



THERMOPLASTIC ELASTOMERS

Special points of interest:

- FAPSIG TALKS TO BE GIVEN AT ANTEC 19
- FAPSIG SCHOLARSHIP
- DR. MYER EZRIN BEST PAPER WINNER
- 2018 BOARD MEETING MINUTES
- FAPSIG BOARD

Letter from the Chair — Brian Ralston

Letter from the Chair:

Welcome to the Failure Analysis and Prevention SIG (FAPSIG) Winter 2019 Newsletter! I am happy to report that the FAPSIG sessions at ANTEC 2018 in Orlando, FL were well attended (we'll lobby for a larger room next year!) Both the technical paper presentations and the tutorial sessions provided FAPSIG members an excellent forum for learning and exchange of ideas. A special thank you to our Technical Program Chair, Todd Menna, and all of our speakers for volunteering their time.

Our next ANTEC meeting will be held March 18-21, 2019 in Detroit, MI. As always, the Dr. Myer Ezrin Best Paper Award winner will be announced at the conclusion of

the FAPSIG sessions. We will also be presenting the FAPSIG Student Paper Award winner. FAPSIG will hold its business meeting during ANTEC and I invite you to participate and voice your suggestions, ideas, and opinions so that the FAPSIG board can better address the needs of our members. Along these lines, we would welcome feedback and suggestions anytime, so please do not hesitate to e-mail me with your ideas at brian.ralston@campoly.com.

Warm regards,
Brian Ralston
Cambridge Polymer Group
FAPSIG Chair





ANTEC® 2019
Detroit, MI • March 18-21, 2019
CO-HOSTED BY SPE DETROIT

FAPSIG Technical Sessions

Monday, March 18

Time	Presenter	Topic
9-9:30	Steven Kreuzer	Perspectives on Battery Enclosure Design
9:30-10:00	Fay Salmon	Simulation of Bond Performance
10:00-10:30		Importance of Whole Package Barrier Analysis in Optimizing
11:00-11:30		Design Elastic Adhesive Contact for Rough Surfaces
11:00-11:30	Paul Tres	Plastic design pitfalls

Tuesday, March 19

Time	Presenter	Topic
9-9:30	Chris Lyons	Environmental Stress Cracking Failure of Amorphous Polymer Materials
9:30-10:00	Brendan Ondra*	Physical Aging Behavior of Aliphatic and Aromatic Thermosets
10:00-10:30	Chen-Liang Zhao	Molding for Damage Accumulation of Injection Molded Components
10:30-11:00	Wolfgang Essig	Air-Coupled Ultrasonic Inspection of Thermoplastic CRFP Tapes
11:00-11:30	Jens Wipperfurth	Inline Systems for Optical Quality Assurance of Multi-Step Processes
11:30-12:00	Akanksha Garg	Mechanical Failure in Agricultural Silo Bags

Wednesday, March 20

Time	Presenter	Topic
11:00-11:30	Giles Dillingham	Additive Blooming: Origins, Detection, and Control
11:30-12:00	Jeff Jansen	Failure Analysis of Automotive Air Conditioning Connectors

*2018-2019 FAPSIG Student Award winner

2019—2020 FAPSIG Scholarship Announcement



2019-2020 FAPSIG Student Award

The Failure Analysis and Prevention SIG of the Society of Plastics Engineers is pleased to announce a scholarship award for students involved in research related to failure analysis and prevention, including topics such as material selection/characterization, CAE/FEA modeling, and lifetime prediction.

The scholarship is a two-part award. For the first part, the recipient will be presented with \$500 (USD) and a certificate at ANTEC 2019. To be eligible for the second \$1,500 part of the award, the research described in the winning application must be submitted as a paper, accepted and presented at ANTEC 2020 (procedures for submitting papers to ANTEC can be found on SPE's website, www.4SPE.org).

The scholarship winner will be selected based on a 1-page summary of their research. The summary must be written by the student and submitted by completing the attached form. The summary is due on February 16, 2019, and the winner will be announced by the end of February. The winner will be announced by email via a valid university email account. The applicant is expected to complete the proposed research as a university student and to be enrolled at the time the paper is presented at ANTEC 2020.

If you have any questions, please contact me.

Dr. Antoine Rios
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ANTEC 2018 FAPSIG Meeting Minutes, May 9, 2018

Attendees:

- Brian Ralston – Chair
- Todd Menna – Technical Program Chair (TPC)
- Jose Perez – TPC in Training (served as secretary for this meeting)
- Jeffrey Jansen – Sponsorship Chair
- Jennifer Hoffman – Best Paper Chair
- Don Duvall – Membership Chair
- Antoine Rios – Activities Chair
- Paul Gramann – Newsletter Editor

- OPEN POSITION – Secretary [Farzana Ansari to be 2018-2019 Secretary]

Others

- Dale Edwards – Past Chair
- Farzana Ansari (Exponent)
- Robert Pieper (Element)

Absent

- Steve Maclean – Treasurer
- Sue Mantell - Website Coordinator
- Mike Hayes – Social Networking
- Javier Cruz - Education Committee Chair

Board (Ralston):

- Minutes approved from 2017 meeting, no changes requested. A quorum was deemed to be present.
- Open board positions of Secretary. Farzana Ansari volunteered for and was approved to serve as the FAPSIG secretary for 2018-2019 by unanimous vote.
- No other changes to current board positions for 2018-2019.

REPORTS FROM CHAIRPERSONS

Treasurer's Report (Menna (as reported to him by Maclean)):

- As of 12/31/2017, balance was \$13,850
- Sponsorship contributions, ANTEC gift card and best paper expenses led to balance of \$15,153 as of 5/9/2018
- Continued good growth and sponsorship participation. Should explore ways to spend money rather than hold onto it.

Technical Program Chair (Menna)

- 1 speaker was a No-Show. Apparent miscommunication within Thermo-Fisher Scientific led to their representative not being confirmed.
- Head count during talks ranged from >100 during the first talk of the session to ~15 at the final talk of the evening.
- Open discussion regarding potential format change at ANTEC 2019 as proposed by the SPE board. Without any formal announcement from SPE, no changes to the current TP are warranted.

Sponsorship Chair (Jansen)

- \$4,000 raised through sponsorships in 2017-2018.

Scholarship Chair (Rios)

- Student Award:
2018 - Sebastian Goris from UW-Madison
2017 - Brendan Ondra from UMass-Amherst

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- The 2017 recipient did not produce a full paper, thus was not eligible for the balance of the scholarship
- Open discussions regarding the possibility of using some of the scholarship award or the current balance in the SIG's account to help offset travel costs for scholarship winner. No binding decisions were made.

Newsletter (Gramann)

- 2 versions released in 2017-2018
- Open request from Paul Gramann for additional content rather than allow the newsletter to go out as an "empty shell"

Best Paper (Hoffman)

- 2018 judging criteria was expanded to include the quality of the presentation. The additional criteria appear to have been well received by the presenters and the judges.
- 4 eligible papers for the 2018 ANTEC and coincidentally, all were linked to one another in some form or fashion.
- Winner of 2018 FAPSIG Best Paper was Kelly Majewski for her paper titled "FRACTURE PROPERTIES OF HDPE EXPOSED TO CHLORINATED WATER".

Membership (Duvall)

- Web reporting system being revamped by SPE, so no reports were able to be retrieved.

OTHER BUSINESS

- Online (Skype or WebEx) to be planned for June/July 2018 to discuss paper submission deadline. Date contingent on notification from SPE regarding format change.
- Leadership to explore the possibility of hosting a luncheon after a morning session at the 2019 Detroit ANTEC. Similar \$750 Student Travel sponsorship to continue moving forward. Menna/Ralston to explore the next higher tier of sponsorship and put it to a vote in June/July 2018
- Vote was proposed, seconded, and unanimously approved to increase the contribution from \$750 to \$1,500 to the SPE Scholarship Fund

MEETING ADJOURNED



Kelly Majewski Recipient of 2018 Dr. Myer Ezrin Best Paper Award

Ms. Kelly Majewski of the University of Minnesota received the 2018 Dr. Myer Ezrin Best Paper Award for her paper “Fracture Properties of HDPE Exposed to Chlorinated Water.” The co-authors on the paper were Evan Cosgriff, Mrinal Bhattacharya, and Susan C. Mantell. Kelly gave an excellent presentation to a packed room at the ANTEC conference in Orlando.

Abstract

High density polyethylene (HDPE) is often used in applications that include both structural loads and oxidative environmental conditions. In this study, the effect of an oxidative environment on HDPE mechanical performance is evaluated. Thin 75 micron HDPE samples are exposed to 5ppm chlorinated water at 70 °C for up to 1250 hours. Changes in polymer morphology as a function of exposure time are evaluated and compared with fracture and tensile test data. FTIR data indicate an increase in the carbonyl group after 250 hours of exposure, while GPC data reveals a 20-50% loss in molecular weight after 500 hours exposure. The decrease in molecular weight is associated with chain scission of the higher molecular weight chains. Essential work of fracture data and strain at break demonstrate significant loss in ductility as exposure time increases, with the greatest loss at 500 hours. The data presented in this study demonstrate the correlation between morphology changes and loss of ductility in HDPE. These data are the basis of a predictive model for lifetime of HDPE components exposed to oxidative environments.



Kelly Majewski receiving the 2018 Dr. Myer Ezrin Best Paper Award from Jennifer Hoffman

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