



# THE PIPELINE

## LETTER FROM THE CHAIR

TENI BUTLER

Fall doesn't start until September 23rd, and it's still scorching hot outside. Then how is it that "summer is over" and the school year has already begun?! Is it because as we get progressively older, each year is a smaller percentage of our overall lives? Or maybe, it is because time appears to pass faster when we are in a set routine? Both ideas have some validity. [Biochemical research indicates](#) that as we age, the brain's internal clock begins to run more slowly, releasing less dopamine in response to new stimuli once we are past the age of 20 – this may appear to make "time fly" overall even though some days may drag on. So, what do we do about it? None of us are eager to lose the precious moments we have left of our lives.

In our younger years, we experience "the big firsts": first date, first job, first house, first child, first, first, first... These large, new events in our lives require more attentive

processing by our brains and lead to more detailed memories making those years of our lives "last longer". As we move into adulthood, we are apt to begin living life in a more rote manner. As "firsts" fall away, our mind begins to process routine things with less effort and maintains less detailed memories of the time period – leading to the apparent "speed up" of time. So, I propose to you: learn something different, do something new, and allow your attention to fully be in that space while you do it. We would love to see you attending our up-coming programs to learn more about a topic, volunteering with our Outreach Committee in an activity you've never done before, and connecting with other members and forging new relationships across your networks at our Professional Engagement events. Time is precious to us all, and we hope we can help you spend it well.

## PROGRAMS

### 2019-2020 PROGRAM SCHEDULE

Thermosets from Highly Functionalized Bio-Based Resins (Joint Program with ACS)	Dean Webster (North Dakota State University)	September 17
Glass Stress	Doug Atkins (Eastman)	October 15

## UPCOMING SEPTEMBER PROGRAM

### JOINT PROGRAM WITH ACS

A challenge faced with transitioning from polymer materials derived from petrochemical sources to bio-based sources is in designing materials having the performance properties required for today's applications. High performance thermoset polymers are used in applications such as coatings, composites, and adhesives and are made in-situ from the crosslinking reactions of functional low molecular weight resins or functional oligomers. While vegetable oils are a readily available and amenable to functionalization to be used in thermosets, their long aliphatic hydrocarbon chains tend to result in materials that are soft and flexible. However, we have found that by creating multifunctional resins from vegetable oil fatty acids and a highly functional rigid polyol, thermosets can be formed that have the strength and stiffness for use in high performance coatings and composites. For example, epoxidized sucrose esters of vegetable oil fatty acids, such as epoxidized sucrose soyate crosslinked with cyclic anhydrides yield thermosets having high modulus, solvent resistance, and hardness. Methacrylated epoxidized sucrose esters can be used to form high performance resins that can be cured with free radicals and used in composites using either glass or natural fibers. These resins have also been demonstrated in additive manufacturing. It has also been discovered that 100% bio-based thermosets can be made from the water-catalyzed crosslinking of epoxidized sucrose soyate with naturally-occurring acids such as citric or tartaric acids. Conversion of the epoxy groups

into cyclic carbonate groups leads to highly functional resins that can be cured using multifunctional amines to yield polyurethanes without using isocyanates. In all of these examples, the thermosets formed have properties far superior to their triglyceride oil counterparts and equivalent or superior to current petrochemical resins. This approach is also applied to lignin, where a green process for direct functionalization of lignin with methacrylate or acetoacetate groups has been discovered. Thermosets from functionalized lignin can be made which are strong and tough.

Dean Webster is Professor and Chair in the Department of Coatings and Polymeric Materials at North Dakota State University. He received a B.S. in Chemistry and a Ph.D. in Materials Engineering Science both from Virginia Tech. Prior to joining NDSU in 2001 he worked for Sherwin-Williams and at Eastman Chemical Company. He is the recipient of the 2011 Roy W. Tess Award in Coatings Science given by the American Chemical Society, the 2013 Joseph Mattiello Lecture award given by the American Coatings Association, and the Waldron Research Award given by the NDSU Alumni Association. He was named Fellow of the American Chemical Society in 2016. His research is in the area of new high performance polymer systems for coatings, composites and additive manufacturing, nanocomposites, polymers for marine antifouling coatings, and use of renewable resources in polymers and coatings systems.

## LEADERSHIP MIXER

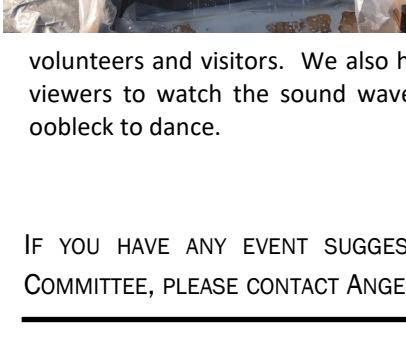
At the same time as our September technical program, AIChE East Tennessee will hold its leadership mixer. During this time, all current officers and committee chairs will be present to discuss their roles and responsibilities. It will be a great time to learn about leadership opportunities for 2020 as well as a great time to meet your chemical engineering peers. Even if you are unsure about holding a position, we hope to see you there!

## SHORT COURSE RECAP

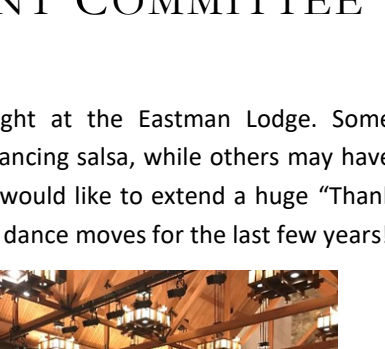


The 2019 AIChE Short Course was held Tuesday thru Thursday, August 20-22. The topic was "Advanced Concepts for Process Hazard Analysis" and was combined with Eastman's own PHA Process Leader training. 26 people attended the course, organized by Sal Arena and facilitated by David Scanlan. The course, taught by AIChE's Robert Johnson, was valuable for providing participants tools and methods for PHA, plus reinforcing the importance of a structured approach to PHA, given the complexity of process safety. Each participant left with a textbook from the Center for Chemical Process Safety and a reference manual developed by Mr. Johnson himself. This course also raised funds for our local chapter of AIChE, enabling the chapter to fulfill our goal to provide high-quality events, programs, and services to our members. If you have any ideas or requests for next-year's short-course, please submit them for consideration and we'll be happy to review them!

## OUTREACH COMMITTEE



The East Tennessee Local section had a presence at the Kingsport Mini Makers Faire at the Kingsport Civic Auditorium on Saturday July 26th. We were set up on the front lawn across from Domtar's paper making station. Children young and old enjoyed getting their hands and feet dirty in oobleck. The cornstarch and water mixture is a non-Newtonian fluid which acts like a solid at high shear stress and like a liquid at low shear. This allowed you to run across the pond of oobleck, but if you were to slow you got stuck. This messy adventure was quite fun for the



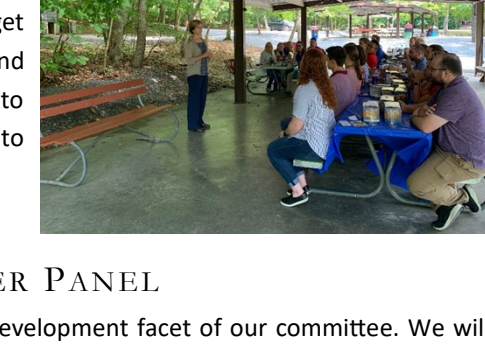
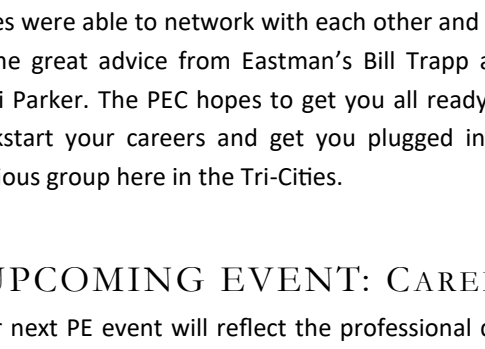
volunteers and visitors. We also had a speaker that allowed viewers to watch the sound waves which would cause the oobleck to dance.

IF YOU HAVE ANY EVENT SUGGESTIONS OR WOULD LIKE TO VOLUNTEER FOR THE OUTREACH COMMITTEE, PLEASE CONTACT ANGELINA ORTIZ AT [ANGELINA.ORTIZ@EASTMAN.COM](mailto:ANGELINA.ORTIZ@EASTMAN.COM).

## PROFESSIONAL ENGAGEMENT COMMITTEE

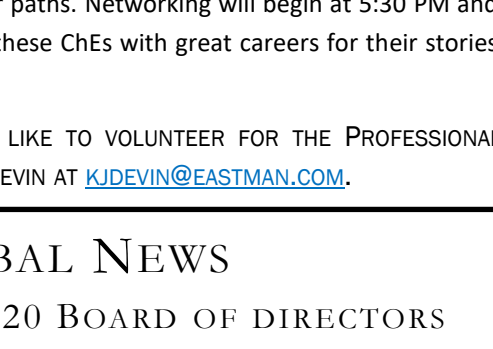
### SALSA NIGHT

In July, the PE Committee hosted its 6th annual Salsa Night at the Eastman Lodge. Some participants learned basic steps and more complex steps for dancing salsa, while others may have enjoyed the salsa and cheese dip more than the dancing. We would like to extend a huge "Thank You" to Ruben del Valle-Saez for his willingness to teach others dance moves for the last few years!



### NEW HIRE PICNIC

With our new hires now settling in at Eastman, AIChE hosted the New Hire Picnic at the Eastman Recreation Center. Collegiate and experienced hires were able to network with each other and get some great advice from Eastman's Bill Trapp and Cari Parker. The PEC hopes to get you all ready to kickstart your careers and get you plugged in to various group here in the Tri-Cities.



### UPCOMING EVENT: CAREER PANEL

Our next PE event will reflect the professional development facet of our committee. We will be hosting a Career Panel on October 8th at the Toy F. Reid Employee Center in Kingsport, featuring distinguished chemical engineers with varied career paths. Networking will begin at 5:30 PM and the panel will begin at 6:00 PM. Come out to ask these ChEs with great careers for their stories and advice!

IF YOU HAVE ANY EVENT SUGGESTIONS OR WOULD LIKE TO VOLUNTEER FOR THE PROFESSIONAL ENGAGEMENT COMMITTEE, PLEASE CONTACT KATIE DEVIN AT [KJDEVIN@EASTMAN.COM](mailto:KJDEVIN@EASTMAN.COM).

## AICHE GLOBAL NEWS

### 2019 ELECTION FOR THE 2020 BOARD OF DIRECTORS

#### VOTING DATES AND DEADLINES:

**August 26th:**  
Ballot Mail Date

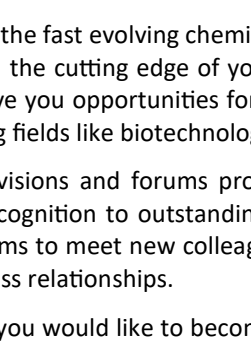
**September 9th:**  
Election Commences

**October 14th:**  
Ballot Receipt Deadline

**November 11th:**  
Results Officially Announced at the Annual Business Meeting in Orlando, FL

For President-Elect	
Gregory Frank	Amgen, Inc
Deborah L. Grubbe	Operations and Safety Solutions, LLC
For Director	
Linda Broadbelt	Northwestern University
Douglas S. Clark	University of California, Irvine
Brian H. Davison	Oak Ridge National Laboratory
Robert M. Kelly	North Carolina State University
Robert D. Kiss	Sutro Biopharma
Ann L. Lee	Juno Therapeutics
Peter Lodol	Eastman Chemical Co.
Todd Przybycien	Rensselaer Polytechnic Institute

Read more about the [2019 Election Candidates](#). Instructions for electronic proxy will be included with the ballot and emailed to members with email addresses on file. As a reminder, your 2019 dues must be paid in full by September 1st in order to be eligible to vote.



The AIChE Young Professionals Committee (YPC) is looking for people interested in writing for various AIChE publications including the YPC's newsletter, [ChEcted](#), and other publications. Articles can cover a wide variety of topics of interests to Young Professional Members of AIChE including: technical articles, professional development articles, best practices for young engineers, general career advice, and more!

If you are interested in writing for any of these, please apply [here](#).

## GLOBAL AICHE DIVISIONS & FORUMS

In the fast evolving chemical engineering profession, AIChE's divisions and forums will keep you on the cutting edge of your specialty. Beyond just technical information, divisions and forums give you opportunities for affiliation with top engineers in both general disciplines and emerging fields like biotechnology and sustainability.

Divisions and forums provide programming for AIChE's technical meetings, and awards and recognition to outstanding chemical engineers in their area of expertise. Join divisions or forums to meet new colleagues, exchange ideas, discuss the latest trends, and build lasting business relationships.

If you would like to become more involved in AIChE at the national level, Divisions and Forums are a great way to do that in an area of your interest. Learn more at: <https://www.aiche.org/community/divisions-forums>.

IF YOU HAVE SUGGESTIONS FOR GLOBAL AICHE NEWS THAT YOU WOULD LIKE TO SEE FEATURED IN OUR NEWSLETTER, PLEASE EMAIL TENI BUTLER [TRBUTLER@EASTMAN.COM](mailto:TRBUTLER@EASTMAN.COM).

## 2019 LOCAL SECTION OFFICERS, DIRECTORS, AND SUPPORT STAFF

Chair	Teni Butler	<a href="mailto:trbutler@eastman.com">trbutler@eastman.com</a>
Vice Chair	Erin Ekart	<a href="mailto:ErinEkart@eastman.com">ErinEkart@eastman.com</a>
Secretary	Kelsey Niehoff	<a href="mailto:Kelsey.Niehoff@eastman.com">Kelsey.Niehoff@eastman.com</a>
Treasurer	Allison Fiorini	<a href="mailto:Allison.Fiorini@eastman.com">Allison.Fiorini@eastman.com</a>
Immediate Past Chair	Rachel McLendon	<a href="mailto:rmclendon@eastman.com">rmclendon@eastman.com</a>
Directors	Tim Nolen	<a href="mailto:tnolen@eastman.com">tnolen@eastman.com</a>
	Rebecca Glaspie	<a href="mailto:rglaspie@eastman.com">rglaspie@eastman.com</a>
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Short-Course Coordinator and Fundraising Chair	David Scanlan	<a href="mailto:David.Scanlan@eastman.com">David.Scanlan@eastman.com</a>
Outreach Committee Chair	Angelina Ortiz	<a href="mailto:Angelina.Ortiz@eastman.com">Angelina.Ortiz@eastman.com</a>
Professional Engagement Committee Chair	Katie Devin	<a href="mailto:kjdevin@eastman.com">kjdevin@eastman.com</a>
Membership Committee Chair	Steve Miller	<a href="mailto:stmiller@eastman.com">stmiller@eastman.com</a>
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