

# 189th Technical Meeting

April 18-21, 2016  
Hilton Palacio del Rio; San Antonio, TX



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## Upcoming Events

**October 10 - 13, 2016**

### 2016 International Elastomer Conference

International Rubber Expo, 190<sup>th</sup> Technical Meeting  
& Educational Symposium

Our International Elastomer Conference is the premier place where customers, suppliers of materials, equipment, tools and services, and educators 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 making new ones.



#### Technical Meeting Topics:

- Rubber Reinforcement • New Commercial Developments • Cure Systems & Networks • Regulations for Rubber Industry • Synthetic Rubber & Synthetic Rubber-based Products • Tire Traction, Handling & Tire Performance Prediction • Contributed Session • Aging & Degradation • Natural Rubber & Bio Materials for Rubber • Adhesion • Mechanics & Modeling of Rubber • Silicon Materials for Rubber

#### Educational Symposium Courses:

- Introduction to Rubber Technology for Non-Technologists • Internal Mixers and Mixing Parameters • Molding of Rubber • Silicone Basics • Introduction to Rubber Bonding

#### This is an ideal conference/expo for companies involved with:

Machinery and Equipment, Chemical Suppliers, Rubber Processing, Natural and Synthetic Rubber, Raw Materials Suppliers, Testing and Research, Mold Release Agents, Molding, Extrusion and Parts Production, Custom Services, Compounding and Mixing Services, Manufacturing or Distribution, Recycling, Advanced Materials in Healthcare, TPEs

#### Visitors Include:

Chemists, Product Manufacturers, Distributors and Suppliers, Machinery Manufacturers, Machinery and Testing Equipment Users and Manufacturers, Raw Materials Suppliers, Manufacturers Looking For Component Suppliers and Rubber Products, Quality Assurance Specialists, End Users, Technical Service Representatives, Research and Development Engineers, Product Design Engineers, Sales and Marketing Professionals

Visit [rubberiec.org](http://rubberiec.org) for details.

**David L. Lawrence Convention Center • Pittsburgh, PA USA**



View all 2016 training opportunities, including course descriptions & pricing at [rubber.org/upcoming-training](http://rubber.org/upcoming-training).

#### 2016 Upcoming Training Opportunities

- Carbon Black Training & Tour – April 27 & 28; Addis, LA
- Essentials of Rubber Technology – May 3; Akron, OH
- Silicone Rubber Chemistry and Technology – May 3; Akron, OH
- Compound Mixing and Consistency – May 4; Akron, OH
- Establishing a Rubber Molding Process – May 4; Akron, OH
- Design of Experiments – May 9 & 10; Akron, OH
- Dynamic Rubber Design – May 11 & 12; Akron, OH
- Introduction to Rubber Technology for Non-Technologists – May 13; Akron, OH
- Internal Mixers and Mixing Parameters – June 13; St. Simons Island, GA
- Understanding Raw Materials, the Building Blocks of Rubber Compounding – August 23; Akron, OH
- Compounding for Performance – August 24 & 25; Akron, OH
- Solving Problems in Rubber Compounding and Processing – August 26; Akron, OH

## Special Events

### 25-Year Club Reception & Luncheon

Tuesday, April 19; 12:00 p.m. – 1:30 p.m.

#### Stetson's, Stetson's Level

Seating is limited - \$60 per person

Come celebrate individuals who have been active in the rubber industry for 25 consecutive years or more. Open to all attendees. Registration is required.

### Science & Technology Awards Banquet

Wednesday, April 20; 12:00 p.m. – 2:00 p.m.

#### La Vista, 22<sup>nd</sup> Floor

Cost of the S&T Banquet is included in the 189<sup>th</sup> Technical Meeting paid registration fee. Emeritus, Students, Press and Guests may purchase tickets for \$60 each.

### Welcome Reception

Tuesday, April 19; 5:15 p.m. – 7:00 p.m.

#### Salon del Rey A, Mezzanine Level

All registered attendees are invited to attend. Reservations are not required.

### Business & Awards Meeting

Thursday, April 21; 11:00 a.m. – 12:00 p.m.

#### Salon del Rey A, Mezzanine Level

##### AGENDA

Chair's Remarks	Leo. C. Goss, Jr.
Retiring Committee Chair	Leo. C. Goss, Jr.
Retiring Directors Rep	Leo. C. Goss, Jr.
Retiring Area Directors	Leo. C. Goss, Jr.
Certificate of Appreciation	Leo. C. Goss, Jr.
Arnold Smith Special Service Award	Leo. C. Goss, Jr.
Distinguished Service Award	Leo. C. Goss, Jr.
Past Chair Award	Leo. C. Goss, Jr.
Treasurer's Report	Jerry McCall
Necrology	Brian Barkes
Report of the Nominating Committee	William Stahl
Other Business	Leo. C. Goss, Jr.

### 5K Walk/Run – Presented by H.M. Royal

Wednesday, April 20

#### Check-in 6:30am in Hilton Palacio del Rio Lobby

Runners, walkers, spouses and guests are invited to participate. You must register to attend.

## Technical Meeting Policies

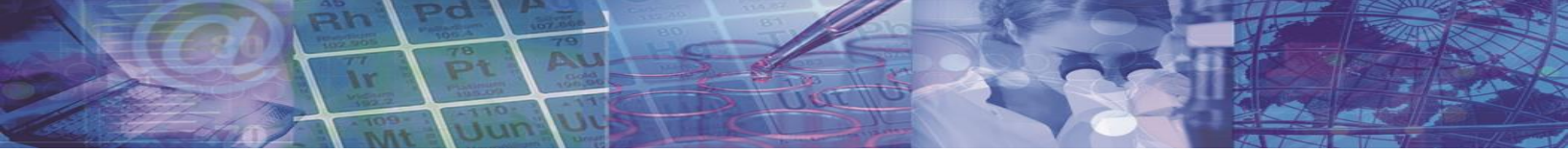
- Videotaping or photographing any portion of a technical presentation is strictly prohibited. Violators of this policy will be asked to leave and will not be allowed back into the meeting.
- Complimentary presentations download from this meeting: You will receive an email around April 29<sup>th</sup> with instructions for downloading the papers presented at this meeting.
- You are required to wear your badge for entrance to the technical sessions.

# Schedule of Events

Day/Time	Event	Location
<b>Monday, April 18</b>		
8:00 a.m. – 9:00 a.m.	Steering Committee Breakfast*	The River's Edge, -2 River Level
9:00 a.m. – 12:00 p.m.	Steering Committee Meeting*	La Reina, Mezzanine Level
12:00 p.m. – 5:00 p.m.	Registration	Salon del Rey Foyer, Mezzanine Level
1:30 p.m. – 3:00 p.m.	Membership Committee Meeting	La Reina, Mezzanine Level
2:00 p.m. – 5:00 p.m.	Program Planning Committee Meeting	La Duquesa, Mezzanine Level
3:00 p.m. – 4:00 p.m.	S&T Committee Meeting*	La Reina, Mezzanine Level
3:30 p.m. – 4:30 p.m.	Area Directors Caucus*	La Condesa, Mezzanine Level
<b>Tuesday, April 19</b>		
7:30 a.m. – 4:30 p.m.	Registration	Salon del Rey Foyer, Mezzanine Level
8:00 a.m. – 10:45 a.m.	Technical Session	Salon del Rey BC, Mezzanine Level
9:00 a.m. – 11:00 a.m.	Partnership Development Committee Meeting	La Condesa, Mezzanine Level
10:00 a.m. – 11:00 a.m.	Marketing Committee Meeting	La Princesa, Mezzanine Level
<b>11:00 a.m. – 12:00 p.m.</b>	<b>Keynote Address</b> <b>Bruce H. March, Senior Vice President of Global Operations, ExxonMobil Chemical Company</b>	<b>Salon del Rey BC, Mezzanine Level</b>
12:00 p.m. – 1:30 p.m.	25-Year Club Reception & Luncheon	Stetson's, Stetson's Level
1:00 p.m. – 3:00 p.m.	Exhibits & Meeting Sites Committee Meeting	La Princesa, Mezzanine Level
1:30 p.m. – 5:15 p.m.	Technical Session	Salon del Rey BC, Mezzanine Level
5:15 p.m. – 7:00 p.m.	<b>Welcome Reception</b> – All are invited!	Salon del Rey A, Mezzanine Level
<b>Wednesday, April 20</b>		
Check-in 6:30 a.m.	5K Walk/Run - Presented by H.M. Royal, Inc.	Meet in Hilton Palacio del Rio Lobby
7:30 a.m. – 4:30 p.m.	Registration	Salon del Rey Foyer, Mezzanine Level
9:00 a.m. – 11:00 a.m.	Technical Session	Salon del Rey BC, Mezzanine Level
9:00 a.m. – 11:00 a.m.	Finance & Budget Committee Meeting*	La Condesa, Mezzanine Level
12:00 p.m. – 2:00 p.m.	<b>Science &amp; Technology Awards Banquet</b>	La Vista, 22 <sup>nd</sup> Floor
2:15 p.m. – 6:00 p.m.	Technical Session – S&T Presentations	Salon del Rey BC, Mezzanine Level
3:30 p.m. – 4:30 p.m.	Area Directors Meeting*	La Condesa, Mezzanine Level
<b>Thursday, April 21</b>		
7:30 a.m. – 12:00 p.m.	Registration	Salon del Rey Foyer, Mezzanine Level
8:00 a.m. – 9:00 a.m.	Steering Committee Meeting*	La Reina, Mezzanine Level
8:00 a.m. – 11:00 a.m.	Technical Session	Salon del Rey BC, Mezzanine Level
9:00 a.m. – 10:45 a.m.	Executive Committee Meeting	Salon del Rey A, Mezzanine Level
11:00 a.m. – 12:00 p.m.	Business & Awards Meeting	Salon del Rey A, Mezzanine Level

\* Closed Meeting

Rubber Division, ACS members are welcome to attend all open committee meetings.



Tuesday, April 19 – Salon del Rey BC, Mezzanine Level

## DYNAMIC PROPERTIES AND RHEOLOGY OF RUBBER

Chair: **Dr. Christopher G. Robertson, Cooper Tire & Rubber Company**

- 8:00 a.m. Effects on Filler Dispersion and Mechanical Properties Due to Branching in Rubber Compounds – **Madhu Namani**, TA Instruments – Waters LLC
- 8:30 a.m. Testing the Kovacs' Signatures in Colloids: Thermoresponsive Colloidal Dispersions – **Gregory McKenna**, Texas Tech University
- 9:00 a.m. Dynamics of Confined Polymers – **C. Michael Roland**, Naval Research Lab
- 9:30 a.m. Break
- 9:45 a.m. Rational Control of Polymer Glass Formation and Mechanical Properties with Molecular Additives – **David Simmons**, The University of Akron
- 10:15 a.m. Interplay Between NP Assembly, Polymer Chain Conformation and Mechanical Properties in Polymer Nanocomposites: From Model to Industrial Systems for Innovative Functional Materials – **Jacques Jestin**, CNRS

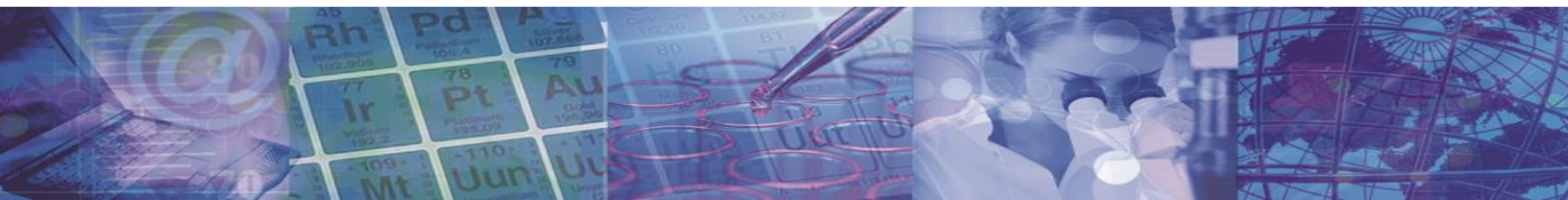
### 11:00 a.m. – 12:00 p.m. KEYNOTE ADDRESS (Open To All Attendees): Global Energy Outlook



Bruce March is senior vice president, global operations of ExxonMobil Chemical Company, Houston, Texas. In this position, he is responsible for the integrated manufacturing operations in North America and Latin America, Europe, Middle East/Africa and Asia Pacific. In addition, he is responsible for the Engineering and Manufacturing Support and the Safety/Health/Environmental organizations. A native of Middleport, New York, Mr. March is a graduate of the Rochester Institute of Technology. He joined Mobil Oil at the Buffalo Refinery as a project engineer in 1980 and advanced through increasingly responsible management positions in domestic and foreign operations, including manager of the ExxonMobil Baton Rouge Refinery, project executive in ExxonMobil's Development Company, and refining director, Europe/Africa/Middle East. In 2008, he was named chairman, president and chief executive officer of Imperial Oil Limited and was a director of Imperial until 2013 when he assumed his current responsibilities.

- 1:30 p.m. Physical Ageing in Highly Filled Rubbers: Role of Particle Flocculation and the Filler Network – **James Busfield**, Queen Mary University of London
- 2:00 p.m. Glass-like Phenomena in the Rubbery State of Reinforced Polymers Due to Particle Jamming – **Dr. Christopher G. Robertson**, Cooper Tire & Rubber Company
- 2:30 p.m. Influence of Particle Size Statistics and Test Specimen Shape on Lifetime Prediction for Reinforced Elastomers – **Jens Meier**, German Institute of Rubber Technology (DIK)
- 3:00 p.m. Fatigue Characterization of a Thermoplastic Elastomer – **William V. Mars**, Endurica LLC
- 3:30 p.m. Break
- 3:45 p.m. Effect of Silane Coupling Agent Loading on the Intrinsic Tear Strength and Crack Propagation of Silica-Filled SBR – **Toby Samples**, Akron Rubber Development Laboratory, Inc.
- 4:15 p.m. Computational Fluid Dynamics (CFD) Analysis of Rubber Mixing in Intermeshing vs. Non-Intermeshing Rotors – **Suma Rani Das**, The University of Akron
- 4:45 p.m. A Combined Rheological and Dielectric Analysis of Filler Flocculation and Reinforcement of Elastomer Nano-Composites – **Manfred Klüppel**, German Institute of Rubber Technology (DIK)





Wednesday, April 20 – Salon del Rey BC, Mezzanine Level

### CHARACTERIZATION OF POLYMERS/RUBBER

Chair: Christopher C. Scilla, Eastman Chemical Company

- 9:00 a.m. PBR and SSBR in Synthesis of High Gloss-High Impact Polystyrene by Continuous Process – **Daniel Elizarrarás**, Dynasol Elastomers
- 9:30 a.m. Mechanical Properties and Crosslinking Structures of Vulcanized Natural Rubber – **Seichi Kawahara**, Nagaoka University of Technology
- 10:00 a.m. Characterization of Spatial Evolution in Thermal-Oxidative Aging of Rubbers – **Ulrich Giese**, Deutsches Institut für Kautschuktechnologie e. V.
- 10:30 a.m. Atomic Force Microscope Nanomechanics on Rubbery Materials – **Ken Nakajima**, Department of Organic and Polymeric Materials, Tokyo Institute of Technology

### SCIENCE & TECHNOLOGY AWARD WINNERS

Chair: Dr. Maria D. Ellul, ExxonMobil Chemical Co.

- 2:15 p.m. Highlights of My Diverse Rubber Science and Rubber Processing Endeavors; Charles Goodyear Medalist – **Dr. Georg Bohm**
- 3:15 p.m. Select Advances in Rubber Technology: Past and Future; Melvin Mooney Distinguished Technology Award Recipient – **Dane Parker**
- 3:45 p.m. Sensors, Actuators and Self-Healing Rubbers; Sparks-Thomas Award Recipient – **Dr. Amit Das**
- 4:15 p.m. Break
- 4:30 p.m. Rubber: from the Nanoscale to Material Properties; George Stafford Whitby Award for Distinguished Teaching & Research Recipient – **Professor Maurizio Galimberti**
- 5:00 p.m. Sustainable Rubber Based Block Polymers; Chemistry of Thermoplastic Elastomers Award Recipient – **Dr. Frank Bates**
- 5:30 p.m. The History and Development of The Banbury® Mixer; Fernley H. Banbury Award Recipient – **Frank Borzenski**





Thursday, April 21 – Salon del Rey BC, Mezzanine Level

### CONTRIBUTED SESSION

Chair: **C. Jeffrey Lin, Momentive Performance Materials, Inc.**

- 8:00 a.m. Comparison of Abient vs. Cryogenically Ground Micronized Rubber Powder – **Glenn Denstaedt**, Lehigh Technologies
- 8:30 a.m. Advancement in Reinforcing Resins – **Alexandra Krawicz**, SI Group, Inc.
- 9:00 a.m. LSR Material Measurement for Virtual Liquid Injection Molding – **Rick Ziebell**, R.D. Abbott Company, Inc.
- 9:30 a.m. The Effect of Thermo-Oxidation on the Permeation Resistance of Bromobutyl Compounds – **Richard Pazur**, Department of National Defence

### FILLERS

Chairs: **Sy Mowdood, Pirelli Tyre SpA (retired); Robert H. Schuster, Deutsches Institut für Kautschuktechnologie**

- 10:00 a.m. Surface Modification of Ground Tire Rubber by Mechanochemical Modification and Its Application in SBR/NR Blends – **Petar Djekic**, University of Niš, Faculty of Mechanical Engineering
- 10:30 a.m. Discrete, Surface Modified Carbon Nanotube-Rubber Materials for Improved Mechanical Properties – **Sateesh Peddini**, Molecular Rebar Design LLC

Visit [rubber.org/technical-meeting2](http://rubber.org/technical-meeting2) for more information about the presenters and award winners at this meeting.

### RUBBER DIVISION, ACS STAFF

Edward L. Miller, MSCE, MBA, PE  
Executive Director  
[emiller@rubber.org](mailto:emiller@rubber.org)  
330-595-5532

Beth Berkheimer, CMP, CEM  
Exposition & Meetings Manager  
[bethb@rubber.org](mailto:bethb@rubber.org)  
330-595-5538

Gabrielle Daniel  
Exec. Admin. Asst. & Reg. Cord.  
[gdaniel@rubber.org](mailto:gdaniel@rubber.org)  
330-595-5535

Nicole Neila  
Training & Development Assistant  
[nneila@rubber.org](mailto:nneila@rubber.org)  
330-595-7603

Melanie Avdeyev  
Exposition & Meetings Assistant  
[melaniea@rubber.org](mailto:melaniea@rubber.org)  
330-595-5537

Chuck Brady  
Librarian  
[cbrady@rubber.org](mailto:cbrady@rubber.org)  
330-972-7197

Heather Maimone, MBA  
Membership Manager  
[hmaimone@rubber.org](mailto:hmaimone@rubber.org)  
330-595-5546

Christie Robinson, M.Ed.  
Training & Development Director  
[crobinson@rubber.org](mailto:crobinson@rubber.org)  
330-595-7602

Lakisha Barclay  
Accounting Manager  
[lb@rubber.org](mailto:lb@rubber.org)  
330-595-5539

Gretchen Cermak  
Marketing Manager  
[gc@rubber.org](mailto:gc@rubber.org)  
330-595-5540

Linda McClure  
Technical & Student Programs Mgr.  
[lmclure@rubber.org](mailto:lmclure@rubber.org)  
330-595-5543