IEC GUIDE
OCTOBER 4-7, 2021
DAVID L. LAWRENCE CONVENTION CENTER
PITTSBURGH, PA USA

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Booth #1815
Greetings rubber industry and welcome back everyone! It is grand to see you at our 2021 International Elastomer Conference in prodigious Pittsburgh! Following a year of lock down, uncertainty and no contact, like the phoenix, out of the ashes we rose. Are you ready to connect, learn and grow? I hope you are because we planned a week of events comprising all those elements for you.

We kick off IEC 2021 with our 2021 IEC Keynote Speaker, Dr. Duane Dunston, as he takes the audience on an exploration through augmented and virtual realities…and it doesn’t stop there!

This year marks the 200th anniversary of the Rubber Division’s Technical Meeting and we’re celebrating it in a big way! The halls will be decked with speakers presenting on the latest developments in rubber research and technology and special Frontiers Symposia will be featured. Want to learn more? Check out the Student Symposium and explore what new research is on the horizon from these bright students. Stop by the Expo as much as possible. You never know what you’ll discover. Walk the aisles to connect with suppliers and customers and see what’s new in materials, machinery, testing and more. Visit the Rubber Division, ACS booth to say hello, learn all that Rubber Division, ACS offers you for professional growth and check out our new t-shirts for sale.

On Tuesday, we’re calling all 25+ year industry veterans front and center! After building an appetite, come lunch, learn and connect with old friends at the 25-Year Club Luncheon.

Hold the bus! Wednesday will be a powerhouse day. It starts off early with the 5K Walk/Run. Looking for a change in career? Visit the Career Fair to see what could be awaiting you. Don’t forget that Wednesday is the day we honor our Science & Technology Award winners at a luncheon. The entire afternoon Technical Session is dedicated solely to presentations given by these winners. We’ll see you there! To end the day we will be featuring receptions for our international visitors, as well as the women and young professionals of our industry.

On Thursday, we close the week out in grand style as we honor the winners for the Student Symposium, Service Awards, Best Paper Awards and more at the Awards Breakfast. Some of our valued sponsors and corporate members will also be recognized. On this day, we will also be hosting many high school students for our Experience Elastomers Student Outreach Program. If you see them on the Expo floor, be sure to engage with them and get them excited about a possible future in our great industry.

I am so excited about this conference! I am so excited to see you here in Pittsburgh and that you joined us in the reunion of our industry!

Peace and love,

Kim Dempsey-Miller
2021 Rubber Division, ACS Chair

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Coat & Luggage Check – Concourse B
Oct. 4-7: 8 a.m. – 5:30 p.m.
Concessions – Expo Hall
Oct. 4: 10:30 a.m. – 2 p.m.
Oct. 5 & 6: 10:30 a.m. – 3 p.m.
Oct. 7: 10:30 a.m. – 1 p.m.

The Hub – Expo Hall
Need some space for a meeting? The Hub offers semi-private meeting space on the expo floor. Spaces can be reserved in one hour increments during Expo hours. A team member can assist you at the Hub entrance. Availability is first come, first served and there is no cost to secure these spaces.

Say cheese! Need a professional headshot?
Stop by to see our headshot photographer Wednesday, October 6th 8 a.m. – 11 a.m. and 12 p.m. – 5 p.m. or Thursday, October 7th 8 a.m. – 1 p.m. This service is free for the first 100 attendees to get their headshot taken. Cost is $10 (payable to the photographer via cash or credit/debit) after that.
OPENING CEREMONY & KEYNOTE ADDRESS

October 5, 2021; 9 a.m. - 10 p.m.
Spirit of Pittsburgh Ballroom; Third Floor

Join us as we kick off the International Elastomer Conference with a short welcome from our Chair, Kim Dempsey-Miller, followed by the Keynote Address.

Keynote Speaker:
Duane Dunston, Professor of Cybersecurity, Champlain College

Duane Dunston is an Associate Professor of Cybersecurity at Champlain College. He has been in Information Security for over 20 years working in both the education and government sectors. He focuses on risk management, cryptography, security education and using technology for social change. In addition to teaching and consulting, he is a member of the Vermont Cyberpatriots Program. He is currently pursuing his Doctor of Education at Northeastern University and resides in Essex Junction, Vermont.

Keynote Address: Virtual or Augmented – What’s Your Reality?

Augmented reality (AR) and virtual reality (VR) have many potentials to broaden the appeal of the rubber industry. These technologies can demonstrate the scope in which our sector permeates the products the world uses every day. AR and VR allow creating immersive virtual training experiences that someone can bring into their home, into schools and vocational training. We can create an interactive training program for those about to be released from incarceration and drug rehabilitation to create an opportunity to learn a trade skill to prevent the cycle of recidivism that a lack of having a job can perpetuate. We have an aging workforce, and we need new talent, so we need innovative and creative methods of reaching a broader audience to help maintain and revolutionize our industry. AR and VR can help us in these endeavors.
**Student Symposium**
Tuesday, Oct. 5; 10:30 a.m. – 3 p.m. &
Wednesday, Oct. 6; 11 a.m. – 3 p.m.
Presentations in Room 306/307, Level Three;
Posters on the Expo Floor
The Student Symposium includes oral presentations by graduate and undergraduate students, as well as a poster session. All registered attendees are encouraged to view the student presentations and posters to help support the future of our industry.

**25-Year Club Luncheon**
Tuesday, Oct. 5; 12 p.m. – 1:30 p.m.
Spirit of Pittsburgh Ballroom; Level Three
All are invited no matter how long you have worked in our industry! Celebrate individuals who have been active in the rubber industry for 25 or more consecutive years. Stop by registration to see if any tickets are still available.

**5K Walk/Run**
Wednesday, Oct. 6;
Check-in at 6:30 a.m.
Westin Hotel Lobby
We’re starting this day off getting together for some exercise and fun, catching up with friends and making new ones.

**Get Involved!**
Wednesday, Oct. 6; 10 a.m. – 10:30 p.m.
Room 308, Level Three
Ever wonder how becoming active within Rubber Division, ACS can benefit you and your company, what opportunities are available or what it takes to get involved? Attend this session to learn about the requirements, expectations and commitment to be a volunteer, serve on a committee, be an Area Director, become a part of our Steering Committee and take the journey on the path to Chair of the division.

**Career Fair**
Wednesday, Oct. 6; 10 a.m. – 5 p.m. &
Thursday, Oct. 7; 10 a.m. – 1 p.m.
East Atrium, Level Three
Looking for a new opportunity in our great industry? Meet with and speak to representatives from several respected companies about career opportunities. Employers will have tabletop presentations with job openings and other opportunities.

**Science & Technology Awards Luncheon**
Wednesday, Oct. 6; 12 p.m. – 1:30 p.m.
Spirit of Pittsburgh Ballroom; Level Three
Join us to celebrate and support our 2021 Science & Technology Award winners as they are honored at this luncheon. Haven’t registered for this? Stop by registration to see if spots are available.

**Young Professionals Forum**
Wednesday, Oct. 6; 2 p.m. – 3 p.m.
Room 308
Under 40 years old? We want to talk to you! Help us gain insight for our initiative to further develop a Young Professionals Committee and help us learn how we can meet or exceed your expectations as a young professional in our industry.

**Science & Technology Award Winner Presentations**
Wednesday, Oct. 6; 2 p.m. – 5:30 p.m.
Spirit of Pittsburgh Ballroom; Level Three
Our 2021 Science & Technology Award winners will be giving presentations about their work demonstrating why they were selected as a Science & Technology Award winner. These presentations are open for all attendees no matter your registration type.

**Awards Breakfast**
Thursday, Oct. 7; 8:30 a.m. – 10 a.m.
Spirit of Pittsburgh Ballroom; Level Three
At this breakfast we will announce of the winners for the Student Symposium, Service Awards, Best Paper Awards and more. Some of our valued sponsors and corporate members will also be recognized. Stop by registration to see if tickets are available if you haven’t already registered.
and food processing. AGC formulates AFLAS resins from alternating polymers of tetrafluoroethylene and propylene to achieve unique properties over a conventional FKM-type fluoroolastomer. These properties include outstanding resistance to heat, chemicals, fuels, acids, bases, solvents, ozone and steam. Visit https://www.agcchem.com/products/ fluoropolymer-resins/fluoroelastomers/ to learn more about AFLAS fluoroelastomers.

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About Rubber Division, ACS
Rubber Division, ACS (American Chemical Society) is an international association of chemists, engineers, technicians, scientists, plant managers, sales and marketing professionals and others in the rubber, polymer or related fields within industry, academia and government. We work to educate, connect and grow the evolving elastomer industry through educational, technical, business and networking activities. For over 100 years, we have delivered exceptional value, service and support, and have become an indispensable resource to our industry.

Conferences & Expos
Our highly respected conferences, expos, technical meetings and educational symposiums attract professionals across all areas of the rubber and elastomeric industries. We host a technical meeting in the spring and our International Elastomer Conference in October.

Training & Development
When it comes to elastomers education, we’re your best resource. We offer instructor led and e-Learning training covering materials supply to end-use production in rubber, plastics, polymers and other advanced materials. From basic to advanced rubber technology to hot industry topics, we cover it all.

Student Services
We are proactive in attracting, educating, training and recruiting talented and qualified students into the rubber and affiliated industry to be part of the future workforce. Scholarship, networking, leadership and education opportunities are some of the student support we provide. Continuing to develop and improve upon student-oriented programs and resources is a primary focus of ours.

Journal
Stay informed about the latest rubber industry issues trends and events through a subscription to Rubber Chemistry and Technology, the leading industry journal on rubber science and technology research. Articles date back to 1928 - print and online available.

Library Services
Get your questions regarding the science and business of rubber answered. We can conduct searches and provide access to the latest scientific information and scholarly research, as well as industry statistics and market information.

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Individual & Corporate Memberships
Joining Rubber Division, ACS is an investment that pays big dividends through exclusive members-only savings and benefits, including free online access to the Rubber Chemistry and Technology journal, a members online community and significant discounts on our events, services and products.
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Two great events presented by Rubber Division, ACS!

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Spring Technical Meeting • April 25 - 28, 2022
Marriott Cleveland East; Warrensville Heights, OH

Featured Topics
- Nanoscale Characterization of Rubbery Materials & Composites
- Computational Chemistry & Multiscale Modelling
- Structure & Physics of Elastomers
- Friction of Rubber at Interfaces
- Winter Performance in Passenger Tires
- Recycling & Reprocessing of Rubber
- Seals & Dynamic Sealing

Visit rubber.org for the official call for abstracts. Abstract deadline is November 6.

Interested in exhibiting? Visit rubber.org today!
EXHIBITOR LIST

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Download the IEC 2021 mobile app for current exhibitor list and booth numbers.
Through your support, we were able to bring several students from colleges and universities to experience IEC 2021 this week. You helped us extend our outreach to Chemical Engineering, Chemistry and Engineering students who have expressed an interest in the polymer industry; however, don’t have polymer focused programming at their college/university. This is a great opportunity for these students to gain more knowledge specific to our industry, make connections, and show them how amazing our industry is and why they should be a part of it!

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Our remaining 2021 learning opportunities are all online. The 2022 learning opportunities are a combination of online only and in-person. In-person courses can be taken at our Elastomer Training Center in Akron, Ohio OR can be taken from the comfort of your home or office - remotely from any tablet, laptop or computer. The Elastomer Training Center is an interactive smart classroom allowing for the viewing of the course live online and features interactive capabilities. Some in-person courses are also held at our partner’s locations.

Visit rubber.org/training for details about these courses, including full descriptions and pricing.

UPCOMING LEARNING OPPORTUNITIES: 2021

- October 26, 2021
  Course: How to Extend Lifetime of Elastomers & Rubber Products

- October 27, 2021
  Course: An Introduction to Continuous Vulcanization

- November 1-5, 2021
  Endurica Workshop: Characterizing Elastomer Fatigue Behavior for Analysis and Engineering

- November 10, 2021
  Course: Rubber Explained

- November 16, 2021
  Course: Compounding Fluoroelastomers

- November 22 & 29 and December 6 & 13, 2021
  (four-part course)
  Course: Final Safety Program

- December 7-10, 2021
  Endurica Workshop: Application of Rubber Fatigue Analysis with Endurica Software

- December 8, 2021
  Course: Hazardous Communication

- December 17, 2021
  Course: Preincident Planning

UPCOMING LEARNING OPPORTUNITIES: 2022

Visit rubber.org/training to view full schedule of known opportunities so far.

- January 12, 2022
  Webinar: General Considerations in Failure Analysis of Rubber and Elastomers

- January 12-18, 2022
  Course: Introduction to Compounding, Mixing & Testing

- January 20, 2022
  Course: Carbon Blacks Manufacturing, Properties & Applications in Rubber Compounds

- January 26, 2022
  Course: Sponge Rubber 101

All webinars are FREE for Rubber Division, ACS Members and all Rubber Division, ACS courses are FREE for undergraduate Student Members (discount for masters & graduate Student Members)!
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Frontiers of Rubber Science: Additives & Applications I
Co-chairs: Ken Bates, Polymer Solutions Group; Yusheng Chen, Flexsys
Plenary Lecture: The Future of Sulfur in the Rubber Industry – Fred Ignatz-Hoover, Flexsys

Frontiers of Rubber Science: Rubber Synthesis
Co-chairs: Carin Helfer, The Ohio State University; Dr. Howard Colvin, Cooper Tire & Rubber Co. (Retired)
Plenary Lecture: Frontiers of Rubber Syntheses/Manufacturing - Judit E. Puskas, The Ohio State University

Frontiers of Rubber Science: Reinforcement of Rubber
Co-chairs: Lewis Tunnicliffe, Birla Carbon; Cindy Barrera, Ford Motor Co.
Plenary Lecture: Reinforcement of Elastomers by Nanoparticles - Anil Bhowmick, The University of Houston

Frontiers of Rubber Science: Additives & Applications II
Co-chairs: Ken Bates, Polymer Solutions Group; Yusheng Chen, Flexsys
Plenary Lecture: Natural Rubber Science and Supply: Past, Present and Future Perspectives - Katrina Cornish, The Ohio State University

TECHNICAL MEETING SYMPOSIUM TOPICS

Characterization of Elastomers and Raw Materials I, II & III
Co-chairs: Christopher Robertson, Alpha Technologies; Ed Terrill, Akron Rubber Development Laboratory

New Commercial Developments I & II
Chair: Lena Nguyen, Dow Chemical Co.

Advances in Materials and Processes for Tires I & II
Chair: Seth Young, Birla Carbon

Sustainability & Renewable Materials
Co-chairs: Crittenden Ohlemacher, Smithers; Krishnan Iyer, ExxonMobil

Science & Technology Awards Symposium
Chair: Dr. Maria Ellul, ExxonMobil (Ret.)

Modelling & Simulation
Co-chairs: William Mars, Endurica LLC; Michael York, WM York Consulting LLC

Connectivity, Robotics and AI in the Rubber Industry
Chair: Khaled Boqaileh, LabsCubed

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<td>Identifying Materials that Win on Durability with the Endurica Companion Web App - Will Mars, Endurica LLC</td>
<td>317/318</td>
<td>New Commercial Developments</td>
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<td>Self-Healable Commodity Polymers - Marek Urban, Clemson University</td>
<td>319/320</td>
<td>Sustainability &amp; Renewable Materials</td>
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<td>TIME</td>
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<tr>
<td>9:30 a.m.</td>
<td>Characteristics and Reinforcing Properties of Environmentally Friendly Plasma Carbon Black - Ned Hardman, Monolith Materials</td>
<td>301/302</td>
<td>Frontiers of Rubber Science: Reinforcement of Rubber</td>
</tr>
<tr>
<td></td>
<td>The Manifold Interactions of ZnO and Stearic Acid in a Modern Silica-filled Tire Tread Compound - Anke Blume, University of Twente</td>
<td>304/305</td>
<td>Advances in Materials and Processes for Tires</td>
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<td></td>
<td>Comparison Between SBR Compounds Filled with In-situ and Ex-situ Silanized Silica - Pilar Bernal Ortega, University of Twente</td>
<td>315/316</td>
<td>Characterization of Elastomers and Raw Materials</td>
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<td></td>
<td>Benefit of Liquid Chemicals Over Dry Liquid Concentrates in Tire Production and the Recent Development of Automation To Allow Their Use in Production Environments - Bob McNabb, Zeppelin Systems USA</td>
<td>317/318</td>
<td>New Commercial Developments</td>
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<tr>
<td></td>
<td>Threats and Opportunities for Rubber Products Direct Cost Reduction - Irene Yurovska, Consultant, YI Global</td>
<td>319/320</td>
<td>Sustainability &amp; Renewable Materials</td>
</tr>
<tr>
<td>10 a.m.</td>
<td>Advanced Carbon Additives for Rubber Compounds - Limeng Chen, Cabot Corporation</td>
<td>301/302</td>
<td>Frontiers of Rubber Science: Reinforcement of Rubber</td>
</tr>
<tr>
<td></td>
<td>Influence of Functionalized Polymers on the Processing Behavior and In-rubber Properties of Passenger Car Tire Tread Compounds - Fabian Grunert, University of Twente</td>
<td>304/305</td>
<td>Advances in Materials and Processes for Tires</td>
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<td></td>
<td>Contrasting the Rheology of Particle Reinforced Rubbers Versus Particle Reinforced Newtonian Fluids - James Kollar, Aditya Birla - Birla Carbon</td>
<td>315/316</td>
<td>Characterization of Elastomers and Raw Materials</td>
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### Wednesday, Oct. 6

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<tr>
<td>10:30 a.m.</td>
<td>3D Analysis of Carbon Black – Views from the Frontier - Tyler Gruber, Birla Carbon</td>
<td>301/302</td>
<td>Frontiers of Rubber Science: Reinforcement of Rubber</td>
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<tr>
<td></td>
<td>Improving Wet Grip and Hysteresis with Reinforcing and Individual Multi-wall Carbon Nanotubes - August Krupp, Molecular Rebar Design</td>
<td>304/305</td>
<td>Advances in Materials and Processes for Tires</td>
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<tr>
<td></td>
<td>Low Temperature Properties of Therban® HNBR - Victor Nasreddine, ARLANXEO North America</td>
<td>315/316</td>
<td>Characterization of Elastomers and Raw Materials</td>
</tr>
<tr>
<td></td>
<td>Tyromer® Rubber Devulcanization: Enabling a Truly Circular Tire-to-tire Recycling Economy - Costas Tzoganakis, University of Waterloo</td>
<td>319/320</td>
<td>Sustainability &amp; Renewable Materials</td>
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<td></td>
<td>Management of the Silica Interface During the Mixing Process with the Elastomers: Fragmentation Mechanisms and Wettability - Laurent Guy, Solvay</td>
<td>301/302</td>
<td>Frontiers of Rubber Science: Reinforcement of Rubber</td>
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<td></td>
<td>Graphene as an Additive to Rubber Compounds and Products - Brendan Rodgers, Akron Polymer Solutions</td>
<td>304/305</td>
<td>Advances in Materials and Processes for Tires</td>
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<td></td>
<td>ExxonMobil Next Generation Elastomer Materials for Pharmaceutical Packaging and Medical Devices - Anas Mujtaba, ExxonMobil</td>
<td>315/316</td>
<td>Characterization of Elastomers and Raw Materials</td>
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<td></td>
<td>Networks that Age Well - A Study of Compounding for Improved Durability and Hysteresis in Severe Service Applications - Frederick Ignatz-Hoover, Flexsys Company</td>
<td>317/318</td>
<td>New Commercial Developments</td>
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<td>Developing New Sustainable Weather-strips With BolderBlack - Mike Kumbalek, Bolder Industries</td>
<td>319/320</td>
<td>Sustainability &amp; Renewable Materials</td>
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<td>11:30 a.m.</td>
<td>Nature of Carbon Black Reinforcement of Rubber: Perspective on the Original Polymer Nanocomposite - Christopher Robertson, Alpha Technologies</td>
<td>301/302</td>
<td>Frontiers of Rubber Science: Reinforcement of Rubber</td>
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<td>Effect of Polymer Type on Vibration Isolator Performance - Edward Terrill, Akron Rubber Development Laboratory, Inc.</td>
<td>315/316</td>
<td>Characterization of Elastomers and Raw Materials</td>
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<td></td>
<td>Navigating The Rubber Industry Supply Chain From an Intellectual Property Perspective - Paul Engel, Howard and Howard, PLLC</td>
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<td>New Commercial Developments</td>
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<tr>
<td>2 p.m.</td>
<td>Charles Goodyear Medal Address - Dr. Joseph DeSimone, Stanford University</td>
<td>Spirit of Pittsburgh Ballroom</td>
<td>Science &amp; Technology Awards Symposium</td>
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<tr>
<td>2:45 p.m.</td>
<td>Melvin Mooney Award Address - Dr. Howard Colvin, Cooper Tire &amp; Rubber Co. (Retired)</td>
<td>Spirit of Pittsburgh Ballroom</td>
<td>Science &amp; Technology Awards Symposium</td>
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<tr>
<td>3:10 p.m.</td>
<td>Sparks-Thomas Award Address - Dr. Kevin Cavicchi, The University of Akron</td>
<td>Spirit of Pittsburgh Ballroom</td>
<td>Science &amp; Technology Awards Symposium</td>
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<td>3:35 p.m.</td>
<td>George Stafford Whitby Award Address - Dr. James Busfield, Queen Mary University of London</td>
<td>Spirit of Pittsburgh Ballroom</td>
<td>Science &amp; Technology Awards Symposium</td>
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<td>4 p.m.</td>
<td>BREAK</td>
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<tr>
<td>4:15 p.m.</td>
<td>Chemistry of Thermoplastic Elastomers Award Address - Dr. Takashi Inoue, Tokyo Institute of Technology</td>
<td>Spirit of Pittsburgh Ballroom</td>
<td>Science &amp; Technology Awards Symposium</td>
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<tr>
<td>4:40 p.m.</td>
<td>Fernley Banbury Award Address - presentation on behalf of Dr. James Stevenson, Honeywell International</td>
<td>Spirit of Pittsburgh Ballroom</td>
<td>Science &amp; Technology Awards Symposium</td>
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<td>5:05 p.m.</td>
<td>Bioelastomer Award Address - Dr. Buddy Ratner, University of Washington</td>
<td>Spirit of Pittsburgh Ballroom</td>
<td>Science &amp; Technology Awards Symposium</td>
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<td>8:30 a.m.</td>
<td>PLENARY LECTURE - Natural Rubber Science and Supply: Past, Present and Future Perspectives - Katrina Cornish, The Ohio State University</td>
<td>301/302</td>
<td>Frontiers of Rubber Science: Additives &amp; Applications</td>
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<td></td>
<td>The Use of Resins for Improving the Performance of Aircraft Tire Retreads - Wilma Dierkes, University of Twente, The Netherlands</td>
<td>304/305</td>
<td>Advances in Materials and Processes for Tires</td>
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<td></td>
<td>Understanding Polyvinylidene Fluoride based Thermoplastic Elastomeric Blends: A Combined Simulation and Experimental Study - Subhabrata Saha, Alliance Tire-A Group Company of Yokohama</td>
<td>317/318</td>
<td>Modelling &amp; Simulation</td>
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<tr>
<td>9 a.m.</td>
<td>Evolving with the Needs of the Rubber Industry: Naphthenic Conventional and Biobased Rubber Plasticizers - Kamyar Alavi, Nynas AB</td>
<td>304/305</td>
<td>Advances in Materials and Processes for Tires</td>
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<td></td>
<td>The Cost and Value of Elastomer Testing for Static Sealing Applications - Paul Tuckner, Grace Technology &amp; Development</td>
<td>317/318</td>
<td>Modelling &amp; Simulation</td>
</tr>
<tr>
<td>9:30 a.m.</td>
<td>Molecular Engineering and Additive Manufacturing of Polyisobutylene-Based Functional Elastomers - Weinan Xu, The University of Akron</td>
<td>301/302</td>
<td>Frontiers of Rubber Science: Additives &amp; Applications</td>
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<td></td>
<td>G3C Process – New Approach to Circular Economy for Tires - Vitaly Khusidman, G3C Technologies</td>
<td>304/305</td>
<td>Advances in Materials and Processes for Tires</td>
</tr>
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<td></td>
<td>Properties of Products Cured by Crosslinking of Alkyl Vinyl Group of 1,2-Polybutadiene and 1,2-SBS - Bruce Bartlett, NISSO AMERICA INC.</td>
<td>315/316</td>
<td>Characterization of Elastomers and Raw Materials</td>
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<td></td>
<td>Testing for Minimum Pressure to Seal Design Parameter - Ben Chouchaoui, Windsor Industrial Development Laboratory, Inc.</td>
<td>317/318</td>
<td>Modelling &amp; Simulation</td>
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### Thursday, Oct. 7

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<tr>
<td>10 a.m.</td>
<td>Resins: Adoption, Evolution, and Innovation in Tire Compounding - Mark Arigo, Eastman Chemical Company</td>
<td>301/302</td>
<td>Frontiers of Rubber Science: Additives &amp; Applications</td>
</tr>
<tr>
<td>10 a.m.</td>
<td>Utilizing Estolide Technology as Sustainable Synthetic Petroleum Replacements - Mark Miller, Biosynthetic Technologies</td>
<td>304/305</td>
<td>Advances in Materials and Processes for Tires</td>
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<tr>
<td>10 a.m.</td>
<td>Solvent Selection and Dilution Process to Distinguish Particle Size and Surface Treatment - Margaret Hwang, Dow</td>
<td>315/316</td>
<td>Characterization of Elastomers and Raw Materials</td>
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<tr>
<td>10 a.m.</td>
<td>Curative Content Optimization to Improve Scorch Behavior of EPDM Compound - Elnaz Esmizadeh, Airboss of America</td>
<td>317/318</td>
<td>Modelling &amp; Simulation</td>
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<tr>
<td>10:30 a.m.</td>
<td>Multi-purpose Products: Additives for Rubber Compounds that can Provide More than One Function - Joel Neilsen, LANXESS</td>
<td>301/302</td>
<td>Frontiers of Rubber Science: Additives &amp; Applications</td>
</tr>
<tr>
<td>10:30 a.m.</td>
<td>New Sustainable Tire Innerliner Using BolderBlack - Mike Kumbalek, Bolder Industries</td>
<td>304/305</td>
<td>Advances in Materials and Processes for Tires</td>
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<tr>
<td>10:30 a.m.</td>
<td>Thermal and Strain-induced Crystallization Characterization of Carbon Black Filled Natural Rubber Compounds During Rapid Adiabatic Straining - William Kyei-Manu, Queen Mary University of London</td>
<td>315/316</td>
<td>Characterization of Elastomers and Raw Materials</td>
</tr>
<tr>
<td>10:30 a.m.</td>
<td>Using Molecular Simulation to Assess the Impact of Additives and Macrocyclic Structures on Vestenamer® Rubber - Mohammad Atif Faiz Afzal, Schrödinger Inc.</td>
<td>317/318</td>
<td>Modelling &amp; Simulation</td>
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<tr>
<td>11 a.m.</td>
<td>Printing of Thermoset Elastomer Compounds: Material Development and Characterizations - AA Mubasshir, University of Massachusetts Lowell</td>
<td>315/316</td>
<td>Characterization of Elastomers and Raw Materials</td>
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<tr>
<td>11 a.m.</td>
<td>Smartchronos Connected Platform Optimizes Production of Elastomers - Arash Kiani, Harmony Elastomers, LLC</td>
<td>317/318</td>
<td>Connectivity, Robotics and AI in the Rubber Industry</td>
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<tr>
<td>11:30 a.m.</td>
<td>Using AI for Dynamic Reduction of Rheological Measurement Frequency - Maximilian Backenstos, DatenBerg GmbH</td>
<td>317/318</td>
<td>Connectivity, Robotics and AI in the Rubber Industry</td>
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</table>
# Student Presentations

**Tuesday, Oct. 5 • Room 306/307, Level Three**

10:30 a.m. Sorption of Gases by Fluoroelastomers at Various Pressures and Temperatures - Michael Cai, University of Houston

11 a.m. Morphology and Physico-mechanical Properties of New Mercapto Silane Grafted Silica/Rubber Composites - Saikat Das, IIT Kharagpur

11:30 a.m. A Non-Covalent Metal-Ligand Coordination Bond Formation in Elastomer: Mechanical Performance and Self-Healing Application - Mithun Das, Research Scholar (PhD student)

1 p.m. Manufacturing of Novel Stretchable Printed Electronics Substrate and Their Material Characterization - Shruti Deshmukh, University of Massachusetts Lowell

1:30 p.m. Creating Sustainable, Designer Natural Rubbers - Eric Devney, The Ohio State University

2 p.m. Correlation between Capillary Rheometer Die Swell and RPA Sample Geometry - Jessica Gialamas, Alpha Technologies

**Wednesday, Oct. 6 • Room 306/307, Level Three**

11 a.m. A Damage Model Based on Maximum Principal Strain Theory to Trace Fracture of Elastomeric Composites: Finite Element Analysis and Experimental Validation - Mohit Goswami, Indian Institute of Technology Kharagpur

11:30 a.m. Predictive Modeling of Hyperelastic Response of Styrene Butadiene Rubber Due to Aging Based on Continuum Damage Mechanics - Vihang Mhatre, Virginia Tech, Center for Tire Research

1 p.m. Flourishing an Electrochemical Synthetic Route Towards Carbon Black Intercalated Graphene as a Neoteric Hybrid Nanofiller for Multifunctional Polymer Nanocomposite - Amrita Roy, IIT Kharagpur

1:30 p.m. Investigation of Structural Instability of Polymeric Extrudate During Processing Using Computational Method - Sujit Sharma, IIT Kharagpur

2 p.m. Aging of Fluoroelastomer at Various Pressures and Temperatures In Hydraulic Fluid - Kapil Surve, University of Houston

# Student Posters

**Tuesday, Oct. 5 & Wednesday, Oct. 6 • Posters Displayed on Expo Floor**

Additive Manufacturing of Rubber Inks Using Direct-ink Write Process – Sarath Kamath, The University of Akron

Carbon Black-nanofiber Dual Filler as a Promising Reinforcing System for Natural Rubber - Surya K P, IIT Kharagpur

Conducting Thermoplastic Elastomer for Mitigating Radiation Pollution - Suman Kumar Ghosh, IPF Dresden/University of Calcutta

Insight into Constitutive Modeling for Tire Tread Rubber Compound in Presence of Defects - Abhay Kumar, IIT Kharagpur

Role of Zinc Oxide with various Morphologies and Surface Characteristics in Elastomer Composites - Sreethu T K, Indian Institute of Technology Kharagpur

Synergistic Effect of Graphene with Graphene Oxide, Nanoclay, and Nanosilica in Enhancing the Mechanical and Barrier Properties of Bromobutyl Rubber (BIIR)/Epoxidized Natural Rubber (Enr 50) Composites - Aswathy Raju, IIT KHRAGPUR

Synthesis and Application of Epoxidized Neem Oil as a Bio-derived Processing Aid for Elastomers - Riya Koley, IIT Kharagpur

Synthesis and Characterization of High Molecular Weight Cyclic Disulfide Elastomers - Aswathy Pillai, The Ohio State University

Tailoring Mechanical, Thermal and Ageing Properties Exploiting Carbon Black-Silica Hybrid Filler in Super Specialty Elastomer Blends - Sipra Khanra, Indian Institute of Technology Kharagpur

Temperature Scanning Stress Relaxation Measurements: A Modern Aspect to Evaluate the Thermo-mechanical Behavior of Peroxide/Co-agent Assisted Thermoplastic Vulcanizates (TPVs) - Asit Baran Bhattacharya, IIT Kharagpur

The Processing of Multilayer Elastomeric Laminates for Chemical and Biological Protection Suits - Mykhel Walker, University of Massachusetts Lowell
All courses take place in the Convention Center, Level Three. Didn’t register for a course? Stop by registration to see if any spots are available.

**Rubber Explained**  
Oct. 4; 10 a.m. – 5 p.m. – Room 334  
Instructor: Erick Sharp, ACE Products & Consulting, LLC

**Essentials of Rubber Technology**  
Oct. 5; 9 a.m. – 1 p.m. – Room 334  
Instructor: Joseph Walker, Elastomer Technologies

**Introduction to Compounding**  
Oct. 5; 9 a.m. – 1 p.m. – Room 333  
Instructor: William Stahl, Rainbow Master Mixing, LLC

**Dynamic Viscoelastic Properties**  
Oct. 5; 1:30 p.m. – 5:30 p.m. – Room 333  
Instructors: Nicki Hershberger & Kylie Knipp, Akron Rubber Development Laboratory

**Essentials of Silicone Rubber**  
Oct. 5; 1:30 p.m. – 5:30 p.m. – Room 334  
Instructor: Joseph Walker, Elastomer Technologies

**Interactive Compound Development & Problem Solving**  
Oct. 6; 9 a.m. – 1 p.m. – Room 333  
Instructors: Nicki Hershberger, Kylie Knipp, Ted Nelson, Jason Poulton and Paul Pavka from Akron Rubber Development Laboratory

**Mixing & Testing for Compound Consistency**  
Oct. 6; 9 a.m. – 1 p.m. – Room 334  
Instructor: Joseph Walker, Elastomer Technologies

**Scientific Rubber Molding**  
Oct. 6; 1:30 p.m. – 5:30 p.m. – Room 334  
Instructor: Joseph Walker, Elastomer Technologies

**Compounding Fluoroelastomers**  
Oct. 6; 1:30 p.m. – 5:30 p.m. – Room 333  
Instructor: William Stahl, Rainbow Master Mixing LLC

Interested in attending a course, but haven’t registered?  
Stop by registration to see if there is still seating available.

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1. Improved low temp. stability, flexibility, and brittleness.
2. Lower electrical conductivity.

CPE has good heat-resistance, weather-proofing, oil resistance, flame-retarding properties, chemical resistance, and ozone resistance. As an elastomer, it is used in wire and cable, hose, tubing, extruded and molded hose and sponge applications.

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TIPS FOR A SAFE STAY IN PITTSBURGH
- Attendees should be aware of their surroundings at all times.
- Don’t wear your meeting badge outside the convention center or hotels.
- Don’t wear fancy jewelry or carry expensive technology in plain sight.
- Carry your briefcase, tote bag, purse or laptop carrier close to your body.
- Don’t leave valuables in your hotel room. Use a hotel safe deposit box.
- Walk in open well-lit areas at night.
- Travel in groups. Don’t be a loner, particularly in the evening.
- Use common sense. If someone or someplace looks suspicious, report it and/or avoid it.
- If an emergency occurs during a meeting event, report emergencies to the nearest security guard or to any Rubber Division, ACS staff member.
- If an emergency occurs outside a Rubber Division, ACS event, contact police or emergency assistance by dialing 911 or seeking assistance from the facility where the emergency occurs.
- Should a catastrophic event occur while the meeting is under way, follow safety and security instructions issued by the facility where you are located at the time of the event.
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