Engage with us and others in our great industry!

195th Technical Meeting
April 30 - May 2, 2019
Holiday Inn Cleveland-S Independence; Independence, OH

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Save The Date

The International Elastomer Conference is the premier place where educators, customers, manufacturers and suppliers of materials, equipment, tools and services come together. This event is the one place, one time of year, where you find the best of the best of our industry all under one roof. It provides a forum for the exchange of ideas, observations, regulatory reforms and emerging scientific technologies, as well as learning, networking, seeing current customers and developing new ones.

Visit rubberiec.org for all details about this conference!
**Table Top Exhibits**
Tuesday, April 30; in Ballroom Foyer, Lobby Level during Technical Meeting breaks, lunchtime and Welcome Reception

- Speak to some of the best companies in our industry, learn what they have to offer.

**Keynote Address**
Tuesday, April 30; 11:00 a.m. – 12:00 p.m.; Ballroom 3 & 4, Lobby Level
Kim K. de Groh – Sr. Materials Research Engineer; NASA Glenn Research Center

Keynote Topic: Durability of polymers in the space environment and space flight experiments on the International Space Station

**25-Year Club Luncheon**
Tuesday, April 30; 12:00 p.m. – 1:30 p.m.; Ballroom 1, Lobby Level

Seating is limited - $60 per person; Reservations are required. Come celebrate individuals who have been active in the rubber industry for 25 consecutive years or more. All are invited no matter how long you have been in the industry.

**Welcome Reception & Table Top Exhibits**
Tuesday, April 30; 5:30 p.m. – 7:30 p.m.; Ballroom 1 & Foyer, Lobby Level

All registered attendees are invited to attend. Enjoy some networking time with fellow attendees and learn about some of the best companies in our industry at the table top exhibits.

**5K Walk/Run – Presented by H.M. Royal, Inc.**
Wednesday, May 1; 6:30 a.m. Check- in at Holiday Inn Lobby

Runners, walkers, spouses and guests are invited to participate.

**Science & Technology Awards Banquet**
Wednesday, May 1; 12:00 p.m. – 2:00 p.m.; Ballroom 1 & 2, Lobby Level

Show your support of our 2019 Science & Technology Award winners as they are honored at this banquet.

**Business & Awards Meeting**
Thursday, May 2; 11:00 a.m. – 12:00 p.m.; Ballroom 1, Lobby Level

Please join us at the semi-annual Business & Awards Meeting of Rubber Division, ACS.

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**Technical Meeting Policies**

- Videotaping or photographing any portion of a technical presentation is strictly prohibited. Violators of this policy will be asked to leave and will not be allowed back into the meeting.

- You can download presentations from this meeting from your Rubber Division, ACS account after May 10th.

- You are required to wear your badge for entrance to the technical sessions and welcome reception.
### Schedule of Events

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<td><strong>Monday, April 29</strong></td>
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<tr>
<td>8:00 a.m. – 9:00 a.m.</td>
<td>Steering Committee Breakfast*</td>
<td>Michael’s Restaurant, Lobby Level</td>
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<tr>
<td>9:00 a.m. – 12:00 p.m.</td>
<td>Steering Committee Meeting*</td>
<td>Rubber Zone Room, Lobby Level</td>
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<tr>
<td>12:00 p.m. – 5:00 p.m.</td>
<td>Registration</td>
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<tr>
<td>1:30 p.m. – 3:00 p.m.</td>
<td>Membership Committee Meeting</td>
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<td>2:00 p.m. – 5:00 p.m.</td>
<td>Program Planning Committee Meeting</td>
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<td><strong>Tuesday, April 30</strong></td>
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<tr>
<td>7:00 a.m. – 5:00 p.m.</td>
<td>Registration</td>
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<tr>
<td>7:45 a.m. – 5:30 p.m.</td>
<td>Technical Session</td>
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<td>9:00 a.m. – 10:00 a.m.</td>
<td>Strategic Partnership Committee Meeting</td>
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<td><strong>9:45 a.m. – 10:00 a.m.</strong></td>
<td><strong>Table Top Exhibits during Tech Meeting Break</strong></td>
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<tr>
<td>10:00 a.m. – 11:00 a.m.</td>
<td>Marketing Committee Meeting</td>
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<tr>
<td><strong>11:00 a.m. – 12:00 p.m.</strong></td>
<td><strong>Keynote Address</strong></td>
<td><strong>Ballroom 3 &amp; 4, Lobby Level</strong></td>
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<td><strong>Kim K. de Groh, NASA Glenn Research Center</strong></td>
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<td><strong>12:00 p.m. – 1:15 p.m.</strong></td>
<td><strong>Table Top Exhibits during Lunch Break</strong></td>
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<tr>
<td><strong>12:00 p.m. – 1:30 p.m.</strong></td>
<td><strong>25-Year Club Luncheon</strong></td>
<td>Ballroom 1, Lobby Level</td>
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<tr>
<td><strong>1:30 p.m. – 6:00 p.m.</strong></td>
<td><strong>Exhibits &amp; Meeting Sites Committee Meeting</strong></td>
<td>Back of Michael’s Restaurant, Lobby Level</td>
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<tr>
<td><strong>3:00 p.m. – 4:00 p.m.</strong></td>
<td><strong>Area Directors Caucus</strong></td>
<td>Back of Michael’s Restaurant, Lobby Level</td>
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<td><strong>3:00 p.m. – 4:00 p.m.</strong></td>
<td><strong>S&amp;T Committee Meeting</strong></td>
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<tr>
<td><strong>3:15 p.m. – 3:30 p.m.</strong></td>
<td><strong>Table Top Exhibits during Tech Meeting Break</strong></td>
<td>Ballroom Foyer, Lobby Level</td>
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<td><strong>5:30 p.m. – 7:30 p.m.</strong></td>
<td><strong>Welcome Reception &amp; Table Top Exhibits</strong></td>
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<td>Technical Session</td>
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<td>10:00 a.m. – 11:00 a.m.</td>
<td>Finance &amp; Budget Committee Meeting*</td>
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<td><strong>12:00 p.m. – 2:00 p.m.</strong></td>
<td><strong>Science &amp; Technology Awards Banquet</strong></td>
<td><strong>Ballroom 1 &amp; 2, Lobby Level</strong></td>
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<td>Technical Session – S&amp;T Presentations</td>
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<td><strong>Area Directors Meeting</strong></td>
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<td><strong>Thursday, May 2</strong></td>
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<td>7:30 a.m. – 5:00 p.m.</td>
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<td>Technical Session</td>
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<td>9:00 a.m. – 10:45 a.m.</td>
<td>Executive Committee Meeting</td>
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<tr>
<td>11:00 a.m. – 12:00 p.m.</td>
<td>Business &amp; Awards Meeting</td>
<td>Ballroom 1, Lobby Level</td>
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</table>

* Closed Meeting

Rubber Division, ACS members are welcome to attend all open committee meetings.
Tuesday, April 30 – Ballroom 3 & 4, Lobby Level

Interfaces & Adhesion
Chair: Yusheng Chen, Cooper Tire

7:45 a.m. Adhesive Nanoparticles as Glue for Soft Gel-like Materials - Ryan Sayko, University of Akron

8:15 a.m. Developing a Mechanistic Understanding of How Eastman’s Duralink Can Replace Cobalt Salts for Tire Cord Adhesion - Leandro Forciniti, Eastman Chemical Company

8:45 a.m. Enhancing the Dispersion and Adhesion of Short Aramid Fibers in Bromobutyl Rubber Using Maleated Polybutadiene Resin - Changwoon Nah, Chonbuk National University

9:15 a.m. Surface Modification of Thermoset Elastomers to Achieve Anti-fouling and Low Coefficient of Friction Properties - Logan Sanow, Minnesota Rubber and Plastics

9:45 a.m. Break & Table Top Exhibits

Dynamic Properties of Elastomers
Chair: Chris Robertson, Endurica LLC

10:00 a.m. Causes of Payne Effect Missing High Harmonics - Xiaorong Wang, Tongji University, Shanghai

10:30 a.m. Impact of an Emergent Hierarchical Filler Network on Nanocomposite Dynamics - Mindaugas Rackaitis, Bridgestone Americas

11:00 a.m. – 12:00 p.m. KEYNOTE ADDRESS (Open To All Attendees)

Topic: The durability of polymers in the space environment and space flight experiments on the International Space Station
Kim de Groh is a senior materials research engineer at NASA Glenn Research Center, where she has conducted research and mentored students for the past 29 years. Kim is internationally known as a technical leader in areas relating to the environmental durability of spacecraft materials. She is the principal investigator for 16 spaceflight experiments flown as part of the Materials International Space Station Experiment (MISSE) missions on the exterior of the International Space Station, including three experiments on ISS’s new MISSE-Flight Facility.

12:00 p.m. Lunch Break & Table Top Exhibits

1:15 p.m. Molecular Weight Dependence of the Viscosity of Highly Entangled Polyisobutylene - Timothy C. Ransom, Naval Research Laboratory

1:45 p.m. Extensional Responses of Polyisoprene and SBR - Shi-Qing Wang, University of Akron

2:15 p.m. Thixotropic Flocculation Processes in Carbon Black Filled Rubbers - Lewis Tunnicliffe, Birla Carbon
2:45 p.m.  Tire Rolling Resistance and Heat Build Up Calculations with Endurica’s Microkinematic Kraus Model - **William V. Mars**, Endurica LLC

3:15 p.m.  Break & Table Top Exhibits

3:30 p.m.  Characterization of Mechanical Properties of Rubber/Elastomer by High Force DMA - **Yanxi Zhang**, NETZSCH Instruments North America LLC

4:00 p.m.  Dynamic Properties of Nitrile Elastomers - **Nick Langmesser**, Zeon Chemicals L.P.


5:00 p.m.  A Non-Equilibrium Model for Particle Networking in Filled Elastomers - **Christopher Robertson**, Endurica LLC

**Industrial Rubber Products**

Chair: **Lena Nguyen**, Dow Chemical Company

7:45 a.m.  Application of Statistical Tools in Industrial Rubber Product Manufacturing - **Tapan Das Gupta**, Institute of Rubber Industry, India

8:15 a.m.  Mill Processing Behavior of EPDM Rubber Compounds - **Greg Li**, Dow Chemical Company

**Nano-Scale Tools for Rubber Analysis**

Chair: **Anna Kepas-Suwara**, Tun Abdul Razak Research Centre (TARRC)

8:45 a.m.  AFM Nanomechanics for Viscoelastic Contact - **Ken Nakajima**, Tokyo Institute of Technology

9:15 a.m.  Atomic Force Microscopy Characterization of the Relationship between Nanostructure and Nanomechanical Properties of Elastomers - **Darja Klat**, Continental Tires Germany

9:45 a.m.  Break

10:00 a.m.  Atomic Force Microscopy of Carbon Black Dispersion at the Micro-scale in Basic SBR Compounds - **Seth L. Young**, Birla Carbon

10:30 a.m.  Loss Tangent Mapping for Filler-filled SBR Vulcanizate with Nano-Rheological Atomic Force Microscope - **Eijun Ueda**, Nippon Zeon

11:00 a.m.  Molecular Microscopy for Analysis of Rubber and Plastic - **Fred Fraser**, Freudenberg-NOK
12:00 p.m.  Science & Technology Awards Banquet

Science & Technology Award Winner Presentations
Chair: Dr. Maria D. Ellul, ExxonMobil Chemical Co. (Retired)

2:15 p.m.  Charles Goodyear Medal - Dr. Roderic Quirk, The University of Akron – Anionic Polymerization and Functionalized Elastomers

3:15 p.m.  Melvin Mooney Award for Distinguished Technology - Dr. Manfred Klüppel, German Institute for Rubber Technology (DIK) – An Advanced Thermomechanical Approach for the Evaluation of Strain-Induced Crystallization of Natural Rubber Composites

3:45 p.m.  Sparks-Thomas Award - Dr. Pamela Martin, Tun Abdul Razak Research Centre (TARRC) – An Improved Understanding of Tread Wear and its Prediction

4:15 p.m.  Break

4:30 p.m.  George Stafford Whitby Award for Distinguished Teaching and Research – Dr. Ulrich Giese, German Institute for Rubber Technology (DIK) – Thermal-oxidative Degradation and Stabilization of Elastomers

5:00 p.m.  Chemistry of Thermoplastic Elastomers Award – Dr. Timothy Long, Virginia Polytechnic Institute and State University – Taking Advantage of Tailored Intermolecular Interactions in Polymer Design: From Ion-Containing 3D Printed Objects to Multi-Hydrogen Bond Containing Triblock Copolymers

5:30 p.m.  Fernley H. Banbury Award, Dr. Charles R. Herd, Birla Carbon – Advanced Carbon Black Characterization and Carbon Blacks for the Future

Thursday, May 2 – Ballroom 3 & 4, Lobby Level

Flammability and Thermal Stability of Elastomers
Chair: Ed Terrill, ARDL, Inc.

7:45 a.m.  Determining the Thermal Stability of Peroxide Cure Fluoroelastomers with and without Zinc Oxide - Karen Hopperstad, 3M, Inc.

8:15 a.m.  Improving the Thermal Stability of a Non-Black Rubber Compound - Nicki Hershberger, ARDL, Inc.

Self-Healing Polymers
Chair: Lewis Tunnicliffe, Birla Carbon

8:45 a.m.  Reversible Network at the Interface of Rubber and Filler and the Development of Self-healing Composites - Amit Das, Leibniz Institute of Polymer Research, Dresden

9:15 a.m.  Tough, Self-healing Elastomers - Liheng Cai, University of Virginia
9:45 a.m. Break

Science, Technology & Applications of Rubber
Co-Chairs: John Dick, Alpha Technologies (Retired); C. Jeffrey Lin, Eastman Chemical Co.

10:00 a.m. Evaluation of Sulfur Dispersion Using Population Survival Analysis - Dominica Wong, Eastman Chemical Company

10:30 a.m. Experimental Validation of Crystallizing and Noncrystallizing Models of Rubber Fatigue Behavior - Anantharaman Ramachandran, Caterpillar, Inc.

11:00 a.m. High Performance Liquid Rubber Used in the Production of Winter Tires - Erich Klein, Kuraray America

11:30 a.m. Single Wall Carbon Nanotube Technology Expands Mechanical and Electrical Properties of Elastomers - Erick Sharp, Ace Products LLC

12:00 p.m. Lunch Break

1:15 p.m. Futuristic Elastomeric Material for Reduction of Carbon Footprint - Subhra Mohanty, Reliance Industries, Ltd.

1:45 p.m. General Considerations in Failure Analysis of Rubber and Plastics - Jason Poulton, ARDL Inc.

2:15 p.m. The Application of Natural Rubber to Toughen Bioplastic Through Reactive Extrusion with Synergic Use of Peroxide and Coagent - Xiaoying Zhao, The Ohio State University

2:45 p.m. Kinetically Controlled Phase Separation and Crystallization in SSBR/TPI Blends - Chenguang Liu, Qingdao University of Science & Technology (QUST), China

3:15 p.m. Break

3:30 p.m. Castor Oil Extended Modified Natural Rubber: A Novel Bio-Based Material with Low Rolling Resistance – K. Rajkumar, Indian Rubber Manufacturers Research Association

4:00 p.m. Crystallization Behavior of Trans-1,4-Polyisoprene Rubber, Huarong Nie, Qingdao University of Science & Technology (QUST), China

4:30 p.m. Comparisons of Physical Properties Between Concrete Paver vs Rubber Cement Composite Paver - Ratnadip Bhoi, Abstract Displays, Inc.

5:00 p.m. Improving OEE Scores in Rubber Mold Cleaning using Dry Ice - Steve Wilson, Cold Jet LLC
Interested in more training opportunities? Visit rubber.org/upcoming-training for details about these upcoming courses!

All of the following courses can be taken in person at our Elastomer Training Center (306 N. Cleveland Massillon Rd., Akron, OH 44333) OR can be taken from the comfort of your home or office – remotely from any tablet, laptop or computer.


May 21, 2019 - An Introduction to Continuous Vulcanization

May 22 & 23, 2019 - Sponge Rubber 101

June 11, 2019 - Essentials of Rubber Technology

June 12, 2019 - Essentials of Silicone Rubber

June 13, 2019 - Mixing and Testing for Compound Consistency

June 13, 2019 - Setting Up a Rubber Molding Process

We will also be featuring an Educational Symposium during our International Elastomer Conference October 8-10 in Cleveland, OH. Visit rubberiec.org for details.

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[Rubber Division Logo]