasza, Chair—Columbia University
Jonathan Estrada, Vice Chair—University of Michigan
Alexander McGhee, Secretary—University of Arizona

Organized by:
SEM Biological Systems and Materials Technical Division

This symposium is aimed at providing a forum to foster the exchange of ideas and information among scientists and engineers involved in the research and analysis of how mechanical forces interact with the structure, properties, and function of living organisms and their tissues. The scope includes experimental, imaging, computational and mathematical techniques and tools spanning various length and time scales. This symposium, now in its 14th year at the Annual Meeting of the Society for Experimental Mechanics, provides a venue where state-of-the-art experimental methods can be leveraged in the study of biomechanics and mechanobiology. A major goal of the symposium is for participants to collaborate in forming fundamental questions and developing new techniques to address bio-inspired problems in society, human health, and the natural world.

The symposium is composed of 7 sessions with 26 papers and 1 keynote that address cutting-edge research in sessions on Mechanical Behavior of Multicellular Tissues, Cellular Force Generation and Mechanobiology, Mechanical Behavior in Biological Function and Disease, Mechanics of the Brain and Traumatic Brain Injury, and Experimental Techniques for Biological Materials. The organizers thank all the speakers and staff at SEM for enabling a successful program.
### Track:
**25th International Symposium on Micro- and Nanomechanics**

**Organizers:**
Mohammad Naraghi—Texas A & M University  
Chenglin Wu—Missouri S&T

**Organized by:**
SEM MEMS & Nanotechnology Technical Division

The International Symposium on MEMS and Nanomechanics (IS-MAN) celebrates over 20 years of landmark contributions to the field of nano-scale experimental mechanics! The symposium covers a wide range of fundamental and applied research with state-of-the-art developments in experimental methods, deformation mechanisms, 1D, 2D materials, MEMS, and more. Key developments in nanomechanics begin here, as we seek new ways to probe and understand materials and structures at the nanoscale.

**Keynotes:**

- **Title:** *Fracture at the Two-Dimensional Limit*  
  Jun Lou—Rice University  
  Monday, June 3, 2024 | 9:00 a.m.

- **Title:** *Mechanical Behavior of Nano-lattices Made from Metallic Nanoclusters*  
  Wendy Gu—Stanford University  
  Monday, June 3, 2024 | 4:10 p.m.

### Track:
**Additive and Advanced Manufacturing**

**Organizers:**
Emily Retzlaff—United States Naval Academy  
Piyush Thakre—Dow Chemical  
Nha Uyen Huynh—Sandia National Laboratories

**Organized by:**
SEM Additive and Advanced Manufacturing Technical Division

Additive and Advanced Manufacturing is an emerging area due to the unprecedented design and manufacturing possibilities offered by new and evolving advanced manufacturing processes and the rich mechanics issues that emerge. Technical interest within the Society spans several other SEM Technical Divisions, including Dynamics Behavior of Materials, Fracture and Fatigue, and Residual Stresses.

The track on the mechanics of additive and advanced manufacturing will cover topics including design, optimization, experiments, computations, and materials for advanced manufacturing processes with particular focus on mechanics aspects (e.g. mechanical properties, residual stress, deformation, failure, rate-dependent mechanical behavior, etc.).

The ten sessions in this track span all four days, including co-sponsored sessions with other technical divisions:

- 19. Residual Stresses in Additive and Advanced Manufacturing  
  (w/ Residual Stresses TD)
- 36. Fracture of Additively Manufactured Materials I  
  (w/ Fracture and Fatigue TD)
- 43. Fracture of Additively Manufactured Materials II  
  (w/ Fracture and Fatigue TD)
- 59. Novel Testing Methods
- 65. Dynamics Behavior of AM Materials  
  (w/ Dynamics Behavior of Materials TD)
- 72. Novel Structures and Design
- 74. Dynamic Behavior of AM Materials  
  (w/ Dynamics Behavior of Materials TD)
- 86. Metals
- 93. Novel Methods
Track: Advancement of Optical Methods in Experimental Mechanics

Organizers:
Chi-Hung Wang—TIRI, NARLabs
Gordon Shaw—U.S. National Institute of Standards and Technology (NIST)
Motoharu Fujigaki—University of Fukui
Cosme Furlong—Worcester Polytechnic Institute
Ming-Tzer Lin—National Chung Hsing University

Organized by:
SEM Optical Methods Technical Division

Continuous advancements in miniaturization technologies are leading to new imaging instrumentation and photonic devices, together with significant progressions in computation power and related developments in data processing and mining algorithms; all these technological advancements enlarge the possibility of adopting optical methodologies in Experimental Mechanics to overcome new measurement challenges and a wide range of applications.

Optical methodologies have been developed and applied for metrology and characterization of materials, components, and systems in multiple disciplines and across various spatial and temporal domains, including applying wavelengths from X-ray to visible and infrared and even acoustic and particle imaging methods. Methodologies have been developed and continue to be developed for 2D, 3D, and 4D applications requiring surface, sub-surface, and volumetric metrology. Further, accompanying data processing and mining algorithms are being expanded to extract critical parameters from data-rich information provided by optical methodologies.

This track aims to provide a forum that encourages the exchange of ideas and promotes cross-fertilization of multiple disciplines for novel applications of optical methods and multidimensional data to analyze complex phenomena.

This track is organized in sessions covering relevant methods, ranging from coherent to incoherent, including interferometric, computer vision, DIC, and DVC at different spatial and temporal scales. The track also includes sessions on data analysis and processing methods, as well as on developing and using optical methods for challenging applications.

The annual 2024 track, aside from regular sessions, Advancement of Optical Methods in Experimental Mechanics, successfully hosts essential special events—Session to Celebrate Prof. Wei-Chung’s Retirement and privilege co-hosts the Special Track to celebrate Cesar Sciammarella’s 100th Birthday. The track is honored to invite Prof. Wei-Chung Wang, National Tsing Hua University, as the Keynote speaker.

The Optical Methods Technical Division thanks all the authors, speakers, chairs, participants, volunteers, sponsors, and the SEM organization for all their efforts, support, and enthusiasm.

Track: Symposium to Celebrate Cesar Sciammarella’s 100th Anniversary

Organizers:
Horacio D.Espinosa—Northwestern University
Michael Sutton—South Carolina University
Luciano Lamberti—Politecnico di Bari, Italy
Cosme Furlong—Worcester Polytechnic Institute
Gordon Shaw—U.S. National Institute of Standards and Technology (NIST)

Organized by:
SEM Optical Methods Technical Division

We are pleased to extend an invitation to the SEM community to participate in a Symposium honoring Professor Cesar A. Sciammarella on the occasion of his 100th anniversary. Professor Sciammarella, born on August 22, 1924, in Argentina, has made
significant and enduring contributions across various topics in the field of experimental mechanics. He has been a pioneer in developing Moiré, holography, and speckle interferometry, with applications ranging from composite materials and metal alloys to metrology of printed structures using additive manufacturing, extraction of fracture crack tip fields, and automation of fringe analysis using wavelet techniques, among others. One unique aspect of his work is the establishment of experimental methods and computer analysis algorithms that cover a wide range of scales, from meters to nanometers.

Since 2005, Professor Sciammarella has been actively involved in developing optical technology to surpass the Rayleigh limit. His recent work includes precise measurements in the far field of nanocrystals and nano-spheres, achieving accuracies on the order of ±3.3 nm. Currently, he is focusing on developing super-resolution optical imaging approaches to analyze the structure of viruses, such as Covid-19, and detect imperfections in diamond wafers used in the semiconductor industry.

The Symposium in honor of Prof. Sciammarella will be structured as a gathering of the broader Society for Experimental Mechanics, covering a wide array of topics related to experiments in mechanics across all scales. We encourage you to attend presentations addressing various engineering problems of theoretical and practical importance.

As part of this Symposium, Professor Cesar Sciammarella will deliver a society-wide lecture entitled “Digital Holographic Moiré Generalized-Nano-Fraction” on Tuesday 6/4/2024 at 5:45 p.m. in the Discovery Ballroom. The symposium will also consist of a series of Keynote speakers, Horacio Espinosa, Motoharu Fujigaki, Cosme Furlong, K.S. Kim, Mike Sutton.

The Optical Methods Technical Division thanks all the authors, speakers, chairs, participants, volunteers, sponsors, and the SEM organization for all the efforts, support, and enthusiasm.
Track: Dynamic Behavior of Materials

Organizers:
Veronica Eliasson—Colorado School of Mines
Paul Allison—Baylor University
Phillip Jannotti—Army Research Laboratory

Organized by:
SEM Dynamic Behavior of Materials Technical Division

Welcome to the 2024 SEM Annual Conference. The Dynamic Behavior of Materials track was initiated in 2005 and reflects our efforts to bring together scientists and students interested in the dynamic behavior of materials and structures, to provide a forum to facilitate technical interaction and exchange, and to disseminate leading edge research in dynamic material behavior to the wider experimental mechanics community. We strive to expand our collaborations with other SEM tracks and topics, and to improve diversity and inclusivity in our scientific community because science moves fastest when diverse viewpoints can be brought to bear to solve tough problems.

For this year’s conference we have submissions from leading scientists and students located at Universities, National Laboratories and Companies from around the world. These contributions have been organized into the following topics/sessions:

- Dynamic Behavior of Geomaterials
- Dynamic Behavior of Low Impedance Materials
- Dynamic Material Testing
- Dynamic Fracture and Fragmentation
- Quantitative Visualization of Dynamic Events
- Novel Experimental Techniques
- Shock and Blast
- Standardization of Dynamic Testing

The contributed papers span numerous technical divisions within SEM, demonstrating its relevance not only in the dynamic behavior of materials community, but also in the mechanics of materials community as a whole. The track organizers thank the authors, presenters, organizers and session chairs for their participation, support, and contribution to this track. The SEM support staff is also acknowledged for their devoted efforts in accommodating the large number of paper submissions this year, making the 2024 Dynamic Behavior of Materials Track successful. The track will commence on Monday morning and continue with a full program through Thursday afternoon. Enjoy the conference!

Track: Fracture and Fatigue

Organizers:
Ryan Berke—Utah State University
Jay Carroll—Sandia National Lab
Kaitlynn Fitzgerald—Sandia National Lab
Leah Ginsberg—Engineering Systems Inc.
Scott Grutzik—Sandia National Lab
Joe Indeck—Boeing
John Kolinski—EPFL
Will LePage—University of Tulsa
Kimberley MacDonald—Sandia National Lab
Phillip Noell—Sandia National Lab
Garrett Pataky—Clemson University
Michael Schuster—GE

Organized by:
SEM Fracture & Fatigue Technical Division

Fatigue, fracture, and plasticity are some of the most critical considerations in engineering design. Understanding and characterizing these material behaviors has remained as one of the primary focus areas of experimental mechanics for several decades. Advances in experimental techniques, such as digital image correlation, acoustic emissions, and electron microscopy, have allowed for deeper study of phenomena related to fatigue and fracture. The collection of experimental mechanics research included here represents another step toward solving the long-term challenges associated with fatigue and fracture.
Track: Fracture and Fatigue (cont)

These sessions provide a forum to discuss advancements in research, development, and analysis relating to fracture and fatigue. Many of the talks center around full-field characterization techniques spanning a variety of length and time scales and engineering applications. A primary goal of the sessions is for participants to collaborate in the development of fundamental understanding and of experimental techniques relating to fracture and fatigue.

This year’s topics are:
- In-situ Techniques and Microscale Effects on Mechanical Behaviors
- Fracture and Fatigue in Brittle Materials
- Interface in Composites
- Fracture of Additively Manufactured Materials
- Fracture and Damage of Highly Deformable Solids
- Mechanics of Electrochemical and Electromechanical Materials
- 3D Characterization of Deformation, Damage, and Failure
- Optical Techniques and Fracture
- Thermal and Environmental Effects in Fracture and Fatigue
- Vibrations and Cyclic Fatigue

Track: Inverse Methods and Machine Learning

Organizers:
Johan Hoefnagels—Inverse Problem Methodologies TD
Sharlotte Kramer—Additive and Advanced Materials TD
Christian Franck—Biological Systems and Materials TD
Marco Rossi—Inverse Problem Methodologies TD

Organized by:
SEM Inverse Methods & Machine Learning Technical Division

With the boom in computational power and the advances in numerical techniques, more and more complex engineering simulations can be approached. In order to match this increased complexity, more advanced material models need to be developed, which involve more parameters that are also harder to identify. As a consequence, the identification effort increases significantly and alternative routes like inverse identification methods and/or machine-learning approaches applied to non-standard heterogeneous tests combined with full-field measurements become more and more relevant. In addition, Machine Learning is a rapidly emerging area in experimental mechanics and identification owing to its powerful applications in material data collection/ preprocessing (e.g., image processing), analysis (i.e., material behavior prediction), and post-processing (e.g., uncertainty quantification). The Inverse Methodologies and Machine Learning track covers research on experimental and/or computational demonstration of novel methods and new applications of existing approaches applied to complex solid mechanics problems. Topics of particular interest include:

- Machine-learned material modeling
- Inverse methods such as Finite Element Model Updating (FEMU) and Integrated Digital Image Correlation (IDIC)
- Bayesian inference
- Design of non-standard heterogeneous tests
- The Virtual Fields Method (VFM)
- Physics-Informed Neural Networks for materials mechanics
- Material Testing 2.0 for calibration
- Model identification for Plasticity and/or High Strain Rate Testing
- Machine learning and data science for very large or very small mechanics data sets
- Advancement of full-field measurement
- Data driven approaches

Keynote 1:
Prof. Samantha Daly—University of California, Santa Barbara, USA
Title: “Trustworthy Machine Learning for High Throughput Characterization: Acoustic Emissions as a Use Case” (#17354)
Date/time: Wednesday, June 5, 2024 | 9:00 a.m.

continued on next page
Track:
Inverse Methods and Machine Learning (cont)

Abstract: As the volume of data generated from experiments has grown rapidly, many of the scientific investigations facing the mechanics community have become rooted in the challenge of finding structure in enormous volumes of multi-modal data that contain complex and stochastic interactions. However, much of the machine learning (ML) adopted by the mechanics community was initially developed for applications outside of science and engineering, which entail black box approaches that do not enforce physics, and therefore have the potential to produce results of questionable physical validity. This talk will discuss the need for ‘SciML’ to have solid grounding in physical principles and be explainable, with three fundamental requirements: (i) clear objectives, (ii) quantifiable evaluation, and (iii) well-defined extensibility, which will be discussed in the context of the ML analysis of acoustic emission spectra obtained during composite testing under uniaxial tension.

Keynote 2:
Prof. Marco Sasso—Università Politecnica delle Marche, Italy
Title: “Inverse FE Analysis of Combined Tension-Torsion Tests Performed with a 90m Hopkinson Bar” (#17341)
Date/time: Tuesday, June 4, 2024 | 9:00 a.m.

Abstract: In this work, the results coming from the recently developed Split Hopkinson Tension-Torsion Bar have been post-processed according to Finite Element Model Updating approach. The aim is to assess the elasto-plastic constitutive behavior of the material subjected to a multi-axial state of stress in the framework of large deformations. The experimental test consists in the application of a simultaneous tensile and torsional load to a hollow cylindrical-shaped sample; pure tension and pure torsion tests have been conducted as well. Both displacement (elongation and twist angle) and load (axial force and torque) values are measured. In the tests with the Split Hopkinson Tension-Torsion Bar, an average strain rate of 100/s was reached. In addition, analogous tests with similar load-torque ratios were performed with a quasi-static multiaxial machine. The experimental test was replicated in an Abaqus\Explicit FEM model, where the constitutive parameters are iteratively varied until an adequate match was obtained with the experimental observations in terms of force-displacement law. In particular, a power law was used for the strain hardening description, combined with the classical von Mises yield criterion. The material of the sample was AA7075T6, whose Johnson-Cook strain rate sensitivity parameters were borrowed from the literature. A reasonably good matching was achieved between the numerical and experimental load-displacement and torque-rotation, meaning that the classical von Mises plasticity describes quite well the plastic behaviour of the material; the model was also able to capture the effect of the non-proportional loading path applied in the combined tension-torsion test.
Organizers:
Rosa De Finis—University of Salento, Lecce-Italy
Geir Olafsson—University of Bristol, Bristol, United Kingdom
Suhasini Gururaja—Auburn University, Auburn, Alabama, USA

Currently more attention is being focused on ‘thermomechanics’ where strong thermomechanical couplings that result in nonlinear behavior such as viscoelasticity, diffusivity and material phase changes are being studied, along with the more traditional areas of stress analysis, damage evaluation, NDE and failure assessments.

In recent years, the group’s activity has also been focused on structural health monitoring for verifying the structural integrity of material and components and on streamlining setups through the use of smaller/more compact and cheaper sensors.

For 2024, we have different attractive sessions: on Monday the ‘Thermomechanics’, ‘Advanced thermographic techniques for structural health monitoring (SHM) and ‘Thermography-based nondestructive evaluation (NDE), process monitoring, Data Fusion’ as well, where emerging researchers and pioneers will show recent advances on the topics. The latter is important especially for those interested in product qualification. On Tuesday we have ‘Industrial applications of thermography/applied thermography: Case studies’ Session that will provide insights on the application of thermography within the Industry to emphasise the highly applicative character of the techniques and methods in use.

The TII-TD sponsors thermomechanics-based topics in the general mechanics track at each SEM annual conference. In some years, larger symposia are organized and a dense network of relationships has been created to consolidate and create new collaborations among researchers from all over the world.
## TECHNICAL PROGRAM  
**MONDAY (MORNING) | JUNE 3, 2024**

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<tr>
<td><strong>9:00-10:30 a.m.</strong></td>
<td>Closed - Honors Committee Meeting—Board Room</td>
<td>Basics of Microscopy: SEM, TEM, AFM, EDS, EBSD #17596</td>
<td>Keynote: Fracture at the Two-Dimensional Limit #17693</td>
</tr>
<tr>
<td><strong>9:00 a.m.</strong></td>
<td>Optimally Graded Cellular Materials to Mitigate Impact Loading #18040</td>
<td>Basics of: Experimental Biomechanics #17696</td>
<td>Keynote: Fracture at the Two-Dimensional Limit #17693</td>
</tr>
<tr>
<td><strong>9:20 a.m.</strong></td>
<td>Projectile Impact Behavior of Drop-Stitch Inflatable Structures #18037</td>
<td>Basics of Fatigue, Fracture, and Forensics #17724</td>
<td>Statistics of the Mechanical Failure of 2D Materials #17720</td>
</tr>
<tr>
<td><strong>9:40 a.m.</strong></td>
<td>Hybrid Approach for Understanding the Thermoelastic Response of CFRP Multidirectional Laminates #18026</td>
<td>Basics of Fatigue, Fracture, and Forensics #17724</td>
<td>Statistics of the Mechanical Failure of 2D Materials #17720</td>
</tr>
<tr>
<td><strong>10:00 a.m.</strong></td>
<td>Multifunctional Carbon/Epoxy Composites with Power Transmission Capabilities #18053</td>
<td>Basics of Fatigue, Fracture, and Forensics #17724</td>
<td>Statistics of the Mechanical Failure of 2D Materials #17720</td>
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<tr>
<td><strong>10:20 a.m.</strong></td>
<td>Non-Invasive Sensing of Internal Abnormalities in Sealed SWF Canisters #17366</td>
<td>Basics of Fatigue, Fracture, and Forensics #17724</td>
<td>Statistics of the Mechanical Failure of 2D Materials #17720</td>
</tr>
<tr>
<td><strong>10:40 a.m.</strong></td>
<td>Engineering Bacterial Polymers for Biomanufacturing: Characterization of a Novel Polysaccharide #18000</td>
<td>Basics of Fatigue, Fracture, and Forensics #17724</td>
<td>Statistics of the Mechanical Failure of 2D Materials #17720</td>
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### Coffee Break—Heritage Pre-function

**Springer/Nature Young Investigator Lecture:**

**Allison Beese—Pennsylvania State University**

—Discovery Ballroom

### Lunch—On Own

**Education “Coffee Talk”: Let’s Talk Postdoc**—Heritage D
Closed - Honors Committee Meeting — Board Room

Thermoelastic Stress Analysis and Heat Source Reconstruction to Measure Stresses and Mechanical Dissipation during Fatigue Testing #17242 | Antoine Jury—Clemson University; Xavier Balandraud—Clemson University; Rachael C. Teghe—University of Wisconsin

Quantifying Residual Stresses in MSQIL Bearing Rings #17670 | Dauton Bao—Air Force Research Lab; Matthew A. Sisler—Air Force Research Lab; Adrian DelVedova—Hill Engineering, LLC; Teresa Wang—Hill Engineering, LLC

Keynote: Non-Destructive Prediction of Wood Mechanical Properties Using Optical and Finite Element Methods #17553 | Wei-Chung Wang—National Tsing Hua University; Yen-Hsuan Huang—National Tsing Hua University

Strength of Nanocrystalline Copper under High Pressures and Ultrastrain Strain Rates #17763 | Rzudkożek S. Kabado—University of Minnesota; Suraj Ravindran—University of Minnesota

Thermomechanical Deformation of 410 Stainless Steel over a Wide Range of Loading Conditions #17494 | Chong-Wei Ho—The Ohio State University; Jeremy D. Seidt—The Ohio State University; Ame Bilge—The Ohio State University

Sliding Method Compliance Generation Using Fracture Mechanics Influence Functions #17851 | Nicholas R. Buech—University of California, Davis; Michael R. Hill—University of California, Davis

Multimode Shock Loading of Polyurea Elastomers #17744 | George Younes—San Diego State University; Aniltech Kumar—San Diego State University

Thermomechanical Dynamic Compression and Microstructural Evolution of Titanium Alloys #17537 | Emily Pittman—Colorado School of Mines; Amy Clarke—Colorado School of Mines; Leslie Lambers—Colorado School of Mines

Near Edge Residual Stress Measurement using Incremental Hole Drilling #17977 | Mitchel Olson—Hill Engineering; Adrian DelVedova—Hill Engineering; Brett Watanabe—Hill Engineering

Whole Field Null Compensation Techniques for Simultaneous Isochromatic and Isoclinic Detection in Photoelasticity #17301 | Min-Jui Ho—National Tsing Hua University; Wei-Chung Wang—National Tsing Hua University; Oh-Hao Chang—National Tsing Hua University

Modification of Jet Velocities in an Explosively Loaded Copper Disk with a Conical Defect #17476 | Finnegan Wilson—Colorado School of Mines; Grace I. Robnovitz—Colorado School of Mines; Max J. Sevick—Colorado School of Mines; Gabriel Bjere—Colorado School of Mines; Kadyn J. Tucker—Colorado School of Mines; Dylan J. Kline—LLNL; Michael P. Hennessey—LLNL; Kyle M. Sullivan—LLNL; Jonathan L. Belof—LLNL; Veronica Elasoch—Colorado School of Mines

Comparison of Fatigue Indicators Obtained by Self-Heating Measurement During Cyclic Tests #17582 | Marianne Daniels—Polytechnic University of Civil Engineering; Rosa De Finis—University of Salento; Davide Palumbo—Polytechnic University of Bari; Antoine Jury—University of Cassino and Southern Lazio

Validation of Hole-Drilling Residual Stress Measurements in Workpieces of Various Thickness #18076 | Matthew C. Lakey—Los Alamos National Laboratory; Michael R. Hill—UC Davis

Analysis of Correlation between Destructive and Non-destructive Measurement Results of Ultra-thin Glass Plate Edges #17551 | Pei-Chi Chang—National Cheng Kung University; Zev Lovinger—Technion – Israel Institute of Technology; Finnegan Wilson—Colorado School of Mines; Michael R. Hill—University of California, Davis

Exploring Shear Localization Under Pore Collapse in Experiments and Simulations #17332 | Izar Loubign—Technion—Israel Institute of Technology; Roman Kostki—Rafael—Advanced Defense Systems

The Effect of the Free Surface on Penetration Depth Limited X-ray Stress Measurements #18006 | Thomas Grapard-Herald—NIST Center for Neutron Research

Multiple Wavelengths Photoelastic Constant Determination of Glass by Tardy Method and a Hyperspectral Camera #17741 | Terry YF Chen—National Cheng Kung University; Tsai-Hang Chang—National Cheng Kung University; Ming-Tzer Lin—National Cheng Kung University

Temperature Effect on Ductile Damage of AA2024-T351 at High Strain Rates and Pressures using Rod-on-Rod Test #17597 | Sangwook Jeon—University of Cassino and Southern Lazio; Nicola Bonora—University of Cassino and Southern Lazio; Antonio Mattiuzzi—University of Cassino and Southern Lazio; Alberto Paparo—University of Cassino and Southern Lazio; Andrew Ruggiero—University of Cassino and Southern Lazio; Gabriel Testa—University of Cassino and Southern Lazio; Sara Ricci—University of Cassino and Southern Lazio

Modal Verification and Strength Analysis of Ground-mounted Solar panels Structures #18124 | Zheng-Yi Liu—National Pingtung University of Science and Technology; Chang-Heng Fu—National Pingtung University of Science and Technology; Chang-Sheng Lin—National Kaohsiung University of Science and Technology

Energy Absorption Properties of Open-Cell Rhombic Dodecahedron Cellular Lattice Structures under Shock Compression #18024 | Cyril L. Williams—DECOM US Army Research Laboratory

Coffee Break—Heritage Pre-function

Springer/Nature Young Investigator Lecture: Allison Beese—Pennsylvania State University —Discovery Ballroom

Lunch—On Own

Education “Coffee Talk”: Let’s Talk Postdoc—Heritage D
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<th>Track Location</th>
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<tr>
<td>1:15-2:30 p.m.</td>
<td><strong>EM Editorial &amp; IAB Meeting—Board Room</strong></td>
<td>Heritage AB</td>
<td>Jonathan Rogers—Sandia National Laboratories (Retired); Sarah Fischer—Fraunhofer Institute for Non-Destructive Testing LFPP; Mohammad Naraghi—Texas A&amp;M University; Rodrigo Bernal—University of Texas at Dallas</td>
</tr>
<tr>
<td>1:30 p.m.</td>
<td><strong>Thermomechanics of Magnesium AZ31B at Elevated Temperatures and Strain Rates #18027</strong></td>
<td>Heritage C</td>
<td>Anthony Lew—University of Utah; Pyeash R. Thakre—DOW; Fatigue-Induced Surface Modification and Microstructural Analysis of Zr-Co-Based Metallic Thin Films using Bulge Testing #17561; Rui Anh Khanh Nguyen—National Chung Hsing University; Khat Minh Dang—National Chung Hsing University; Ching-Tse Chuang—National Chung Hsing University; Ting-Fang Zhang—National Chung Hsing University; Ming-Zer Lin—National Chung Hsing University</td>
</tr>
<tr>
<td>1:50 p.m.</td>
<td><strong>In Situ Characterization of Plastic Flow in Metals at 10^5s / Strain Rates Using High-Speed Microphotography and Image Correlation #18023</strong></td>
<td>Heritage D</td>
<td>Odai Nassar—Texas A&amp;M University; Effect of Intentionally Seeded Defects on the Fatigue Crack Initiation and Fatigue Life in L-DDE Inconel 625 #17658; Joseph Inadock—Boeing Research &amp; Technology; Baily Thomas—Boeing Research &amp; Technology; Hankoo R. Han—Boeing Research &amp; Technology; Zachary Theimer—Boeing Research &amp; Technology; Jessica Johnson—Boeing Research &amp; Technology; Matt Callaway—Boeing Research &amp; Technology; Lawrence Pado—Boeing Additive Manufacturing; Taisa Lou—Boeing Additive Manufacturing; Dan Drenmeyer—Boeing Research &amp; Technology; High Cycle Lifetime in Microswitches Using Hot Switching at Ultra-Low Voltages #17348; Deepak Kumar—Carnegie Mellon University; Vaishali P. de Boer—Carnegie Mellon University</td>
</tr>
<tr>
<td>2:10 p.m.</td>
<td><strong>Investigation of the Non-Adiabatic Thermoelectric Effect in Face-Sheet/Core Debonded Composite Sandwich Structures #18025</strong></td>
<td>Heritage E</td>
<td>Nicholas Bachus—Auburn University; Gururaja—Auburn University; Nicholas Hamilton—National Instrument Laboratory; Phillip Reu—Phillip Rec Laboratory; Thomas A. Ivanoff—Sandia National Laboratories; Ernest Miramontes-Carrera—Sandia National Laboratories; Mark Foster—Sandia National Laboratories; Nha Uyen T. Huynh—Sandia National Laboratories; Brian M. Fuchs—Sandia National Laboratories; Elizabeth MC—Auburn University; A Cost-effective Tensile Tester for the Electro-thermo-mechanical Characterization of Microscale Ti-6Al-4V Wires #17874; Miryhone Choi—Arizona State University; Maxwell Kadak—Arizona State University; Chungehwan Kim—Arizona State University; Eric Payton—University of Cincinnati; Christopher Rudolf—Naval Research Laboratory; Wonho Kang—Arizona State University</td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td><strong>Line Scanning Thermography for Corrosion Detection: Towards the Autonomous Quantification of Defects #18022</strong></td>
<td>Heritage AB</td>
<td>Liora F. Krip—University of Waikato; Controlled Long Duration 100 G Horizontal Testing Module for High Intensity Visible Spectrum LED Lighting integrated on a REL High Strain Rate Testing System #17807; Josh E. Loukus—REL, Inc.; From Small Scale Fracture Tests to Open Metrology #17836; Cristos E. Athanassou—Georgia Tech</td>
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<tr>
<td>2:45-4:00 p.m.</td>
<td><strong>ET Editorial &amp; IAB Meeting—Board Room</strong></td>
<td>Heritage AB</td>
<td>Nanomechanics of Shock-resistant Materials #17746; Amrittech Kumar—San Diego State University; George Yousef—San Diego State University</td>
</tr>
<tr>
<td>2:50 p.m.</td>
<td><strong>Ultraviolet Digital Image Correlation (UV-DIC) for Extreme Temperature and High Magnification Applications #18058</strong></td>
<td>Heritage AB</td>
<td>Prasenjit Devarjey—Utah State University; Nanomechanics of Shock-resistant Materials #17746; Amrittech Kumar—San Diego State University; George Yousef—San Diego State University</td>
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<tr>
<td>3:10-4:10 p.m.</td>
<td><strong>Coffee Break in the Exhibit Hall—Heritage AB</strong></td>
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<td><strong>ET Editorial &amp; IAB Meeting</strong> — Board Room</td>
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<td><strong>Full detailed event schedule available on the Whowa app.</strong></td>
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**Advanced Thermographic Techniques for Structural Health Monitoring (SHM)**

- Sahasini Gururaja — Auburn University
- Daiki Shiozawa — Kobe University
- Ritin Mathews — Oak Ridge National Laboratory
- Nicholas Bachus — University of California Davis
- Phillip Reu — Sandia National Laboratories
- Satoru Yoneyama — Aoyama Gakuin University
- Finnegan Wilson — Colorado School of Mines
- Helio Matos — University of Rhode Island

**Diffraction-Based Residual Stress Measurements**

  - Jun-Sang Park — Argonne National Laboratory
- Advanced Techniques to Enable the Automation of Digital Image Correlation and Analysis in Mechanial Testing #17660
  - Nathan M. Heckman — Sandia National Laboratories
  - Brian M. Fuchs — Sandia National Laboratories
  - Aisha Lyen — Sandia National Laboratories
  - Mark Foster — Sandia National Laboratories
  - Ernest Minamoto — Carnegie — Sandia National Laboratories
  - Amanda R. Jones — Sandia National Laboratories
  - Thomas A. Ivanoff — Sandia National Laboratories
  - Christopher M. Lausen — Sandia National Laboratories
  - Shuartte Le Kramer — Sandia National Laboratories

**Dynamic Testing with Thermographic Phosphor Digital Image Correlation #17595**

- Elizabeth MC Jones — Sandia National Laboratories
- Colin Loeffler — Sandia National Laboratories
- Caroline A. Winters — Sandia National Laboratories

**High-throughput Characterization of Dynamic Tensile Failure in Pure Niobium and Niobium-titanium Alloy #17904**

- Ayesha Zare — Washington State University
- Jacob Diamond — Johns Hopkins University
- KT Namkoong — Johns Hopkins University

**Advanced Applications/Challenges in Industry 25th International Symposium on Heritage C**

**Heritage D**

- Sarah Fischer — Heritage AB

**Heritage E**

- Anthony Lew — Thermomechanics of Magnesium AZ31B at Elevated Temperatures #17859
  - Larissa F. Kopf — University of Waikato

**Applied Research in Experimental Mechanics**

**Experimental Methods**

- A Novel Approach to the Crack Density Assessment via Thermographic Signal Analysis #17486
  - Pasca De Fos — University of Salento
  - Davide Palumbo — Politecnico di Bari
  - Umberto Galeotti — Politecnico di Bari

**Face-Sheet/Gear Debonds in Composite Sandwich Structures — Fusion of Full-Field Imaging Data and FE Simulations #17387**

- Emily Hill — University of Bristol
- Ricardo Cappello — University of Bristol
- Juner M. Dula — University of Bristol
- Ole T. Thomsen — University of Bristol

**Multi-scale Microstructure Characterization for Engineering Materials using High-Energy X-Ray Diffraction #17681**

- Jeffrey R. Burri — Oak Ridge National Laboratory
- Ainsley Nash — Oak Ridge National Laboratory
- Justin March — Oak Ridge National Laboratory

**Mapping Full Stress Tensors in Advanced Manufactured Components using Neutron Diffraction #17681**

- Aaron Jacques — Oak Ridge National Laboratory

**Advanced Techniques to Enable the Automation of Digital Image Correlation and Analysis in Mechanical Testing #17660**

- Nathan M. Heckman — Sandia National Laboratories
- Brian M. Fuchs — Sandia National Laboratories
- Aisha Lyen — Sandia National Laboratories
- Mark Foster — Sandia National Laboratories
- Ernest Minamoto — Carnegie — Sandia National Laboratories
- Amanda R. Jones — Sandia National Laboratories
- Thomas A. Ivanoff — Sandia National Laboratories
- Christopher M. Lausen — Sandia National Laboratories
- Shuartte Le Kramer — Sandia National Laboratories

**Phase Change Kinetics and Multiphase Strength Effects on HMX Explosives on the Beta-Gamma Boundary #17679**

- Michael B. Prime — Los Alamos National Laboratory
- David R. Jones — Los Alamos National Laboratory
- Sanya J. Fenton — Los Alamos National Laboratory

**Effect of Bondline Defects on Cyclic Stiffness Degradation in Adhesively-bonded Composite Joints via Infrared Thermography #17871**

- Nithinkumar Manoharan — Auburn University
- Sahasini Gururaja — Auburn University

**Measuring Near Surface Residual Strain with Synchrotron X-ray Diffraction #17721**

- Christoph J. Budhew — Budhew Consulting LLC
- Kelly E. Nygren — Cornell University
- Peter Ko — Cornell
- Paul A. Shade — Air Force Research Ladt
- Dwokar Naragari — University of Dayton

**Photogrammetry Measurements of Blade Deflections and Pitches on an Operating 150 Meter Diameter Wind Turbine #17896**

- Tim Schmidt — Trilron Quality Systems
- Jose Samaniego — Trilron Quality Systems
- Nicholas Hamilton — National Renewable Energy Laboratory

**Spall Strength and Dynamic Fracture Toughness of Pre-twinned AZ31B #17922**

- Bodie Zierman — University of Minnesota
- Twin Cities
- Daniel Magagnosc — DEVCOM Army Research Laboratory
- Jeffrey Llyod — DEVCOM Army Research Laboratory
- Tim Ziernman — University of Minnesota

**Uncertainty Quantification in Crystal Plasticity Simulations via Multimodal High-energy Synchrotron X-ray Experiments #17839**

- Dwokar Naragari — University of Dayton
- Paul Shade — ARL
- Armand Beaudoin — Cornell University
- Donald Boyle — Cornell University

**Using Digital Image Correlation Method for the Straightness Measurement of Component #17827**

- Cheng-Tue Chuang — National Chung Hsing University
- Gu-Hao Ku — National Chung Hsing University
- Ming-Tzer Lin — National Chung Hsing University
- Terry YF Chen — National Cheng Kung University
- Luliang Zhang — Mississippi State University

**Pressure Wave Amplification in Tapered Pipes #17523**

- Marcia Janach — Mississippi State University
- Luliang Zhang — Mississippi State University
- Will Whittington — Mississippi State University

**Multi-Scale Residual Stress Evaluation in Laser-Welded Eurofer97 Steel for Fusion Plant #17290**

- Tan Sui — University of Surrey

- Taisia Lou — Boeing Additive Manufacturing
- Dan Driemeyer — Boeing Research & Technology
- Jessica Johnson — Boeing
- Rajendran — Boeing Research & Technology
- Zachary Theimer — Boeing Research & Technology
- Baily Thomas — Boeing Research & Technology
- Harikrishnan

**Crack Initiation and Fatigue Life in L-DED Inconel 625**

**Development of Sustainable Nonwovens #17733**

- Johnathan Rogers — University of California Davis
- Thermo-mechanics of Magnesium AZ31B at Elevated Temperatures #17859
  - Larissa F. Kopf — University of Waikato
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<td>4:15-5:30</td>
<td>Bond Exchange Reactions to Mitigate Residual Stress in Polymer Composites #18045</td>
<td>Michael Sutton Int’l Student Paper Competition III</td>
<td>Measurement of in-situ Creep Deformation Mechanisms of a Metastable B Ti #17952</td>
<td>Benjamin Elbrecht—Clemson University; Garrett J. Pataly—Clemson University</td>
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<tr>
<td>4:30</td>
<td>Detection and Identification of Defects in Fiber Spinning</td>
<td>Michael Sutton Int’l Student Paper Competition III</td>
<td>The Interaction of Superalasticity and Plasticity in NiTi #17647</td>
<td>Andrew Christison—University of California, Santa Barbara; Hanyad Panajap—Confluent Medical Technologies; Samantha Duly—University of California, Santa Barbara</td>
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<tr>
<td>5:10</td>
<td>Characterization of Magnetic Metamaterials #18057</td>
<td>Caroline M. Schell—University of Tulsa</td>
<td>Understanding Size Affected Ductility in Microscale Additively Manufactured Polymers #17899</td>
<td>Lucas R. Meza—University of Washington; Ziadah Patel—University of Washington; Kishal Dwyer—University of Washington</td>
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<tr>
<td>5:30</td>
<td>Constitutive Characterization of Porcine Brain Under Blast-Relevant Loading Conditions #18033</td>
<td>Elizabeth C. Bremer-Saw—University of Wisconsin—Madison</td>
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<td>6:30-7:30</td>
<td>Student Meet-Up—TBD</td>
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<td>7:00-8:30</td>
<td>SEM Journals Panel—Heritage F</td>
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<td>FRACTURE AND FATIGUE IN BRITTLE MATERIALS</td>
<td>INVERSE METHODS AND MACHINE LEARNING</td>
<td>25TH INTERNATIONAL SYMPOSIUM ON MICRO- AND NANOMECHANICS (ISMAN)</td>
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**9:00 a.m.**

- **Statistical Modeling of Mechanical Lifetime and Fatigue Threshold in Silicate Glass #17305**
  - Kimberley Mac Donald—Sandia National Laboratories;
  - Scott Grutzik—Sandia National Laboratories; Kevin Strong—Sandia National Laboratories

**9:20 a.m.**

- **Mixed Mode Fracture Behaviour of Silver Sintered Interconnects #17960**
  - Noud PT Schoenmakers—Delft University of Technology/Dip Integration Technology Center/
    Eindhoven University of Technology; Johan PM Hoefnagels—Eindhoven University of Technology; Ediger CP Smith—Dip Integration Technology Center; OGIS Shu, van der—Eindhoven University of Technology

**9:30-10:30 a.m.**

**SEM Membership Committee Meeting—Board Room**

**9:40 a.m.**

- **Fracture Toughness in Porous Ceramic Coatings #18018**
  - Mahaveer Singh—Indian Institute of Technology Bombay; Prakash K. Sahu—Indian Institute of Technology Bombay; Sanjay Sompah—Stony Brook University; Krunal N. Josnilageadda—Indian Institute of Technology Bombay

- **A Necking Profile-Based Approach for Strength Model Identification of Strain-Rate Sensitive Materials #17574**
  - John Kattil—University of South Carolina; Addis Kidane—Columbia University; Skipta K. Ramesh—Johns Hopkins University; K.T. Ramesh—Johns Hopkins University

- **Automated High Throughput Laser Driven Plate Impact Experiments for AI-Driven Material Design #17473**
  - Pyoosh Waroo—Johns Hopkins University; Jacob Diamond—Johns Hopkins University; K.T. Ramesh—Johns Hopkins University

**10:00 a.m.**

**10:20 a.m.**

- **Spatial-Temporal Stress Field Determination Utilizing Full-Field Deformation Measurements and Explicit Finite Element Method #17272**
  - Subramani Sarkarbaugh—University of South Carolina; Karan Kodagali—University of South Carolina; Dennis Miller—University of South Carolina; Michael Sutton—University of South Carolina; Twist Weima—Army Research Laboratory; Sreetharan Rajan Kamil—University of South Carolina; Addy Kadam—Columbia University

**10:40-11:10 a.m.**

**Coffee Break in the Exhibit Hall—Heritage AB**

**11:10 a.m.—12:10 p.m.**

**William M. Murray Lecture: Ghatu Subhash—University of Florida—Discovery Ballroom**

**12:10-1:40 p.m.**

**TD Meetings—All Attendees Welcome! (see page 13 for details)**
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<td><strong>THERMOMECHANICS AND INFRARED IMAGING</strong></td>
<td><strong>RESIDUAL STRESS</strong></td>
<td><strong>ADVANCEMENT OF OPTICAL METHODS IN EXPERIMENTAL MECHANICS</strong></td>
<td><strong>DYNAMIC BEHAVIOR OF MATERIALS</strong></td>
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**Spatial and Time-Series 4D Infrared Gas Cloud Imaging Re-constructed from Infrared Measurement #17929**  
Daiso Shosawo–Kobe University, Takuma Aoki–Kobe University, Shogo Oka–Kobe University, Yoko Guya–Kobe University, Takahide Sakagami–Kobe University, Shota Kure–Kobe University

Keynote: Residual Stress Applications and Measurement Challenges in the Jet Engine Industry #18071 | Seung-Yub Lee–Pratt & Whitney

A DIC-FEM Hybrid Method for Stress and Strain Analysis of Viscoelastic Body Based on the Principle of Superposition #17545 | Satoku Yoneyama–Aoyama Gakuin University; Keisuke Izuka–Aoyama Gakuin University; Yone-Kai–Aoyama Gakuin University

Small-scale Split Hopkinson bar to investigate Local Deformation Behavior of Materials Subjected to Extreme Strain Rates #17740 | Moulsawr R. RamaKumaresan–University of Minnesota, Sunay Ravindran–University of Minnesota

**Novel Composite Substructure Testing Approaches Utilizing Multi-Camera Full-Field Imaging #17580**  
Talas Laux–University of Bristol; Riccardo Cappello–University of Bristol, Jack S. Callaghan–Bangor University, Geir Olafsson–University of Bristol, Stephen W. Boyd–University of Southampton, Duncan A. Crump–University of Southampton, Andrew F. Robinson–University of Southampton, De T. Thomson–University of Bristol, Janice M. Dulke-Baron–University of Bristol

**Contour Method Measurement of a Residual Stress Map in Friction Stir Welded Ti-6Al-4V #17626**  

**DIC Strain Comparisons at the Limit using the Stereo-DIC Challenge 2.0 #17388**  

**Identifying Experimental Rates of Thermo-Elastic Cooling and Heating During Tensile Strength Testing with a Highly Sensitive Cooled Infrared Camera #17329**  

**Evaluating Differences in Residual Stress Along the Scan Direction in an Additively Manufactured Part #17766**  

**Determining Heart Behaviors by Tracking Fluorescent Marked Artificial Features on Cardiac Surface #17629**  
Chi-Hung Hwang–Taiwan Instrument Technology Institute; Yu Jen Chen–Taiwan Instrument Technology Institute; Yu-Bin Yang–National Taiwan University; Rong-Qing Qiu–Taiwan Instrument Technology Institute, Rui-Cian Weng–Taiwan Instrument Technology Institute; Yi-Pei Lu–Taiwan Instrument Technology Institute

**Effect of Process Defects on Fatigue Life of AM-CM Composites via Infrared Thermography #17869**  
Phanindra Pathak–Auburn University, Sushanto Garunia–Auburn University

**Investigating the Liders Phenomenon in AISI 1524 Hot-Rolled Steel Alloy: Effects of Loading Unloading and Reloading #17522**  
Mohamed Almahasany–Mohammed bin Rashid Space Centre, Waad A. Samad–Rochester Institute of Technology

**High Throughput Tensile Testing for Characterization of Static Strain Aging #17969**  
Ville Bjorklund–Aalto University

**High-rate Deformation behavior of Nanocrystalline Copper due to Dynamic Tensile Extrusion and Plate Impact #17082**  
Philip Jannotti–DEVCOM Army Research Laboratory, Nicholas Lonza–DEVCOM Army Research Laboratory, Kris Darling–DEVCOM Research Laboratory, Chad Humphre–DEVCOM Army Research Laboratory, Naresh Thadney–Georgia Tech

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**Coffee Break in the Exhibit Hall—Heritage AB**

**William M. Murray Lecture:**  
Ghatu Subhash–University of Florida—Discovery Ballroom

**TD Meetings—All Attendees Welcome!** (see page 13 for details)
## TECHNICAL PROGRAM  TUESDAY (AFTERNOON) | JUNE 4, 2024

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<td><strong>29. INTERFACE IN COMPOSITES</strong></td>
<td><strong>30. PLASTICITY, DAMAGE &amp; STRESS IDENTIFICATION</strong></td>
<td><strong>31. ACTIVE LEARNING IN MECHANICS</strong></td>
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<tr>
<td><strong>CHAIR</strong></td>
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<tr>
<td>Kunal Mishra—Corning Incorporated</td>
<td>Samantha Daly—University of California, Santa Barbara; Jean-Charles Stivinville—University of Illinois Urbana-Champaign</td>
<td>Michael Keller—The University of Tulsa</td>
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### 1:40 p.m.

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<th>2:00 p.m.</th>
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<th>2:20 p.m.</th>
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<th>3:00 p.m.</th>
<th>3:20-4:00 p.m.</th>
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<tr>
<td><strong>Technical Activities Council Meeting</strong> — Board Room</td>
<td><strong>EXPOSITION OPEN</strong></td>
<td><strong>Analysis of Fractures Propagating in Silver Fir (Abies Alba) Using High-Resolution Full-Field Measurements and Imagery</strong> #17461</td>
<td><strong>Filtering Techniques of Full-Field Data for More Accurate VFM Analysis</strong> #17452</td>
<td><strong>Towards Absolute non-simulation-based HR-EBSD on Single Experimental Patterns, by Means of Excess-deficiency Correction</strong> #17829</td>
<td><strong>Dessert Break in the Exhibit Hall</strong> — Heritage AB</td>
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<td><strong>Multiscale Experimental-Computational Evaluation of Fiber-Matrix Debonding in Macro Fiber Samples</strong> #17317</td>
<td><strong>Mode I Fracture of Tropical Timber in 3-point Bending in a Controlled Environment</strong> #17393</td>
<td><strong>Automatic Local Slip System Identification for Complex Nano-scale Plastic Deformation in a Polycrystalline zinc HCP Microstructure</strong> #17867</td>
<td><strong>Tack Testing of Photo-switchable Liquid Crystalline Elastomer Adhesives</strong> #17362</td>
<td><strong>Fracture Characterization in Nakajima and Hydraulic Barge Tests through Inverse Methods</strong> #17709</td>
<td><strong>Hands-on Activities in Upper-Level Mechanics Courses</strong> #17945</td>
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<tr>
<td>Behrad Noorlbor—Rowan University; Nicholas Menne—Rowan University; Kaz Zahar Vlad—Rowan University; Hugo Grand—University of Lyon; Zynadah Haavert—Rowan University; Aurelien Datrand—University of Lyon</td>
<td>Martian Aiseko-Ela—Clermont Auvergne University; Giacomo Gol—University of Florence; Rostand Moudu-Pitti—Clermont Auvergne University; Joseph Grel—Université Clermont Auvergne</td>
<td>Capper A Manour—Eindhoven University of Technology; Gert-Jan Slokker—Eindhoven University of Technology; Tijmen Vermeij—Eindhoven University of Technology; Dennis König—Eindhoven University of Technology; Johan PM Hoefnagels—Eindhoven University of Technology</td>
<td>R. R. Almi—University of Utah; Andrew Leed—University of Utah; Nathan Spulak—University of Alabama, Huntsville; Nathan Spulak—University of Alabama, Huntsville</td>
<td>Andrew R. Roginski—Purdue University; Weinong W. Chen—University of Illinois at Urbana-Champaign; R. L. Black—University of Illinois at Urbana-Champaign; Y. Ne—University of Illinois at Urbana-Champaign; Jean-Charles Stivinville—University of Illinois at Urbana-Champaign</td>
<td>Martha E. Grady—University of Kentucky; Christine Gable—Center College</td>
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<tr>
<td><strong>Mechanical Properties Prediction of Functionally Graded Metallic Materials through High-Throughput Characterization and Machine Learning</strong> #17762</td>
<td><strong>Nanowires and Elastic Matrix</strong> #17505</td>
<td><strong>Filtering Techniques of Full-Field Data for More Accurate VFM Analysis</strong> #17452</td>
<td><strong>Towards Absolute non-simulation-based HR-EBSD on Single Experimental Patterns, by Means of Excess-deficiency Correction</strong> #17829</td>
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<td>C. Bean—University of Illinois at Urbana-Champaign; D. Angjana—University of Illinois at Urbana-Champaign; R. L. Black—University of Illinois at Urbana-Champaign; Y. Ne—University of Illinois at Urbana-Champaign; Jean-Charles Stivinville—University of Illinois at Urbana-Champaign</td>
<td>Yong Zhu—University of California, Santa Barbara; Alex Edwards—Auburn University; Jackson Cho—Texas A&amp;M University; Andrew Leed—University of Utah; Andrew Leed—University of Utah</td>
<td><strong>Nanowires and Elastic Matrix</strong> #17505</td>
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<td><strong>Nanowires and Elastic Matrix</strong> #17505</td>
<td><strong>Analytical In Situ Micromechanical Models of Fibrous Composites</strong></td>
<td><strong>Towards Absolute non-simulation-based HR-EBSD on Single Experimental Patterns, by Means of Excess-deficiency Correction</strong> #17829</td>
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<td>HEMLOCK/OAK</td>
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<td>HERITAGE F</td>
<td>PINE/SPRUCE</td>
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<tr>
<td>32. CESAR SCIAMMARELLA’S 100TH BIRTHDAY</td>
<td>33. MECHANICS OF FIBERS AND INCLUSIONS</td>
<td>34. OPTICAL FIBER SENSOR AND MINIATURIZED DEVICES</td>
<td>35. NOVEL TECHNIQUES II</td>
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<td>Horacio Espinosa—Northwestern University</td>
<td>Todd Henry—U.S. Army Research Laboratory</td>
<td>Chi-Hung Hwang—Taiwan Instrument Technology Institute; Gordon Shaw, III—National Institute of Standards &amp; Technology</td>
<td>Trey Leonard—Standard Mechanics, LLC; Nathan Spulak—The University of Alabama—Huntsville</td>
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**Technical Activities Council Meeting—Board Room**

- Intra vs Inter Fiber Variability in Mechanical Properties of High Performance Fibers #17663 | Atif Gafsi—Rochester Institute of Technology; Amy Engebret-Wiggans—Rochester Institute of Technology
- Mechanics of Hydrogen-Bonded Glassy Polymer Nanofibers #17695 | Advait Galkawad—Texas A&M University; Pavani V. Kalkuru—Texas A&M University
- Real-time Shape Measurements In-Situ by Dual-Frequency Fringe Projection to Augment Smart Manufacturing #17855 | Howard Zheng—Worcester Polytechnic Institute; Anthony Salemni—Worcester Polytechnic Institute
- Using Physical Regime Sensitivity to Interpret Dynamic, Extreme Condition Experiments #17428 | Joshua W. Dyer—Los Alamos National Laboratory; Michael B. Prine—Los Alamos National Laboratory
- Microscale Mechanics of Liquid Inclusions in an Elastomeric Solid #17634 | Kuvadana Moneke—University of Illinois Urbana-Champaign; Kamalendu Ghoor—University of Illinois at Urbana-Champaign; Arnis Medeleb—Pennsylvania State University; Soubenta Dandara—Pennsylvania State University; Oscar Lopez-Parras—University of Illinois at Urbana-Champaign; Ioannis Chasiotis—University of Illinois at Urbana-Champaign
- The Dynamic Thermomechanical Behavior of Magnesium AZ31B at Elevated Temperatures #17427 | Anthony Lew—University of Utah; S. Daniyal Salehi—University of Utah; Owen T. Kingstedt—University of Utah
- Interfacial Shear Stress Transfer Between Nanowires and Elastic Matrix #17505 | Yong Zhu—North Carolina State University
- A Novel Dynamic Ring on Ring Experimental Methodology #17618 | Aran Goyal—Corning Incorporated; Charandeep Singh—Corning Incorporated; Adeola Olusumboye—Corning Incorporated; Patrick Phuden—Corning Incorporated; Jonathan Lapaoneck—Corning Incorporated; Ryan Vetter—Corning Incorporated

**Dessert Break in the Exhibit Hall—Heritage AB**

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Full detailed event schedule available on the Whova app.
### TECHNICAL PROGRAM  TUESDAY (LATE AFTERNOON/EVENING) | JUNE 4, 2024

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<tr>
<td>4:00 p.m.</td>
<td>Editorial Council Meeting — Board Room</td>
<td>HERITAGE D</td>
<td>Interlaced Material Characterization and Model Calibration for Improved Computational Simulation Credibility #17297</td>
<td>Material Parameters Identification #37</td>
<td>Composites and Interfaces #38</td>
</tr>
<tr>
<td>4:00-5:30 p.m.</td>
<td>Editorial Council Meeting — Board Room</td>
<td>HERITAGE C</td>
<td>Shear Fracture of 3D Printing Polyamide with Printing Interfaces #17265</td>
<td>Interlaced Material Characterization and Model Calibration for Improved Computational Simulation Credibility #17297</td>
<td>Composites and Interfaces #38</td>
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<tr>
<td>4:00 p.m.</td>
<td>Experimental Optimization for Characterization of Corrugated Fiberboard #17490</td>
<td>HERITAGE E</td>
<td>Experimental Optimization for Characterization of Corrugated Fiberboard #17490</td>
<td>500% Faster Master Curves on Commercial DMA Hardware via Broadband Chirps #17589</td>
<td>Idealized Artificial Interfaces for the Validation of Nanoscale Interphase Measurements #17690</td>
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<tr>
<td>4:20 p.m.</td>
<td>Comparing Fracture Toughness and Fracture Energy: Assessing Mode-I Fracture Behavior in Additively Manufactured Thermoplastics with Diverse Cellular Infill #17958</td>
<td>HERITAGE D</td>
<td>Correspondence of Physical Heterogeneity and Local Anisotropic Stiffness in Thin Cellulosic Materials #17496</td>
<td>Interlaced Material Characterization and Model Calibration for Improved Computational Simulation Credibility #17297</td>
<td>Idealized Artificial Interfaces for the Validation of Nanoscale Interphase Measurements #17690</td>
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<tr>
<td>4:40 p.m.</td>
<td>Structural Materials with Engineered Meso-Scale Architectures: A Case Study on Fracture of Lamellar Materials #17923</td>
<td>HERITAGE C</td>
<td>Characterization of Two-Dimensional Heterogeneous Materials using Full-Field Strain Data and Finite Element Analysis #17654</td>
<td>Inverse Methods for Advanced Material Characterization: Expanding Beyond Heterogeneous Stress/Strain to Heterogeneous Temperature Fields #17718</td>
<td>Evaluation of the Influence of Interfacial Strength in Behavior of UHMMPE Composite Plates #17795</td>
</tr>
<tr>
<td>5:00 p.m.</td>
<td>Characterization of Two-Dimensional Heterogeneous Materials using Full-Field Strain Data and Finite Element Analysis #17654</td>
<td>HERITAGE E</td>
<td>Characterization of Two-Dimensional Heterogeneous Materials using Full-Field Strain Data and Finite Element Analysis #17654</td>
<td>Inverse Methods for Advanced Material Characterization: Expanding Beyond Heterogeneous Stress/Strain to Heterogeneous Temperature Fields #17718</td>
<td>Evaluation of the Influence of Interfacial Strength in Behavior of UHMMPE Composite Plates #17795</td>
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<td>Idealized Artificial Interfaces for the Validation of Nanoscale Interphase Measurements #17690</td>
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<tr>
<td>5:45-6:30 p.m.</td>
<td>Cesar Sciammarella Lecture — Discovery Ballroom</td>
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<td>6:30-8:00 p.m.</td>
<td>President’s Reception in the Exposition — Heritage AB</td>
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<td>ADVANCEMENT OF OPTICAL METHODS IN EXPERIMENTAL MECHANICS</td>
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<tr>
<td>39. CESAR SCIAMMARELLA’S 100TH BIRTHDAY II</td>
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<td>40. TECHNOLOGY APPLICATIONS</td>
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<td>41. ACOUSTICS, IMAGE AND LASER NOVELTY APPLICATIONS</td>
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<td>42. QUANTITATIVE VISUALIZATION</td>
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<td>Michael Sutton—University of South Carolina; Luciano Lamberti—Politecnico di Bari</td>
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<td>Sarah Fischer—Fraunhofer Institute for Non-Destructive Testing (ZFP), Trey Leonard—Standard Mechanics, LLC</td>
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<td>Motoharu Fujigaki—University of Fukui; Satoru Toneyama—Aoyama Gakuin University</td>
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<td>Logan Shannah–DEVCOM Army Research Laboratory; Nicholas Lorenzo—U.S. Army Research Laboratory</td>
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<td>CONTENT</td>
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<td>Editorial Council Meeting—Board Room</td>
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<td>Keynote: Active Anti-Fogging by Ultrasonic Excitation to Enhance Visual Acuity through Transparent Media #17900</td>
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<td>Quantifying Ultrafast Full-field Material Deformation &amp; Fracture with Digital Imaging #18082</td>
<td>Kyle Golay—Vision Research</td>
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<tr>
<td>Using Distributed Acoustic Sensing to Observe Oceanographic Processes on the Oregon Continental Shelf #17605</td>
<td>Marek G. Tjo—Oregon State University; Neagun E. Wengrove—Oregon State University; Hannah Glayer—Oregon State University; Robert Holman—Oregon State University</td>
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<td>Overcoming the Challenges of Integrating Mechanical Load Frames with In Situ Tomography #18122</td>
<td>Alex Accimandili—Plytech; Zachary Thompson—Plytech</td>
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<td>Camera-Based Modal Analysis in Minutes with Motion Amplification #17649</td>
<td>Jeff R. Hay—R2D Technologies</td>
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<tr>
<td>Computing the frequency response function (FRF) using digital image correlation (DIC), plus an overview of a new DIC stress analyzer #18137</td>
<td>Nisarah Tofts—Correlated Solutions, Inc.; Bluejay Robinson—Correlated Solutions, Inc.; Michael Kalaitzakis—Correlated Solutions, Inc.</td>
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<td>Solid State Laser Refrigeration of Precision Optomechanical Sensors #17966</td>
<td>Sanikhya Hirani—University of Washington; Lars Forberg—University of Washington; Peter J. Pauszuski—University of Washington/Pacific Northwest National Laboratory (PNNL)</td>
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<td>In-Situ Imaging of Spall Fracture #17540</td>
<td>Jacob M. Diamond—Johns Hopkins University; Justin Moreno—Johns Hopkins University; Lily Zhao—Johns Hopkins University; Kallat T. Ramesh—Johns Hopkins University</td>
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<td>An Additively Manufactured Pattern Generation Technique for Deformation Analysis of Additively Manufactured Specimens #17466</td>
<td>Nicolas A. Yisun—Stony Brook University; Austin M. Giordan—Stony Brook University; Fa-Pen Chiang—Stony Brook University</td>
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<td>Automated Multi-crack Detection and COD Extraction in MatchID’s Fracture Module #18138</td>
<td>(Pascal Lava—MatchID; Joao Filha—MatchID; Lukas Wittevrongel—MatchID)</td>
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<td>Dynamic Characterization via Digital Image Correlation of Collapsing Spherical Pore Under Shock Loading #17601</td>
<td>Barry P. Lawlor—California Institute of Technology; Vatsa Gandhi—California Institute of Technology; Gurunswami Ravichandan—California Institute of Technology</td>
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<td>Optical Based Survey using Photogrammetry to Build 3D Models for the Structural Analysis of Automotive Suspensions #17859</td>
<td>Rosa De Ferra—University of Salento; Sara Gennari Barrassani—University of Campania; Luigi Vannozzi; Riccarda Noble—University of Salento</td>
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<td>FAST M2X UD: A Next Generation Fast Frame Rate Thermal Infrared Imaging System #18139</td>
<td>Joseph Carrock—Telops; Benjamin Saute—Telops; Antoine Dumesnil—Telops; Jean-Philippe Gagnon—Telops</td>
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<td>Investigation of Dynamic Fracture Mechanism of a Bonding Adhesive using a Novel Spiral Metal-cohesive Specimen #17615</td>
<td>Achyuth Thumbalaram Gadh—Oklahoma State University; Ali Fahren—Oklahoma State University; Addis Akladie—Columbia University; Raman Singh—Oklahoma State University</td>
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**Full detailed event schedule available on the Whova app.**
## TECHNICAL PROGRAM  WEDNESDAY (MORNING) | JUNE 5, 2024

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<th>TIME</th>
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<tr>
<td>9:00 a.m.</td>
<td>Joint Meeting of the Applications, Education and Research Committees</td>
<td>— Board Room</td>
<td>Crack Growth Around Pores in Additively Manufactured Ti-6Al-4V Under Tension: Measurements and Modeling #17654</td>
<td>Keynote: Trustworthy Machine Learning for High Throughput Characterization: Acoustic Emissions as a use Case #17354</td>
<td>The Effect of Rate and Temperature on the Outcome of Damage in Polymer Bonded Simulants #17429</td>
</tr>
<tr>
<td>9:20 a.m.</td>
<td>Measuring Anisotropy Effects on Fracture Toughness Characterization of Additively Manufactured Metals #17713</td>
<td>— Heritage AB</td>
<td>Kimberley A. Mac Donald—Sandia National Laboratories</td>
<td>Improved Intermediate Strain Rate Characterization for Parachute Canopy Fabrics #17716</td>
<td>— Heritage E</td>
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<tr>
<td>9:40 a.m.</td>
<td>The Toughness of Interlocking Metasurfaces #17257</td>
<td>— Heritage C</td>
<td>Benjamin E. Young—Sandia National Laboratories; Ryan G. Smith—Sandia National Laboratories; Scott J. Gratuze—Sandia National Laboratories; Brad L. Boyce—Sandia National Laboratories</td>
<td>Leveraging Machine Learning for Describing Damage in Composite and Hybrid Plates Subjected to Low-Velocity Impact #17587</td>
<td>Characterization of Rate Sensitivity of Transparent Thermoplastics in Shear Deformation using Hat Shaped Specimen #17731</td>
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<tr>
<td>10:00 a.m.</td>
<td>The Mechanical Performance of Interlocking Metamatериалs #17310</td>
<td>— Heritage B</td>
<td>Philip J. Noell—Sandia National Labs; Benjamin Young—Sandia National Labs; Ethelat Balamin—Sandia National Labs; Nathan Brown—Sandia National Labs; Brad L. Boyce—Sandia National Labs</td>
<td>Study of Nonlinear Creep Behavior of Entandrophragma Cylindricum Wood Through Zener Fractional Rheological Model #17330</td>
<td>— Heritage E</td>
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</table>

**Coffee Break in the Exhibit Hall—Heritage AB**

**National Meetings Council Meeting—Board Room**
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<th>HERITAGE F</th>
<th>PINE/SPRUCE</th>
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<tbody>
<tr>
<td>ADVANCES IN COMPOSITES</td>
<td>49. HIGH RATE DEFORMATION OF ENERGETIC MATERIALS</td>
</tr>
</tbody>
</table>

**Joint Meeting of the Applications, Education and Research Committees — Board Room**

- **Keynote:** From Optical Moire Interferometry to AFM Moire Interferometry #17853 | Kyung-Suk Kim—Brown University

**Mechanics and Blast Mitigation Strategies Associated with UNDEX Loading on Thin Composite Laminates**

- Horacio Espinosa—Northwestern University; Michael Sutton—University of South Carolina

- Karen Kasza—Columbia University; Jonathan Estrada—University of Michigan

- Michael Keller—The University of Tulsa; Frank Gardea—U.S. Army Research Laboratory

- Tomislav Kosta—U.S. Air Force Research Laboratory; Jamie Kimberley—New Mexico Institute of Mining and Technology

**Coffee Break in the Exhibit Hall — Heritage AB**

**National Meetings Council Meeting — Board Room**
<table>
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<tr>
<th>10:50 a.m.</th>
<th>Energy Release Rate in Pure Shear Specimens Subject to Large Deformation #17498</th>
<th>Identifying Constitutive Parameters for Complex Hyperelastic Solids using Physics-Informed Neural Networks #17237</th>
<th>Dynamic Viscoelasticity of Single Fibers and Fiber Bundles Via Stress-Relaxation Kolosky Bar Tension #17389</th>
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<tr>
<td>11:10 a.m.</td>
<td>Puncture of Thin Aluminum 7075-T651 Plates: Experiments and Simulations #17478</td>
<td>Machine-Learning Augmented 3D-EBSD Analysis of Fatigued Titanium #17628</td>
<td>Creep in Hydrogen-Bonded Glassy Polymer Nanofibers #17702</td>
</tr>
<tr>
<td>11:30 a.m.</td>
<td>Fracture Mechanics Analysis of Anisotropic and Asymmetric Contact Area Evolution under Tangential Loading #17581</td>
<td>Composite Damage Identification using Acoustic Emission #17508</td>
<td>Opportunities and Challenges of Using DNA for Polymers #17849</td>
</tr>
<tr>
<td>11:50 a.m.</td>
<td>Optimal Design of Architectured Vertically Aligned Carbon Nanotube (VACNT) Foams for Impact Mitigation #17726</td>
<td>Effect of Heat Treatment in Atmosphere on Dynamic Viscoelastic Properties of CFRP #17457</td>
<td></td>
</tr>
<tr>
<td>12:15-2:30 p.m.</td>
<td>All Society Awards Luncheon — Discovery Ballroom</td>
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**All Society Awards Luncheon** — Discovery Ballroom
### TECHNICAL PROGRAM  WEDNESDAY (AFTERNOON) | JUNE 5, 2024

#### TRACK \n**HERITAGE C**
**MECHANICS OF ELECTROCHEMICAL AND ELECTROMECHANICAL MATERIALS**
- Joseph Ineck—The Boeing Company;
- John Kolinski—EPFL

**HERITAGE D**
**ADDITIONAL AND ADVANCED MANUFACTURING**
- Piyush Thakre—Dow Inc.;
- Thomas Ivanoff—Sandia National Laboratories

**HERITAGE E**
**TIME-DEPENDENT MATERIALS**
- Kshitiz Upadhyay—Louisiana State University;
- Aliresa Amirkhizhi—University of Massachusetts, Lowell

### 2:30-3:30 p.m.  
**Open Executive Board Meeting—Board Room**

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>2:30 p.m.</td>
<td>Experimental and Numerical Analysis of Battery Mechanical Behavior #17343</td>
<td>Aboojal Schauer—University of Alabama in Huntsville; Nathan Spulak—University of Alabama in Huntsville; George Nelson—University of Alabama in Huntsville</td>
</tr>
<tr>
<td>2:30 p.m.</td>
<td>Efficient Measurements on the Minimum Shear Strengths of 3D Printing Polymers #17264</td>
<td>Luoju R. Xu—Ningbo University</td>
</tr>
<tr>
<td>2:50 p.m.</td>
<td>Effects of Fiber and Matrix resin on the Statistical Life of Unidirectional CFRP under Creep and Fatigue</td>
<td>Mark Foster—Sandia National Laboratories; Brendan Nation—Sandia National Laboratories; Keith Roberts—Sandia National Laboratories</td>
</tr>
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</table>

### 2:50-3:30 p.m.  
**Technical Program**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
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<tr>
<td>2:50 p.m.</td>
<td>Real-time Stress Measurement in Hard Carbon During Electrochemical Cycling Against Sodium: An Insight into Na+ Storage Mechanism #17325</td>
<td>Amit Chanda—Michigan State University; Abdushahman Affadhli—Michigan State University; Vijay A. Seturaman—University of South Carolina; Siva PV Nadimpalli—Michigan State University</td>
</tr>
<tr>
<td>2:50 p.m.</td>
<td>Effect of Coupled High Pressure Salt Water Absorption and Low Temperatures on the Mechanical Characteristics of Additively Manufactured Polymers #17338</td>
<td>James LeBillon—Naval Undersea Warfare Center, Division Newport; Lewis Shattuck—Naval Undersea Warfare Center, Division Newport; Carlos Jovier—Naval Undersea Warfare Center, Division Newport; Eric Wamer—Naval Undersea Warfare Center, Division Newport; Imre Cherwa—Naval Undersea Warfare Center, Division Newport; Tyler Chu—University of Rhode Island; Arun Shukla—University of Rhode Island; John Torres—Naval Undersea Warfare Center, Division Newport; David Ponte—Naval Undersea Warfare Center, Division Newport; Patricia Lockhart—Naval Undersea Warfare Center, Division Newport</td>
</tr>
<tr>
<td>3:10 p.m.</td>
<td>Effect of Electrochemical Cycling on the Interface Failure between Binder and Active Material in a Composite Electrode #17586</td>
<td>Akshay S. Pathare—Michigan State University; Siva PV Nadimpalli—Michigan State University</td>
</tr>
<tr>
<td>3:10 p.m.</td>
<td>4D Porosity Evolution in Additively Manufactured 316L Stainless Steel using in-situ Tensile Testing and X-ray Computed Tomography #17609</td>
<td>David Hertz-Eichenrode—Auburn University; University of Applied Science Aachen; Hosein Fahimchad—Auburn University; Ralf Fischer—Auburn University; Barton C. Prorok—Auburn University</td>
</tr>
<tr>
<td>3:30 p.m.</td>
<td>In-situ Photopolymerization Gradient Characterization via Inertial Microcavitation Rheometry #17919</td>
<td>Joseph G. Beckett—University of Michigan; Bahar A. Abed—University of Michigan; Jon B. Estrada—University of Michigan</td>
</tr>
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### 3:30-4:20 p.m.  
**Coffee Break—Heritage Pre-function**
Open Executive Board Meeting — Board Room

The Role of No Free Lunch Theorem on Mechanical Characterization of Biotissues 17962 — Antonio Boccaccio—Politecnico di Bari; Luciano Santoro—Politecnico di Bari, Bari; Batsiou Trestase—Politecnico di Bari, Antonio E. De—Politecnico di Bari

Mechanical Assessment of Alveolar Macrophages 17960 — Tony Butera—University of Kentucky; Robert L. Devier—University of Kentucky; Elizabeth M. Gens—University of Kentucky; Christopher M. Waters—University of Kentucky; Martha E. Grady—University of Kentucky

Mixed-mode Fracture using Digital Actuator Test Frame 17963 — Brian T. Werner—Sandia National Laboratories, Riley Ehlsne—Sanda National Laboratories


Deformation and Strain-rate Sensitivity of Rotating Square Auexic Structures 17967 — Behrad Andohadi—Rowan University, George Tousseff—San Diego State University, Kazi Zahir Uddin—Rowan University, Matthew Hess—Rowan University, Dennis Miller—University of South Carolina, Subramani Sankalingam—University of South Carolina, Michael A. Sutton—University of South Carolina

Optical Cavity Force References 17960 — Gordon A. Shaw III—NST; Ryan Wagner—Purdue

An Experimental Study on the Physical Characteristics of the ECM During Early-Stage Invasion of a Cancer Spheroid 17963 — Yasuyuki Morita—Kumamoto University, Seigo Omata—Kumamoto University, Toshihiko Maeda—Kumamoto University, Toyoo Gao—Kumamoto University, Rynnouke Mor—Kumamoto University, Isao Morita—Kumamoto University

Rate Dependent Off-axis Shear Loading of Fiber and Film Based UHMWPE Composites 17965 — C. Allan Gunnarson—DEVCOM Army Research Laboratory, Stephen Alexander—DEVCOM Army Research Laboratory, Todd W. Wernbao—DEVCOM Army Research Laboratory

Effect of Strain Rate on Dynamic Compressive Behavior on Additively Manufactured 17-4 PH Steel through Fused Filament Fabrication Method 17967 — Siddharth Shrin—Auburn University, Ernest Porterfield—Auburn University, Bart Prong—Auburn University, Vinu preventative Auburn—Auburn University


Coffee Break — Heritage Pre-function

Full detailed event schedule available on the Whova app.
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<th>4:20 p.m.</th>
<th>Leveraging 3D Characterization for Mechanical Modeling of Failure in AM Metals #17377</th>
<th>Dynamic Tensile Behavior of Solid-State Additive Manufactured of As-Deposited HEAs #17624</th>
<th>On the Nucleation and Growth of Cracks in Elastomers #17485</th>
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<tr>
<td>Philip Noell—Sandia National Laboratories; John Kolinski—EPFL</td>
<td>Andrew T. Polkosky—Sandia National Laboratories; Kyle Johnson—Sandia National Laboratories; Carolanne Massey—Sandia National Laboratories; Xiya UyEn Tran Hoyinh—Sandia National Laboratories; James Grego—Sandia National Laboratories; Philip Nol—Sandia National Laboratories; Nathan Heckman—Sandia National Laboratories; Thomas Vanoff—Sandia National Laboratories</td>
<td>Isaac Liu—Baylor University; Michael P. Ameling—University of Alabama; Brian Jordan—Baylor University; Mark Weaver—University of Alabama; Paul G. Allison—Baylor University</td>
<td>Arlindo Guo—The University of Texas at Austin; Krishnaswamy Ravi-Chandar—The University of Texas at Austin</td>
</tr>
<tr>
<td>4:40 p.m.</td>
<td>Error Estimation and Measurement of the Deformation Gradient Tensor from Particle Tracking Data in a Soft Solid #17445</td>
<td>Investigation of Dynamic Behavior of Hybrid Additively Manufactured Materials #17668</td>
<td>Density-dependent Damage Evolution and Healing of Flexible Foam #17453</td>
</tr>
<tr>
<td>Emily Retzlaff—United States Naval Academy; Brian Fuchs—Sandia National Laboratories</td>
<td>Rachel M. Swinney—Sandia National Laboratories; Colin Loeffler—Sandia National Laboratories</td>
<td>N ха Uyen T. Huynh—Sandia National Laboratories; Andrew S. Miller—Sandia National Labs; Craig M. Hamel—Sandia National Labs; Kevin N. Long—Sandia National Labs; Shariotte LB Kramer—Sandia National Labs</td>
<td>Martina I. Borges—Michigan State University; Akshay Pakhare—Michigan State University; Amit Chanda—Michigan State University; Siva Nadimpalli—Michigan State University</td>
</tr>
<tr>
<td>5:00 p.m.</td>
<td>Predicting Fracture Location in AM Tensile Specimens Containing Porosity and Surface Defects #17692</td>
<td>Evolution of Mechanical and Failure Behavior in 17-4PH Stainless Steel Across Quasistatic and Dynamic Rates #17907</td>
<td>In Situ Measurement of Adhesion Properties of Polymer Binders for Rechargeable Batteries #17583</td>
</tr>
<tr>
<td>Sarah A. Bentil—Iowa State University; Richa Ghosh—Iowa State University</td>
<td>Brian Jordan—Baylor University; Paul G. Allison—Baylor University</td>
<td>Martina I. Borges—Michigan State University; Akshay Pakhare—Michigan State University; Amit Chanda—Michigan State University; Siva Nadimpalli—Michigan State University</td>
<td>Marina I. Borges—Michigan State University</td>
</tr>
<tr>
<td>5:20 p.m.</td>
<td>Failure of an AM Al-10Si-Mg Tensile Specimen in a Heterogenous Stress-State #17545</td>
<td>Dynamic Behavior of Round Feedstock-Additive Friction Stir Deposition (RF-AFSID) Aluminium Alloy 7075 after Post Deposition Heat Treatment #17622</td>
<td>Durability of Polyimide Aerogels in The Space Environment #17507</td>
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<tr>
<td>Brian Fuchs—Sandia National Laboratories; Emily Retzlaff—EPFL; Chenzhuo Li—EPFL; John M. Kolinski—EPFL</td>
<td>Jacob B. Hearst—Baylor University; Isaac Liu—Baylor University; Ryan Kinsel—Baylor University; James B. Jordan—Baylor University; Paul G. Allison—Baylor University</td>
<td>Sadeh Mihalko—NASA Glenn Research Center, Stephanie L. Vivod—NASA Glenn Research Center, Kim K. de Groh—NASA Glenn Research Center</td>
<td>Sadeh Mihalko—NASA Glenn Research Center, Stephanie L. Vivod—NASA Glenn Research Center, Kim K. de Groh—NASA Glenn Research Center</td>
</tr>
<tr>
<td>5:40 p.m.</td>
<td>Advances in 4D Grain Stress and Strain Measurements in Torsionally-Compressed Geomaterials #17501</td>
<td>Effect of Layer Orientation on the Rate-Dependent Compresive Behavior of Additively Manufactured Alumina #17710</td>
<td>Viscoelastic Consequences of Fatigue in Polymeric Foams #17356</td>
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<tr>
<td>Ryan C. Hurley—Johns Hopkins University; Edward Ando—EPFL; Kiwagmin Lee—Johns Hopkins University</td>
<td>Allison Amgittan—Colorado School of Mines; Geoff Brennecka—Colorado School of Mines; Leslie Lamberson—Colorado School of Mines</td>
<td>Marya M. Foster—Lawrence Livermore National Laboratory; Daniel Morrison—Colorado School of Mines; Alexander Landauer—National Institute of Standards and Technology; Mark Heyn—Lawrence Livermore National Laboratory; Leslie Lamberson—Colorado School of Mines</td>
<td>Marya M. Foster—Lawrence Livermore National Laboratory; Daniel Morrison—Colorado School of Mines; Alexander Landauer—National Institute of Standards and Technology; Mark Heyn—Lawrence Livermore National Laboratory; Leslie Lamberson—Colorado School of Mines</td>
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<td>Topic</td>
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<tr>
<td>A Method for Determining the Through Thickness Stress Intensity Factor (SIF) of a Opaque Specimen</td>
<td>Horacio Espinosa—Northwestern University; Luciano Lamberti—Politecnico di Bari</td>
<td>Fascicular Tracking and Injury Characterization in Ovine Models Exposed to Blast and Blunt TBI</td>
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<tr>
<td>Determining the Phytage Composition for use as a Brain Surrogate in Blast-induced Traumatic Brain Injury Research</td>
<td>Jin Yang—The University of Texas at Austin; Karen Kasza—Columbia University</td>
<td>Mechanical Characterization of Additively Manufactured Ankle Foot Orthotics Fabricated using Dual-Material Composite Filaments</td>
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<tr>
<td>MRI Validation of the Anthropomorphic Neurologic Gyrencephalic Unified Standard (ANGUS) Phantom</td>
<td>Piyush Thakre—Dow Inc.</td>
<td>Multi-recyclability of Fused Filament Fabricated Additively Manufactures Wood-plastic Composites: Mechanical Performance and Aesthetics</td>
<td></td>
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<tr>
<td>TBI-on-a-Chip: a µ-Fluidic Device for the Detection of Traumatic Brain Injury Biomarkers</td>
<td>Matthew Shaeffer—Johns Hopkins University</td>
<td>Automated Split Hopkinson Bar Experiments for Large Scale Data</td>
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<tr>
<td>Session Track</td>
<td>HERITAGE C FRACTURE AND FATIGUE</td>
<td>HERITAGE D ADDITIVE AND ADVANCED MANUFACTURING</td>
<td>HERITAGE E ADVANCEMENT OF OPTICAL METHODS IN EXPERIMENTAL MECHANICS</td>
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<tr>
<td>CHAIR(S)</td>
<td>John Kolinski—EPFL; Ryan Berke—Utah State University</td>
<td>AM Guidelines for Structural Similitude of Grillshell Models - An Experimental and Computational Study #17343</td>
<td>Keynote: Calibration-free Multi-Camera 3d Displacement Measurement Method Using Sampling Moire Method #17288</td>
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<tr>
<td>71. OPTICAL TECHNIQUES AND FRACTURE I</td>
<td>Digital Image Correlation at High Magnification: Effect of Shorter Wavelength on Diffraction Limit of Light #17126</td>
<td>Investigating the Effects of Coating Systems on the Degradation Behavior of 3D-Printed Pressure Vessels #17441</td>
<td>Luciano Lambertti—Politecnica di Bari; Cosme Furlong—Worcester Polytechnic Institute</td>
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<tr>
<td>9:00 a.m.</td>
<td>Characterizing Optical Distortion in DIC Measurements at Higher Magnifications through a Thick Viewing Window #17402</td>
<td>Effect of Printing Orientation on Mixed-Mode Fracture Criterion of Additively Manufactured ABS-CF Composites #17509</td>
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<td>Microstructural Characterization with Directional Reflectance Microscopy (DRM) #17403</td>
<td>A Novel NDT Method for On-line Evaluation of Manufacturing Defects Using Physics Informed Machine Learning #17608</td>
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<td>9:20 a.m.</td>
<td>Exploration of Ductility Scaling Relationships across Length Scales Using a DIC-based Variable Extensometer Technique #17404</td>
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<tr>
<td>9:40 a.m.</td>
<td>Assessing Coated Cladding with the Ring Tension Test (RTT) using Digital Image Correlation (DIC) #17421</td>
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<td>10:00 a.m.</td>
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<td>10:20 a.m.</td>
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<tr>
<td>10:40-11:10 a.m.</td>
<td>Coffee Break—Heritage Pre-function</td>
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Coffee Break—Heritage Pre-function

Full detailed event schedule available on the Whova app.
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<td>11:10 a.m.</td>
<td>Heritage C</td>
<td>Ultraviolet Digital Gradient Sensing (UV-DGS) as an Alternative to Heat Resistant Paints for High Temperature Digital Image Correlation #17694 [Luke H. Remigan—Utah State University; Prasenjit Dwiranj—Utah State University; Jeff M. Wagner—Utah State University; Victoria E. Kemeny—Utah State University; Ryan B. Berke—Utah State University]</td>
<td>From Structure to Properties of Wire Arc Additively Manufactured Steels - A Deep Dive into the Microstructure #17911 [Johan Hoehnagels—Eindhoven University of Technology; Tim van Nuland—Eindhoven University of Technology; Marc Geers—Eindhoven University of Technology; Marco van Dommelen—Eindhoven University of Technology]</td>
<td>Mark Foster—Sandia National Laboratories; Emily Retzlaff—United States Naval Academy</td>
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<tr>
<td>11:30 a.m.</td>
<td>Heritage C</td>
<td>Optimization of Lighting when using DIC in Vibration-based Fatigue Testing #17814 [Jeffrey M. Wagner—Utah State University; Jacob R. Rigby—Utah State University; Brandon A. Furman—Utah State University; Ryan B. Berke—Utah State University]</td>
<td>Exploration of Process-Property Interrelationships in Additively Manufactured Fiber Composites #17426 [Aml Singh—San Diego State University; Ansel Flanagan—San Diego State University]</td>
<td>—On Own</td>
</tr>
<tr>
<td>11:50 a.m.</td>
<td>Heritage C</td>
<td>Multiscale Digital Image Correlation of Nuclear Fuel Cladding Using Color Cameras #17815 [Jaden Z. Mechem—Utah State University; Prasenjit Dwiranj—Utah State University; Senorita Sarker—Utah State University; Jeffrey M. Wagner—Utah State University; Raushan K. Singh—Utah State University; Ryan B. Berke—Utah State University]</td>
<td>Assessment of Microstructural and Mechanical Consistency in L-DED Ti-6Al-4V due to Variation in Processing Parameters #17664 [Daily Thomas—Boeing Research &amp; Technology; Dana Smith—Boeing Research &amp; Technology; Joseph Indeck—Boeing Research &amp; Technology; Hakeeshan Rajendran—Boeing Research &amp; Technology; Debrah Deles-Stagner—Boeing Research &amp; Technology; Zachary Themmer—Boeing Research &amp; Technology]</td>
<td>—On Own</td>
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<tr>
<td>12:10 p.m.</td>
<td>Heritage C</td>
<td>Sub Surface Adhesive Interface Fracture Front Mapping Using Terahertz Spectroscopy #17541 [Mahaveer Singh—Purdue University; Marco Herbsommer—Purdue University; Shuchet Harmaekar—Purdue University; Vikas Tomar—Purdue University]</td>
<td>Facile Material Hybridization for Tunable Structural Performance #17401 [Brandon Huffman—San Diego State University; Behrand Koober—Rowan University; Dennis Miller—University of South Carolina; Subramani Sockalingam—University of South Carolina; Michael A. Sutton—University of South Carolina; George Youssef—San Diego State University]</td>
<td>—On Own</td>
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<tr>
<td>12:30-1:30 p.m.</td>
<td>Lunch</td>
<td>Lunch—On Own</td>
<td>Lunch—On Own</td>
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<tr>
<td>12:30-1:30 p.m.</td>
<td>Heritage C</td>
<td>DIC Challenge Meeting—Heritage E</td>
<td>DIC Challenge Meeting—Heritage E</td>
<td>DIC Challenge Meeting—Heritage E</td>
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**Dynamic Characterization and Numerical Simulation of Density Graded Polymeric Foams for Energy Absorption** #17602

- Marco Sasso—University Politecnica delle Marche; Mattia Ulzeri—University Politecnica delle Marche; Carlo Sabbatini—Università Politecnica delle Marche; Edoardo Manconi—Università degli Studi dell’Aquila; Marco Pillon—University Politecnica delle Marche

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**Microstructural Implications of Heat Treatment on Compression Behavior of Polyethylene Methacrylate** #17648

- Tulika Dixit—Colorado School of Mines; Leslie Lambersan—Colorado School of Mines

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**Dynamic Viscoelasticity in Single Crystalline Barium Titanate** #17842

- Matthias Biedermann—ETH Zürich; Vignesh Kannan—ETH Zürich; Dennis Kochmann—ETH Zürich

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**Full-Field Strains of High-Grade Bursal-Sided Rotator Cuff Tendon Tears** #17879

- Carla Nath duly Villacís Núñez—University of Michigan; Ulrich Scheuer—University of Michigan; Ashesh Badl—NorthShore Orthopaedic and Spine Institute; Ellen M. Amado—University of Michigan

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**Numerical Investigation of Metamaterial Unit Cells with Tunable Mechanical Behavior under Quasi-static Uniaxial and Toroidal Loads** #17673

- Rebecca Kose—Fraunhofer Institute for Nondestructive Testing IZFP; Sarah Cl Fischer—Fraunhofer Institute for Nondestructive Testing IZFP

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**Trade-off Break in Strength-Ductility Relation via Graphene/Ni Wires: Tensile Tester for Microscale Wires and Strengthening Mechanism in Mechanical Property** #17971

- Fangyan Che—Arizona State University; Marward Khalil—Arizona State University; Yuchun Dau—Arizona State University; Chunghwan Kim—Arizona State University; Wonma Kang—Arizona State University

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**High Strain Rate Response of Zorbium Foam Liners in Combat Helmets Subjected to Shock Waves** #17759

- Joseph Amponsah—Iowa State University; Jeffrey A. Arruda—University of Michigan; Arruda—University of Michigan; Asheesh Bedi—University of Michigan; Ulrich V. Voo—University of Michigan; Carolina Villacís Núñez—University of Michigan; Uschus Dau—Arizona State University; Chunghwan Kim—Arizona State University; Wonma Kang—Arizona State University

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**Comparison of Actuation Performance Between Linear Carbon Fiber-Based Artificial Muscles and Rotary Servo Actuators** #17707

- Bradley D. Lawrence—DEVCOM Army Research Laboratory; Frank Gardner—DEVCOM Army Research Laboratory; Jeffrey T. Aukstas—DEVCOM Army Research Laboratory; Madeline A. Morales—DEVCOM Army Research Laboratory; Todd C. Henry—DEVCOM Army Research Laboratory

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**Evolution of Material Properties in Molecularly Architected Semi-Crystalline Copolymers** #17316

- Luis E. Rodriguez Kett—University of Illinois Urbana-Champaign; Nancy R. Sottas—University of Illinois Urbana-Champaign

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**Finite Element Analysis of Traumatic Blast Shock on a Brain Phantom Model** #18063

- Marshid Khandaker—University of Central Oklahoma; Dhar C. Kalay—Bursa Uludag University; Mehmet K. Turan—Bursa Uludag University; Efe Savran—Bursa Uludag University; Faisal Karap—Bursa Uludag University; Mohammad Hossain—University of Central Oklahoma

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**Layered Jamming of Bistable Carbon Fiber Composites for Lightweight Morphing Structures** #17575

- Hugh A. Bruck—University of Maryland; Vidya Manju—University of Maryland; Oliver J. Myers—Clemson University

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**Dynamic Cyclic Loading--Unloading Response of AM PMDI Compression Pads** #17711

- John Vanga—San Diego State University; Rie Sano—San Diego State University; Devi Rouch—San Diego State University

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**Lunch—On Own**

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**DIC Challenge Meeting—Heritage E**
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<tr>
<td>1:30 p.m.</td>
<td>85. THERMAL AND ENVIRONMENTAL EFFECTS IN FRACTURE AND FATIGUE</td>
<td>An Update on a High-Throughput Technique for Conducting Multiple Creep Tests Simultaneously</td>
<td>Heterogeneous Deformation of Additively Manufactured IN625 at Different Strain Rates</td>
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<td>Michael Schuster—GE Research; Ryan Berke—Utah State University</td>
<td>Michael Schuster—GE Research; Ryan Berke—Utah State University                                                   Kendall Yetter—University of Tulsa; Nha Uyen Huynh—Sandia National Laboratories</td>
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<td>1:50 p.m.</td>
<td>Vibration-Based Fatigue Measurements at Elevated Temperatures</td>
<td>Vibration-Based Fatigue Measurements at Elevated Temperatures</td>
<td>Effect of Process Gas on Melt Pool Dynamics and Microstructure of 316L SS in L-PBF</td>
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<td>Matthew R. Hope—USU; Jeffrey M. Wagner—USU; Brandon A. Farman—USU; Ryan B. Berke—USU</td>
<td>Matthew R. Hope—USU; Jeffrey M. Wagner—USU; Brandon A. Farman—USU; Ryan B. Berke—USU</td>
<td>Andrii Smolyak—Auburn University; Rong Zhao—Auburn University; Ethan Morcos—Auburn University; Barton C. Proven—Auburn University</td>
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<td>2:10 p.m.</td>
<td>Microcracking Fracture Toughness of Cryogenically Conditioned Composites</td>
<td>Microcracking Fracture Toughness of Cryogenically Conditioned Composites</td>
<td>A New Transient Surface Remelting Process for Smoothening AM Metals</td>
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<td>Ben Gittins—University of Bristol; Neha Chandranan—University of Bristol; Matthew E. Swanson—Sandia National Laboratory; Thomas A. Ivanoff—Sandia National Laboratory; Amanda R. Jones—Sandia National Laboratory; Mark H. Foster—Sandia National Laboratory; Charlotte B. Kramer—Sandia National Laboratory</td>
<td>Ben Gittins—University of Bristol; Neha Chandranan—University of Bristol</td>
<td>Kendall J. Yetter—University of Tulsa; William LePage—University of Tulsa</td>
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<td>2:30 p.m.</td>
<td>Multi-axial Effect on the Fatigue Performance of Pt-20Ir and MP35N Coils used in Medical Device</td>
<td>Multi-axial Effect on the Fatigue Performance of Pt-20Ir and MP35N Coils used in Medical Device</td>
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<td>2:50 p.m.</td>
<td>Exploration of Shear-Dominated Top Hat Specimen Geometry for Model Calibration</td>
<td>Exploration of Shear-Dominated Top Hat Specimen Geometry for Model Calibration</td>
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<td>3:10-3:40 p.m.</td>
<td>Coffee Break</td>
<td>Coffee Break—Heritage Pre-function</td>
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<td>HEMLOCK/OAK</td>
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<td><strong>DYNAMIC BEHAVIOR OF MATERIALS</strong></td>
<td><strong>14TH INTERNATIONAL SYMPOSIUM ON THE MECHANICS OF BIOLOGICAL SYSTEMS &amp; MATERIALS</strong></td>
<td><strong>10TH INTERNATIONAL SYMPOSIUM ON THE MECHANICS OF COMPOSITE AND MULTIFUNCTIONAL MATERIALS</strong></td>
<td><strong>SUSTAINABLE CONSTITUENT COMPOSITES II</strong></td>
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<td>88. BRITTLE MATERIALS</td>
<td>89. EXPERIMENTAL TECHNIQUES FOR BIOLOGICAL MATERIAL II</td>
<td>90. SUSTAINABLE CONSTITUENT COMPOSITES II</td>
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<td>Vignesh Kannan—ETH Zürich</td>
<td>Karen Kasza—Columbia University</td>
<td>Fabio Gatamorta—Universidade do Estado do Rio de Janeiro; Emin Bayraktar—ISAE-SUPMECA-Paris</td>
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<td>Dynamic Mechanical Behavior of NdFeB Magnets #17809 (Colin M. Loeffler—Sandia National Laboratories; Bo Song—Sandia National Laboratories; Brett Sanborn—Sandia National Laboratories; Thomas Martinez—Sandia National Laboratories; Christopher Laursen—Sandia National Laboratories; Dylan Landry—Sandia National Laboratories; Rob Ferrie—Sandia National Laboratories; James Pacheo—Sandia National Laboratories)</td>
<td>Nonlinear Modelling in Suppression of Parkinsonian Hand Tremor #17671 (Tim A. Doughty—University of Portland; Conner Shannon—University of Portland; J. P. Neighbors—University of Portland)</td>
<td>Damage Analyses Sustainability of Fresh Scrap Ni-Al Intermetallic based Composites reinforced with TiB2-TiC produced by Sinter-Forging #17549 (Fabio Gatamorta—Rio de Janeiro State University; Gamze Cakir Kabakci—ISAE-SUPMECA-Paris; Ozgur Aslan—Atlin University; Emin Bayraktar—ISAE-SUPMECA-Paris)</td>
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<td>Quantitative Error Analysis in Computer Vision Based Fracture Measurement #17833 (Logan Shankarah—DEVCOM ARL; Chris Meredith—DEVCOM ARL)</td>
<td>Correlating Viscoelastic Properties and Polymerization Process of Polyvinyl Alcohol/ Sodium Alginate (PVA-SA) Hydrogel with Optical Coherence Elastography #17831 (Evan Depp—Northwestern University; George Weib—Northwestern University; Olusojiyi Balogun—Northwestern University)</td>
<td>Low Cost Copper Matrix Composites Reinforced with Fe3O4-NiO-Co Produced by Sinter-Forging: Electrical and Magnetic Properties #17568 (Matthew Soran—ISAE-SUPMECA-Paris; Fabio Gatamorta—Rio de Janeiro State University; Ozgur Aslan—Atlin University; Emin Bayraktar—ISAE-SUPMECA-Paris)</td>
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<td>Visualizing Damage Evolution of Ceramics with in-situ X-Ray and Visible-Light Imaging under High-Rate Uniaxial Compression #17700 (Christopher S. Meredith—Army Research Laboratory; Andrew Leong—Los Alamos National Lab; Bryan Zuanetti—Los Alamos National Lab; Nicholas J. Lorencz—Army Research Lab; Jeffrey J. Swabs—Army Research Lab)</td>
<td>Seeing the Sound: An Ultrasound-mediated Intravascular Light Source Enabled by Colloidal Mechanoluminescent Materials #17950 (Goosong Hong—Stanford University)</td>
<td>Low Cost Production of the Magnetic Aluminium “AA7075-AT050” based Composites Reinforced with Nano ZrO2 and Nano Fe3O4 for Aeronautical engineering Applications #17573 (Gamze Cakir Kabakci—ISAE-SUPMECA-Paris; Ozgur Aslan—Atlin University; Fabio Gatamorta—Rio de Janeiro State University; Emin Bayraktar—ISAE-SUPMECA-Paris)</td>
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<td>In Situ Energy Dispersive X-ray Diffraction Tomography of Shark Vertebrae #17593 (Jun-Sang Park—Anyang National Laboratory; Ryan Horn—Purdue University; Huyan Chen—Stony Brook University; Kelley James—National Oceanic and Atmospheric Administration; Michelle Passerini—National Oceanic and Atmospheric Administration; Lisa Katrines—National Oceanic and Atmospheric Administration; Stuart Stock—Northwestern University)</td>
<td>Sustainability and Green Design of Polymer Based Composites Reinforced with Recycled Natural Fibers #17604 (Olga Kinkova—ISAE-SUPMECA-Paris; Gamze Cakir Kabakci—ISAE-SUPMECA-Paris; Ebru Ata—ISAE-SUPMECA-Paris; Ermin Bayraktar—ISAE-SUPMECA-Paris)</td>
<td>Flexible Carbon Nanotubes (CNT) Polydimethylsiloxane (PDMS) Micro-Newton Force Sensors for Rate-Dependent Hydrogel Characterization #18043 (Sinan Candan—University of Wisconsin Madison)</td>
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<td>Sustainable and Mechanical Behaviour of Polymers Based Composites Reinforced with Recycled Rubber, Carbon Fibers, GNP, Bi2O3 #17566 (Gamze Cakir Kabakci—Atlin University; Olga Kinkova—ISAE-SUPMECA-Paris; Fabio Gatamorta—Rio de Janeiro State University; Emin Bayraktar—ISAE-SUPMECA-Paris)</td>
<td>Coffee Break—Heritage Pre-function</td>
<td>Full detailed event schedule available on the Whova app.</td>
<td>Technical Program 53</td>
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<td>3:40 p.m.</td>
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<td>(Tate T. Adams–Utah State University; Jeffrey M. Wagner–Utah State University; Jacob B. Heninger–Utah State University; Brandon A. Furman–Utah State University; Ryan B. Berke–Utah State University)</td>
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<td>4:00 p.m.</td>
<td>High Throughput Resonance-Dwell Fatigue Measurements using Parallelism #17465</td>
<td>Effect of Ultrasonic Treatment on In718 Powder Re-Use for Laser Powder Bed Fusion #17686</td>
<td>George Vankirk–U.S. Army ERDC; Micael C. Edwards–U.S. Army ERDC; Mei Q. Chandler–U.S. Army ERDC</td>
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<td>Brandon A. Furman–Utah State University; Jeffrey M. Wagner–Utah State University; Jacob B. Heninger–Utah State University; Tate T. Adams–Utah State University; Jacob B. Heninger–Utah State University; Ryan B. Berke–Utah State University</td>
<td>(Hamjad U. Behman–Ohio University; Cheoung O’Brien–Ohio University; Essa A. Alman–Ohio University; Brian Wisner–Ohio University)</td>
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<td>4:20 p.m.</td>
<td>The Effect of Strain Amplitude on Low Cycle Fatigue (LCF) Response of a Single Phase Cu-Zn Alloy at Room Temperature #17558</td>
<td>Multi-Material Direct Ink Writing of Solids Loaded Viscous Materials for Layer-Wise Selective Material Deposition #17704</td>
<td>Mohamed A. Abbas–Southern Methodist University; Casper J.A. Mornout–Eindhoven University of Technology; Imperfectly Roll Bonded Sheet Metal #17886</td>
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<td>4:40 p.m.</td>
<td>Using Added Inertia to Improve Loading of Vibration-based Fatigue Tests #17775</td>
<td>Rapid Prototyping of Micro-Optical Components by Two-Photon Direct Laser Writing and Realization of a Fiber-Optic Based Spectrophotometer #17886</td>
<td>Andrew M. Lessel–U.S. Army Engineering Research and Development Center; Xu Nie–U.S. Army Engineering Research and Development Center; William F. Heard–Army Engineer Research and Development Center; Zackery B. McClelland–U.S. Army ERDC; Mei Q. Chandler–U.S. Army ERDC</td>
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<td>Jacob B. Heninger–Utah State University; Brandon A. Furman–Utah State University; Jeffrey M. Wagner–Utah State University; Tate T. Adams–Utah State University; Ryan B. Berke–Utah State University</td>
<td>(Anthony D. Saleri–Worcester Polytechnic Institute; Cosme Furlong–Worcester Polytechnic Institute)</td>
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<td>5:00 p.m.</td>
<td>Buckling Analysis of a Novel High-Throughput Assembly for Accelerated Fatigue Testing #17813</td>
<td>Additive Manufacturing Process Parameter Design for Variable Component Geometries using Reinforcement Learning #17810</td>
<td>Tyler C. Price–University of Illinois Urbana-Champaign; Tyler C. Price–University of Illinois Urbana-Champaign; Tyler C. Price–University of Illinois Urbana-Champaign</td>
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<td>Meheem Hassan Manhuz–Utah State University; Rachel D. Norris–Utah State University; Rashiwan K. Singh–Utah State University; Caytar J. Willis–Utah State University; Ryan B. Berke–Utah State University</td>
<td>(Ehsan Vaghifi–Auburn University; Seyyedmehrab Hosseini–Auburn University; Bart Prorok–Auburn University; Dharm Mekoshi–Auburn University)</td>
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<td>5:20 p.m.</td>
<td>Microprocessor Failure Detection Using Machine Learning to Identify Fatigue Injuries in Incornt 718 #17691</td>
<td>Fabrication and Characterization of Continuous Polycaprolactone Microfiber Filament for Bioreabsorable Flow Diverters #17948</td>
<td>Caroline Schell–The University of Tulsa; Yang–The University of Texas at Dallas; Ning Bian–The University of Texas at Dallas; Gabriel Thakur–Johns Hopkins University; Sohanjit Ghosh–Johns Hopkins University; Mohmad M. Sevcik–Colorado School of Mines; Elbert Caravaca–U.S. Army Combat Capabilities Development Command Armaments Center; Edward Tesine–Naval Surface Warfare Center, Veronica Eliaason–Colorado School of Mines</td>
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<td>J. Willis–Utah State University; Ryan B. Berke–Utah State University; Raushan K. Singh–Utah State University; Caylor Mahfuz–Utah State University; Rachel D. Norris–Utah State University;</td>
<td>(Mohammad R. Hassani–University of Central Oklahoma; Alex Matsuyko–University of Central Oklahoma)</td>
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<td><strong>95. GEOMATERIALS</strong></td>
<td><strong>97. FRACTURE AND FATIGUE OF COMPOSITES II</strong></td>
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<td>Brett Williams—U.S. Army ERDC; George Vankirk—U.S. Army Corps of Engineers ERDC</td>
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<td>Characterization of Interfacial Adhesion in Frontally Cured Carbon-Fiber/Poly(dicyclopentadiene) (CF/pDCPD) Composites #17550</td>
<td>Caroline Schell—The University of Tulsa</td>
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<td>Impact of Matrix Strength on Dynamic Damage Behavior in Cementitious Composites #17435</td>
<td>Andrew M. Lossel—U.S. Army Engineering Research and Development Center; Brett A. Williams—U.S. Army Engineering Research and Development Center; Xu Nie—Southern Methodist University; William F. Heard—U.S. Army Engineering Research and Development Center</td>
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<td>Simulations of Kolsky Bar and Quasi-Static Loads on Concrete with Explicitly Modeled Aggregate and Cement Using the Advanced Fundamental Concrete Material Model #17616</td>
<td>Mics C. Edwards—U.S. Army ERDC; Mel L. Chandler—U.S. Army ERDC; Jackery B. Mcelland—U.S. Army ERDC</td>
<td>Influence of Cavities on the Formability of Imperfectly Roll Bonded Sheet Metal #17886</td>
<td>Casper Ja Marnoot—Eindhoven University of Technology; Shur Giew—Massachusetts Institute of Technology; C. Gem Yoon—Massachusetts Institute of Technology</td>
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<td>An Improved Experimental Technique for Dynamic Direct Tensile Testing of Concrete #17269</td>
<td>Mohamed A. Abbas—Southern Methodist University; Dylan D. Chapman—Southern Methodist University; Brett A. Williams—Army Engineer Research and Development Center; William F. Heard—Army Engineer Research and Development Center; Xu Nie—Southern Methodist University</td>
<td>Aminated Graphene-Filled Glass Fiber Composites for Extended Fatigue Life #17981</td>
<td>Ning Bian—The University of Texas at Dallas; Ashutosh Shrivastava—The University of Texas at Dallas; Runyu Zhang—The University of Texas at Dallas; Gabriel Morel-Torres—University of Puerto Rico, Mayaguez; Samuuddin Mahmood—GrapheneTX Inc.; Ducky Yang—The University of Texas at Dallas; Hongbing Lu—University of Texas at Dallas</td>
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<td>On Rapid Compaction of Granular Materials: Combining Experiments with In-Situ Imaging and Mesoscale Modeling #17571</td>
<td>Mohammad M. Thakur—Johns Hopkins University; Suhajit Ghosh—Johns Hopkins University; Ryan C. Hurley—Johns Hopkins University</td>
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2024 SEM ANNUAL!

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2025 SEM ANNUAL

JUNE 2-5, 2025 | MILWAUKEE, WI
Session Organizers

We would like to thank the following individuals for their efforts in organizing the sessions below:

01. Michael Sutton Int'l Student Paper Competition I
Sponsored by Correlated Solutions, Inc.

02. Basics of …
Ryan Berke–Utah State University

04. Thermomechanics
Rosa De Finis–University of Salento;
Geir Ølafsson–University of Bristol;
Suhasini Gururaja–Auburn University

07. Shock and Blast I
Helio Matos–University of Rhode Island;
Finnegan Wilson–Colorado School of Mines

08. Michael Sutton Int'l Student Paper Competition II
Sponsored by Correlated Solutions, Inc.

11. Advanced Thermographic Techniques for Structural Health Monitoring (SHM)
Rosa De Finis–University of Salento;
Geir Ølafsson–University of Bristol;
Suhasini Gururaja–Auburn University

14. Shock and Blast II
Helio Matos–University of Rhode Island;
Finnegan Wilson–Colorado School of Mines

15. Michael Sutton Int'l Student Paper Competition III
Sponsored by Correlated Solutions, Inc.

16. In-situ Techniques and Microscale Effects on Mechanical Behaviors
Kaitlynn Fitzgerald–Sandia National Laboratories;
Jay Carroll–Sandia National Laboratories

18. Thermography-based Nondestructive Evaluation (NDE), Process Monitoring, Data Fusion
Rosa De Finis–University of Salento;
Geir Ølafsson–University of Bristol;
Suhasini Gururaja–Auburn University

21. Impact and Penetration
Marcia Cooper–Texas A&M University;
Michael Trim–ERDC;
Joseph Morton–Colorado School of Mines

22. Fracture and Fatigue in Brittle Materials
Scott Grutzik–Sandia National Laboratories;
Kimberley Mac Donald–Sandia National Laboratories

23. High Strain Rate Identification
Marco Sasso–Università Politecnica delle Marche

25. Industrial Applications of Thermography/ Applied Thermography: Case studies
Rosa De Finis–University of Salento;
Geir Ølafsson–University of Bristol;
Suhasini Gururaja–Auburn University

28. Novel Techniques I
Nathan Spulak–The University of Alabama - Huntsville;
Trey Leonard–Standard Mechanics, LLC

29. Interface in Composites
Scott Grutzik–Sandia National Laboratories;
Kimberley Mac Donald–Sandia National Laboratories

30. Plasticity, Damage & Stress Identification
Johan Hoefnagels–Eindhoven University of Technology

32. Cesar Sciammarella's 100th Birthday I
Horacio Espinosa–Northwestern University;
Michael Sutton–University of South Carolina;
Emmanuel Gdoutos–Academy of Athens;
Cosme Furlong–Worcester Polytechnic Institute;
Luciano Lamberti–Politecnico di Bari

35. Novel Techniques II
Nathan Spulak–The University of Alabama - Huntsville;
Trey Leonard–Standard Mechanics, LLC

36. Fracture of Additively Manufactured Materials I
Garrett Pataky–Clemson University;
William LePage–University of Tulsa

37. Material Parameters Identification
Marco Rossi–Università Politecnica delle Marche

39. Cesar Sciammarella's 100th Birthday II
Horacio Espinosa–Northwestern University;
Michael Sutton–University of South Carolina;
Emmanuel Gdoutos–Academy of Athens;
Cosme Furlong–Worcester Polytechnic Institute;
Luciano Lamberti–Politecnico di Bari

42. Quantitative Visualization
Logan Shannahan–DEVCOM Army Research Laboratory;
Nicholas Lorenzo–U.S. Army Research Laboratory

43. Fracture of Additively Manufactured Materials II
Garrett Pataky–Clemson University;
William LePage–University of Tulsa

46. Cesar Sciammarella's 100th Birthday III
Horacio Espinosa–Northwestern University;
Michael Sutton–University of South Carolina;
Emmanuel Gdoutos–Academy of Athens;
Cosme Furlong–Worcester Polytechnic Institute;
Luciano Lamberti–Politecnico di Bari
47. Mechanical Behavior of Multicellular Tissues in Organisms
Karen Kasza–Columbia University;
Jonathan Estrada–University of Michigan;
Alexander McGhee–University of Arizona

49. High Rate Deformation of Energetic Materials
Tomislav Kosta–U.S. Air Force Research Laboratory;
Jamie Kimberley–New Mexico Institute of Mining and Technology;
Trevor Fleck–Baylor University

50. Fracture and Damage of Highly Deformable Solids
Shelby Hutchens–University of Illinois Urbana-Champaign;
John Kolinski–EPFL

53. Cesar Sciammarella’s 100th Birthday IV
Horacio Espinosa–Northwestern University;
Michael Sutton–University of South Carolina;
Emmanuel Gdoutos–Academy of Athens;
Cosme Furlong–Worcester Polytechnic Institute;
Luciano Lamberti–Politecnico di Bari

54. Cellular Force Generation and Mechanobiology
Karen Kasza–Columbia University;
Jonathan Estrada–University of Michigan;
Alexander McGhee–University of Arizona

56. Mechanics of Pore Collapse/Hot Spots in Energetic Materials
Tomislav Kosta–U.S. Air Force Research Laboratory;
Jamie Kimberley–New Mexico Institute of Mining and Technology;
Trevor Fleck–Baylor University

57. Mechanics of Electrochemical and Electromechanical Materials
Joseph Indeck–The Boeing Company;
John Kolinski–EPFL

60. Cesar Sciammarella’s 100th Birthday V
Horacio Espinosa–Northwestern University;
Michael Sutton–University of South Carolina;
Emmanuel Gdoutos–Academy of Athens;
Cosme Furlong–Worcester Polytechnic Institute;
Luciano Lamberti–Politecnico di Bari

61. Mechanical Behavior in Biological Function and Disease
Karen Kasza–Columbia University;
Jonathan Estrada–University of Michigan;
Alexander McGhee–University of Arizona

63. Architectitic Materials
Vignesh Kannan–ETH Zürich;
Kazi Uddin–Rowan University

64. 3D Characterization of Deformation, Damage and Failure
Philip Noell–Sandia National Laboratories;
John Kolinski–EPFL

67. Cesar Sciammarella’s 100th Birthday VI
Horacio Espinosa–Northwestern University;
Michael Sutton–University of South Carolina;
Emmanuel Gdoutos–Academy of Athens;
Cosme Furlong–Worcester Polytechnic Institute;
Luciano Lamberti–Politecnico di Bari

68. Mechanics of the Brain and Traumatic Brain Injury
Karen Kasza–Columbia University;
Jonathan Estrada–University of Michigan;
Alexander McGhee–University of Arizona

70. Standardization of Dynamic Testing
Matthew Shaeffer–Johns Hopkins University;
Steven Mates–National Institute of Standards and Technology

73. Cesar Sciammarella’s 100th Birthday VII
Horacio Espinosa–Northwestern University;
Michael Sutton–University of South Carolina;
Emmanuel Gdoutos–Academy of Athens;
Cosme Furlong–Worcester Polytechnic Institute;
Luciano Lamberti–Politecnico di Bari

75. Experimental Techniques for Biological Materials I
Karen Kasza–Columbia University;
Jonathan Estrada–University of Michigan;
Alexander McGhee–University of Arizona

81. Dynamic Time Dependent Materials
Vignesh Kannan–ETH Zürich

82. Biomechanics of Healthy and Diseased Tissue
Karen Kasza–Columbia University;
Jonathan Estrada–University of Michigan;
Alexander McGhee–University of Arizona

84. Low Impedance
Mark Smeets–San Diego State University

85. Thermal and Environmental Effects in Fracture and Fatigue
Michael Schuster–GE Research;
Ryan Berke–Utah State University

88. Brittle Materials
Vignesh Kannan–ETH Zürich;
Colin Loeffler–Sandia National Laboratories

89. Experimental Techniques for Biological Material II
Karen Kasza–Columbia University;
Jonathan Estrada–University of Michigan;
Alexander McGhee–University of Arizona

92. Vibrations and Cyclic Fatigue
Ryan Berke–Utah State University;
Leah Ginsberg–Engineering Systems, Inc.

95. Geomaterials
Brett Williams–U.S. Army ERDC
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Image Systems TrackEye, Inc.
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480-436-4764
james.monnie@imagesystems.se
imagesystems.se

Image Systems specializes in motion analysis software and systems, providing accurate measuring tools for object movement, orientation, and deformation analysis. With over 30 years in high-speed imagery metrology, our TEMA platform and Elite-DIC system, including high-resolution cameras and advanced tools, offer versatile solutions for diverse applications. Our in-house developed algorithms and strong sensor infrastructure support a broad range of digital image correlation (DIC) applications, ensuring quality results.

iX Cameras, Inc.
8 Cabot Road, Suite 1200
Woburn, MA 01801 USA
339-645-0778
michael.quzor@ix-cameras.com
www.ix-cameras.com

iX Cameras is a worldwide leader in the high-speed (slow motion) imaging industry. We design, build, and sell high-speed cameras and software for advanced research and engineering applications. Our cameras and software are used in the study and analysis of dynamic behavior of materials, DIC, ballistics, aerospace, fluid dynamics, shock and vibration, Schlieren, and automotive applications.
**LaVision Inc.**  
211 W. Michigan Avenue, Suite #100  
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sales@lavisioninc.com  
www.lavision.com

LaVision provides integrated imaging systems to scientific, industrial and educational markets and has extensive experience in optical techniques such as 2-D, stereo, and tomographic particle image velocimetry, gaseous and liquid laser induced fluorescence, shadowgraphy for multi-phase flows, DIC for deformation/strain, high-speed and ultra-high-speed imaging, and intensified camera systems.

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**Psylotech**  
1616 Payne Street  
Evanston, IL 60201 USA  
847-328-1800 x 18  
info@psylotech.com  
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Setting the stage for multi-scale in situ mechanical testing, Psylotech designs and manufactures miniature universal load frames that are compatible with optical microscopes, SEM, confocal, Raman, µCT, and beamlines. Based in Evanston, IL, Psylotech has been supplying precision, modular systems to meet the evolving needs of leading public and private research institutions since 2006.

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**Photron USA Inc.**  
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858-684-3555  
image@photron.com  
www.photron.com

Photron, a worldwide supplier of high-speed cameras for slow motion analysis cameras operating from 60 to 2M frames per second for use in applications including ballistics, digital image correlations (DIC), laser beam shaping and materials testing, also offers the world’s first high-speed 2D polarization camera for use in visualizing photoelasticity in soft materials, microfluidics, and rheology.

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**Quantifi Photonics**  
13630 Immanuel Road, Suite E  
Austin, TX 78660 USA  
512-572-2033  
sales@quantifiphotonics.com  
www.quantifiphotonics.com

Quantifi Photonics is a test and measurement company in the photonics space. Quantifi’s modular Photon Doppler Velocimetry (PDV) solution combines all the key optical components in extremely compact instruments, helping research teams more efficiently design, maintain, and control their PDV systems, so they can focus more of their time on making sense of the PDV data.

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**RDI Technologies Inc.**  
10024 Investment Drive  
Knoxville, TN 37932 USA  
865-606-1080  
info@rditechnologies.com  
www.rditechnologies.com

RDI Technologies is pioneering the camera as the sensor of the future because visualization is faster, safer, and makes the complex more simple. Our proprietary technology platform powered by Motion Amplification® enables our users to see and measure motion that is impossible to see with the human eye and could previously only be measured by contacting sensors.

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**REL, Inc.**  
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906-337-3018 ext. 302  
hsrt@relinc.com  
www.relinc.com

REL, Inc. manufactures high intensity visible spectrum LED lighting solutions. REL’s Certified 100 g light, the W54, is the most robust form of visible spectrum LED power. Sled testing has demonstrated multiaxial survivability of the lamp subjected to 150 g’s for a time duration in excess of 15 milliseconds! The tuned high-efficiency pin-fin fan-sink design cools the 30 LEDs as they output an explosive 16,000 lumens of continuous light power during your high-speed capture event!
Exposition Directory (cont)

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www.specialised-imaging.com

Specialised Imaging is a manufacture of ultra high-speed imaging solutions for scientific research and military applications. These solutions include the award winning projectile trajectory tracking system, framing and ballistic range cameras, image intensifiers, illumination and triggering systems. Service and software. Specialised Imaging also offer streak cameras and long record duration video camera systems.

Stresstech, Inc.  
540 Alpha Drive  
Pittsburgh, PA 15238 USA  
412-784-8400  
neil.owen@stresstech.com  
www.stresstech.com

For more than 40 years, Stresstech has been providing non-destructive and destructive testing solutions for process control and quality inspection across the manufacturing & service industries. Stresstech is headquartered in Finland and has offices in Germany, the United States, and India, as well as sales and service representatives around the world.

Telops  
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418-864-7808  
sales@telops.com  
www.telops.com

Telops designs and manufactures high-performance hyperspectral imaging systems and infrared cameras for defence, industrial, and academic research applications. Telops also offers R&D services for optical systems technology development in order to respond to the specific needs of its customers. Since its beginnings in 2000, Telops has distinguished itself with the quality of its personnel and its innovative approach to the technological challenges of the optics and photonics field. Today, the expertise of its scientists, engineers and technicians and the performance of its infrared cameras and hyperspectral imagers are internationally recognized.

Trilion Quality Systems  
651 Park Avenue  
King of Prussia, PA 19406 USA  
215-710-3000  
sales@trilion.com  
www.trilion.com

Trilion Quality Systems develops precision 3D optical measurement devices for dynamic testing. The company’s 3D digital image correlation and photogrammetry instruments measure material properties, structural response, and product quality in the automotive, aerospace, biomechanics, microelectronics, civil structures, and defense fields.

Vision Research  
100 Dey Road  
Wayne, NJ 07470 USA  
973-283-5490  
phantom.marketing@ametek.com  
www.phantomhighspeed.com

Vision Research (VRI) designs, develops, and manufactures industry-leading, cutting-edge Phantom High-Speed cameras. Our products employ proprietary CMOS sensor technology designed for capturing video with class-leading image quality at staggering frame rates. Phantom cameras can be found throughout academia, industry, and government laboratories. VRI also offers cutting-edge application-specific short courses out of the Phantom Academy of High-Speed Imaging. These are hands-on trainings hosted by the VRI application engineering team.

Xcitex, Inc.  
8 Cabot Road, Suite 1400  
Woburn, MA 01801 USA  
617-225-0080  
info@xcitex.com  
www.xcitex.com

Xcitex (booth 307) is the developer of the award-winning line of ProAnalyst software products for video-based motion analysis. Used throughout the world since 2005 with over 1500 installations, ProAnalyst allows users to track objects using advanced tracking algorithms, and compute complex motion models. ProAnalyst 2023 is the newest version of Xcitex’s flagship software. Stop by the booth for a free trial of ProAnalyst 2023 (all toolkits and features!) Xcitex has also introduced new ProAnalyst Essentials, a free-download starter version of ProAnalyst.
ATTENTION ALL CONFERENCE ATTENDEES

Are you interested in becoming a technical reviewer for one or more of SEM’s journals?

Please scan the QR codes below for details on each journal and how to become a technical reviewer.

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www.springer.com/journal/40799
www.springer.com/journal/40870
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The Whova Event App is free to download and is an integral part of your SEM Annual experience. Here’s everything you need to know about the Whova App:

**Downloading**
The Whova event app is free for event attendees. To download the app, please follow ANY of the steps below:

- Open up the Apple Store or Google Play on your mobile device, and search for “Whova”
- Or, scan the QR codes here:
- Or, visit: https://whova.com/portal/webapp/sem_202405/ in your web browser.

When you have found Whova, tap to download and install the Whova app.

**How to Sign In**
1. Sign on to Whova with the same email as registered for the Conference on sem.org
2. Create password and type in your name.
3. Profile Editing
Other attendees will see this and network with you, so make it look good. You can edit it later; click your profile picture (or a default headshot image) at top-left corner of the event “Home.”

**4. Access your event main page**
a. The app will take you to your event page automatically if organizers updated the app with your registration information.
b. If the event doesn’t show up automatically, search for 2024 SEM Annual Conference.

**Technical Sessions: Interactive Q&A**
The ability to interact, share ideas and ask questions is a mainstay of our events. Did you find an interesting presentation and want to ask a question? From the Agenda, within the app or the web platform, click on a session to view its details. On the mobile app, tap the Q&A icon and post your question (authors can then reply directly to your question at the scheduled time slot). On the web platform, Session Q&A should be automatically highlighted, click Ask a Question button, type your question and hit submit.

**Whova Event App User Tutorial**
Need a quick glance at how to navigate and use the app? www.whova.com/pages/whova-app-user-guide/
SEM Membership

Membership in SEM is open to any individual who supports the mission of the society. The members of SEM encompass a unique group of experimentalists, development engineers, design engineers, test engineers and technicians, students, and research and development scientists from industry and educational institutions. Prices listed (except Individual Life Membership) are for one year of membership.

**Individual Membership** ................................................................. $100

**Student Membership**
- Undergraduates ............................................................................. $35
- Graduates ........................................................................................ $50

**Individual Lifetime Membership** .................................................. $1,500
  (membership NEVER expires)

**SEM Corporate Membership**
- Sustaining Membership ................................................................. $2,100
- Commercial Membership ............................................................. $1,200
- Government / Military Membership ............................................... $900
- Educational and Non-Profit Membership ......................................... $600

**SEM Membership Add-On Options**
- Experimental Techniques (Print) .................................................. $75
- Experimental Mechanics (Print) ..................................................... $75
- Journal of Dynamic Behavior of Materials (Print) ......................... $75

SEM Membership has its benefits! Among those benefits is free electronic access to a number of journals. To sign up for any of the above options, select them upon registration.

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2023-2024 SEM Executive Board

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Contact SEM
Society for Experimental Mechanics, Inc.
7 School Street, Bethel, CT 06801 USA
203-790-6373 | sem@sem.org | sem.org

**Executive Director/Secretary**
Nuno Lopes | director@sem.org

**Conference Manager**
Jennifer Tingets | jen@sem.org

**Registration/Membership Manager**
Shari Matthews | shari@sem.org

**Proceedings/Abstract Submission**
Nicole Trombetta | nicole@sem.org

**Office Manager/Managing Editor–SEM Journals**
Nicole Trombetta | nicole@sem.org

**Graphic Designer**
Dan Trombetta | dan@sem.org
Registration Information

Conference:
June 3 - 6, 2024

Pre-Conference Course
June 2, 2024

Course fee includes lunch each day of the course, course handout materials, and refreshment breaks. Lodging and additional food or materials are not included.

Cancellation Policy
If the course or conference is canceled for any reason, the Society for Experimental Mechanics’ liability is limited to the return of the registration fees.

We understand that circumstances may arise that require you to cancel. If you need to cancel a registration/course, your request must be submitted in writing to SEM by May 1, 2024. A full refund of the registration fee, less a $75 administrative fee, will be granted for all written registration requests received by May 1, 2024; send your written request to Shari Matthews at shari@sem.org. No refunds for cancellations received after May 1, 2024. There are no refunds for no-shows.

Registration Rates

<table>
<thead>
<tr>
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<th>Early Bird</th>
<th>Regular</th>
<th>Late</th>
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<tr>
<td>Member</td>
<td>$925</td>
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<td>$1225</td>
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<td>Student Member*</td>
<td>$300</td>
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<td>Student Non-Member*</td>
<td>$360</td>
<td>$435</td>
<td>$460</td>
</tr>
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Early Bird Rates effective 3/13/24 UNTIL 5/1/24 @4:59 PM EST
Regular Rates effective 5/1/24 at 5:00 PM UNTIL - 5/22/24 at 4:59 PM EST
Late Rates effective as of 5/22/24 at 5:00 PM EST

Students
To qualify for student rates, you must be a full-time engineering or science student at the time of the conference. This includes Graduate and/or Undergraduate students. Post-Doctoral do not qualify and must pay regular rate. An unofficial transcript showing proof of enrollment MUST be emailed to Shari Matthews (shari@sem.org). * please see Student Membership requirements under at www.sem.org/faqs#bb

Conference Registration
Registration fee entitles the registrant to a free downloadable conference submissions (available for 30 days after the conference) and includes the following: President’s Reception on Tuesday, June 4, Welcome Reception on Sunday, June 2, Exposition, and one ticket to the All Society Awards Luncheon on Wednesday June 5.

Conference participants, including authors, coauthors, students, and session chairs, should preregister online at sem.org. Your badge and other conference materials will be ready for you when you arrive at the registration desk.

All those who registered by the May 1, 2024 deadline are eligible to win one of many door prizes being offered by Annual Exhibitors.

Conference Registration Hours

Conference Registration:
Sunday, June 2, 2024 ..........................................................8:30 AM –9:30 AM
Monday, June 3, 2024 .......................................................7:30 AM–4:00 PM
Tuesday, June 4, 2024 .......................................................7:30 AM–4:00 PM
Wednesday, June 5, 2024 ...................................................8:00 AM–4:00 PM
Thursday, June 6, 2024 .....................................................8:00 AM–12:30 PM

Course Only Registration:
Sunday, June 2, 2024 .......................................................8:30 AM –9:30 AM
SEM/IMAC Code of Conduct

The Society for Experimental Mechanics, Inc. is committed to making its SEM/IMAC Conferences inclusive spaces for sharing ideas and knowledge by providing a safe and productive meeting environment that fosters open dialogue and the exchange of scientific ideas, promotes equal opportunities and treatment for all participants, and is free of harassment and discrimination. All participants are expected to treat others with respect and consideration, follow venue rules, and alert staff or security of any dangerous situations or anyone in distress. Speakers are expected to uphold standards of scientific integrity and professional ethics. The policies herein apply to all attendees, speakers, exhibitors, staff, contractors, volunteers, and guests at SEM/IMAC Conferences and related events.

SEM/IMAC prohibits any form of harassment, sexual or otherwise. Harassment should be reported immediately to SEM/IMAC Conference staff and via email: director@sem.org or (203) 790-6373 extension 100.

What is Harassment?
Harassment includes speech or behavior that is not welcome or is personally offensive, whether it is based on ethnicity, gender, religion, age, body size, disability, veteran status, marital status, sexual orientation, gender identity, or any other reason not related to scientific merit. It includes stalking, unnecessary touching and unwelcome attention.

Behavior that is acceptable to one person may not be acceptable to another, so use discretion to be sure that respect is communicated. Harassment intended in a joking manner still constitutes unacceptable behavior. Retaliation for reporting harassment is also a violation of this policy, as is reporting an incident in bad faith.

Reporting Harassment
SEM/IMAC is committed to supporting a productive and safe working environment for everyone at our conferences. If an individual experiences, or witnesses, harassment, they should contact SEM/IMAC Conference staff and via email: director@sem.org or (203) 790-6373 extension 100, or, if during a conference, by using a venue phone and ask for security if they feel unsafe. All complaints will be treated seriously and responded to promptly.

If an individual experiences harassment, it is recommended that, in addition to notifying SEM/IMAC Conference staff, they write down the details, as they may be asked to fill out a report. They are not expected to discuss the incident with the offending party. Their confidentiality will be maintained to the extent that it does not compromise the rights of others.

Filing a Formal Complaint of Harassment
If an individual wishes to file a formal complaint of harassment:

- Notify SEM/IMAC Conference staff and via email: director@sem.org or (203) 790-6373 extension 100
- SEM/IMAC staff will discuss the details first with the individual filing the complaint, then with the alleged offender; seek counsel if the appropriate course of action is unclear; and report findings as needed to the SEM Executive Board
- SEM/IMAC will consult with the individual filing the complaint prior to taking any action

SEM/IMAC reserves the right to request the removal of any individual engaging in harassment type behavior from its Conferences. All conference fees shall not be refunded, the individual(s) will be prohibited from attending future SEM/IMAC Conferences and their employer or institution will be notified.

For any questions about this policy, please contact Nuno Lopes, Executive Director at director@sem.org or (203) 790-6373 extension 100.
Terms and Conditions

The following Terms and Conditions apply to the Society for Experimental Mechanics (SEM) website and to SEM Events, both online and in-person. As a condition of registration, you will be required to acknowledge and accept the SEM Terms and Conditions contained herein.

Acceptance of our Terms and Conditions
Using our website indicates your acceptance of our terms and conditions. Your continued visits to our website after changes are posted to these terms and conditions will signify your acceptance of those changes.

Photography and Video
Event participants grant SEM the absolute right to take photographs and/or make audio and visual recordings of an event for any purpose in SEM-related publications, promotion or website, at its sole discretion.

Recording Policy
Conferences, courses, and sessions: Recordings of any kind are strictly prohibited without prior written consent of both SEM and the session presenter(s) or instructor. Attendees may not capture or use materials presented in any session/course room without written permission. Individuals not complying with this policy will be asked to leave a given session and/or asked to surrender their recording media. Refusal to comply with such requests is grounds for expulsion from the event.

Exposition: Recordings of any kind are prohibited without explicit permission from on-site company representatives. Individuals not complying with this policy will be asked to surrender their recording media and to leave the exhibition hall. Refusal to comply with such requests is grounds for expulsion from the event.

Event Access
Conference Events: All conference technical and networking events require a badge for admission. Registered attendees may bring a guest if they have been issued a badge. Registration badges for guests are available at the SEM registration desk onsite.

Exposition: Everyone who attends the exposition must be registered and have a badge. Only company representatives allowed in the exposition area during move-in and move-out

Payment Policy
SEM accepts VISA, MasterCard, American Express, checks and wire transfers as payment. For onsite registrations, only cash or credit card payments will be accepted. All registrations must be paid in full to access a conference. Invoice options are not available for credit card payments, only a system-generated receipt. All invoices must be requested more than 30 days before a conference start date.

Presentation Policy
One paid Conference registration is limited to no more than two presentations per registered individual. Author(s)/presenter(s) wishing to present more than 2 presentations must pay for two registrations or have a co-author/presenter register for the Conference.

Event Cancellation Policy
If for some unforeseen reason SEM should have to cancel an event, processed registration fees will be refunded to registrants. Registrants will be responsible for cancellation of travel arrangements or housing reservations and the applicable fees.

Conference, Course and Session Cancellations
SEM reserves the right to cancel events and/or sessions. In the unlikely event of a cancellation, all registrants will be notified and will receive a refund, if applicable. Conferences, courses and sessions are subject to change, and SEM reserves the right to substitute a program, session, and/or speaker.

Cancellations by Attendee/Refunds
Cancellations must be sent in writing or via email. All refunds are provided on a case-by-case basis and are reviewed 30 days post conference.

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Memories From 2023
Orlando, FL
Hilton Vancouver Washington Floor Plan
SEM Student Ambassador Award Program

Preferred Qualifications

• Should have previously attended an SEM Annual Conference

Duties

• Responsible for programming any activities during the Monday night student reception
• Organize small group or impromptu gatherings
• Discuss and implement strategies for appropriate social media platforms during the conference
• Meet with and report to the Education Committee
• Attend the next cycle’s virtual planning meeting with the newly elected student ambassadors

Award Details

• Free registration at SEM Annual Conference
• Recognition at the annual awards banquet

Application Materials

• Online application
• CV/Resume
• Must have support letter from any faculty member stating expectation to attend (if this letter is difficult to obtain, e-mail the Chair of the Education Committee directly who is currently Dr. Ryan Berke ryan.berke@usu.edu)
• Optional: One letter of recommendation from any professional that addresses the candidates ability to perform the duties upon acceptance of the Award (may be combined as faculty support letter)

Award Criteria

• Commitment to inclusivity and diversity within the Society
• Excited to generate programming for students by students
• Evidence of leadership and teamwork experience
• Demonstrated experience with social media platforms
• Will enthusiastically represent SEM

Apply Here:
www.sem.org/educationcommittee

Apply along with submission of your abstract in October.
Exposition Floor Plan

Exhibitor Booth #

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<td>Dantec Dynamics, Inc.</td>
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