



Automotive Plastics NEWS

SEPT 2016
VOLUME 46, ISSUE 1



ACCE AUTOMOTIVE COMPOSITES CONFERENCE PREVIEW

For the sixteenth time in as many years, the Automotive Composites Conference & Exhibition (ACCE) organized by SPE's Automotive and Composites Divisions returns to the Detroit suburbs from September 7-9. The event's mandate is to educate the global transportation composites supply chain on the latest developments in polymeric materials, processes, machinery and applications. Billed as "the world's leading automotive composites forum," the conference attracted just under 1,000 attendees last year and more are expected in 2016. The event has a global following and regularly attracts speakers, sponsors, exhibitors, press, and attendees from 15 countries on five continents. Owing to its Motor City location (the Diamond Center at the Suburban Collection Showplace, Novi, MI, US) and the fact entry fees are waived for transportation OEMs, the event boasts an enviable number of engineers and scientists working directly for automotive, commercial truck, agricultural equipment, off-highway, and plane manufacturers as well as their tier suppliers. Organizers schedule numerous breaks between technical programming to visit exhibits (numbering close to 80), and offer three evening receptions to help facilitate networking and energetic discussion about what the industry needs now and in the not-too-distant future.

Continued on Page 5

16th-Annual

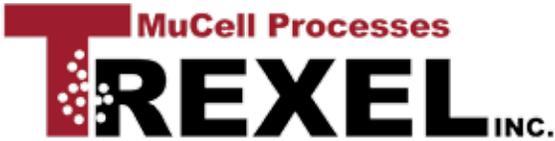
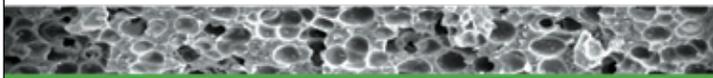


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AUTOMOTIVE DIVISION
MEETING SCHEDULE
& SPECIAL EVENTS
CALENDAR



SPE Auto. Div. Golf Outing

Fieldstone Golf Club
Auburn Hills, MI USA
ALL DAY
September 6, 2016

16th-Annual SPE Automotive Composites Conference & Exhibition (ACCE)

The Diamond Banquet & Conference Center
at the Suburban Collection Showplace
Novi, MI USA
ALL DAY
September 7-9, 2016

First Round - Automotive Innovation Awards Judging

Celanese Corp.
Auburn Hills, MI USA
8:00 a.m.- 5:00 p.m.
September 29-30, 2016

18th-Annual SPE TPO Automotive Engineered Polyolefins Conference (TPO)

Detroit-Troy Marriott
Troy, MI USA
ALL DAY
October 2-5, 2016

SPE Auto. Div. Board Meeting

American Chemistry Council - Auto. Ctr.
Troy, MI USA
5:30 - 7:30 p.m.
October 3, 2016

Second Round / Blue Ribbon - Automotive Innovation Awards Judging

Celanese Corp.
Auburn Hills, MI USA
8:00 a.m.- 5:00 p.m.
October 10, 2016

46th-Annual SPE Automotive Innovation Awards Gala

Burton Manor
Livonia, MI USA
5:00-11:00 p.m.
November 9, 2016

SPE Auto. Div. Board Meeting

American Chemistry Council - Auto. Ctr.
Troy, MI USA
5:30 - 7:30 p.m.
December 5, 2016

Automotive Division Board of Directors meetings are open to all SPE members. All events are listed on our website at <http://speautomotive.com/ec>

EEmail Matt Carroll at auto-div-chair@speautomotive.com for more information.

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CHAIR'S WELCOME

by Matt Carroll,
SPE Automotive Division Membership Chair



Greetings to all readers of this Automotive Plastics NEWS, the newsletter of the Automotive Division of the SPE. We have another exciting Fall season planned with our Golf Outing and Automotive Composites Conference & Exhibition (ACCE) in September and the 46th Annual Automotive Innovations Awards Gala on November 9th. Please be sure to nominate your plastic part innovations for an award this year!! In addition, our partners in the SPE Detroit Section have organized the 18th Annual TPO Conference for October 2-5, another great event.

As stated at www.speautomotive.com...“The Automotive Division is dedicated to recognizing and communicating technical accomplishments in all phases of new automotive plastics and plastic-based composite applications including material, process, equipment, tooling and design”... and our Fall events really help fulfill this mission. Another unstated mission is to have FUN and the Golf Outing and Social Events contribute towards that objective.

As you may know, in SPE, our Annual Year is July 1st – June 30th. Starting this new SPE year, there have been several changes to the Committees and Board for the Automotive Division. First, I am honored to succeed Steve Van Loozen, our **Chair** for the last two years, and I will now carry the torch forward. Steve, thank you for your exemplary service and we are pleased to have you stay on the Board as a very involved **Membership** Chairperson for the upcoming year! Steve replaces Teri Chouinard in this Membership role and Teri left behind a wealth of great membership strategies for us, including many involving her **Social** Committee!

Crystal VanHouten, a 2004 Ferris State grad from their plastics program, brings some “young blood” to the team as our new **Secretary**. Crystal spent four years in Iowa at a custom injection molder which she described as a “step back in time”. She wore many hats there as an engineer of consumer and agricultural products but for eight years now, Crystal has been in automotive, both at General Motors and at suppliers, and she currently works at Grupo Antolin. Kudos to Monica Prokopyshen, our past Secretary, for her continued involvement as our **Education** Committee Chairperson.

Dhanendra Nagwanshi replaces Maheen Kahn as our **Intersociety** Chairperson. Dhanendra started his career with GE Plastics in Bangalore, India back in 2005, transitioned to SABIC during the famous spin-off of 2009, and is now the SABIC Global Marketing Manager for Body and Crash Applications. He moved to the States in 2011 with SABIC and really enjoys the culture here (and at SPE).

Speaking of spin-offs, our multi-talented Communications expert Peggy Malnati has divested her **Newsletter** editor job to David Helmer of General Motors. This occurred just prior to Dave's promotion to Engineering Group Manager of Interior Materials in July, so I guess a lot of juggling will be happening. Fortunately, Peggy will hold our hands for awhile with the newsletter and still manages all other **Communications**.

Tom Pickett completed his second term as our Division **Councilor** and, according to the bylaws, had to step down from this position. We at least were able to entice Tom to stay on as a Board Member with the delicious pizza that we serve at Board Meetings. By the way, please reference our schedule on page 2 and feel free to join us (and the pizza) at the meetings. In any case, our new Councilor volunteer is Suresh Shah who was highlighted in “An Engineer's Life” in the June 2015 issue of this newsletter. Please check out our website www.speautomotive.com to go back to that newsletter and read Suresh's inspiring story.

Welcome

When it comes to money matters, Bonnie Bennyhoff took over the reins of **Treasurer** last January for the Division from Dawn Stephens, who moved into a new job at Celanese. Bonnie, a self-described "stickler for details", has been magnificent at working the books for us. An automotive veteran of 25 years with Exxon Mobil (think Santoprene) and Dow, Bonnie is also an SPE Honored Service Member.

Of course, we have many stalwart contributors to the success of our Division: all the continuing Chairpeople, Event Volunteers and Board Members. I wish I had space to mention everyone but I at least want to recognize Norm Kakarala who volunteered to be our **ANTEC** Chairperson for 2016-2017. And we absolutely can't forget our many supplier friends who really keep all the events going with their generous advertising and sponsorship.

Finally, the Board of Directors has some new faces from the Ford Motor Company. A warm welcome to Alper Kiziltas and Cynthia Flanigan and a "Fare Thee Well" to Mike Masserant as he fulfilled his three year board term. Thankfully, Mike still wants to stay involved!

Welcome to all members, new and old alike, and to another action-packed year of industry involvement and great events!!

Kind Regards,

Matthew E. Carroll

Matt Carroll
2016-2017 SPE Automotive Division Chairperson
General Motors Company

Welcome

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At press time, over 90 regular presentations had been accepted in the final program. These will be presented in 10 sessions, including:

- Additive Manufacturing & 3D Printing;
- Advances in Reinforcement Technologies;
- Advances in Thermoplastic Composites;
- Advances in Thermoset Composites;
- Bonding, Joining & Finishing;
- Enabling Technologies (process/machinery advances);
- Nanocomposites;
- Opportunities & Challenges with Carbon Composites;
- Sustainable Composites (recycled, bio-based, and natural fiber-reinforced composites); and
- Virtual Prototyping & Testing.



Additionally, a special eight-paper session will cover recent precompetitive research by the United States Council for Automotive Research LLC (USCAR, Southfield, MI, US) and its member companies on validation of material models for crash testing of carbon composite bumpers.

Five keynote topics will be interspersed throughout the three-day event and currently include:

- Craig Blue, CEO, **Institute for Advanced Composites Manufacturing Innovation (IACMI)**: *IACMI – The Composites Institute: Progress, Roadmap and Opportunities*;
- Rick Neff, BAAM Sales Manager, **Cincinnati Inc.**: *BAAM - Big Area Additive Manufacturing - Using Reinforced Plastics to Drive Innovation in Big 3D Printing*;
- Rich Fields, Mechanical Engineering Senior Manager, **Lockheed Martin Missiles and Fire Control**: *Accelerated Introduction of New Material Systems*;
- Ove Schuett, Vice President - Transportation & Mobility, Industrial Equipment Business Unit, **Dassault Systèmes**: *An Innovative Approach to Light Weighting and Managing Vehicle Development Complexity*; and
- James Staargaard, CEO, **Plasan Carbon Composites**: *Development of a Carbon Fiber Reinforced Roof Frame Using the High Pressure Resin Transfer Molding Process*.

All five keynote speakers will also participate on a panel discussion on the topic of *Critical Issues in Automotive Composites: Technology, Policy and Supply Chain*. Panelists will alternately take questions from the moderator, Dale Brosius (SPE Composites Division and IACMI) and the audience.



Pre-event social outings on Sept. 6 include a day-long golf competition at Fieldstone Golf Club (Auburn Hills, MI, US) and a facilities tour at BASF's Wynandotte, MI facility. Conference attendees are invited to attend an evening reception that night at the conference facility's Fireside Room.

To keep things interesting, the ACCE also features awards for competitions for best paper, student scholarships, student posters, and best composite parts.

Learn more at <http://speautomotive.com/comp.htm>; 15 previous years of ACCE proceedings are available free at <http://speautomotive.com/aca>. Register to attend the conference at <http://AttendACCE.com>.





IN MEMORIUM TERRY CRESSY

Sadly, former SPE Auto Division Board member Terry Cressy passed away on May 24th in Ft Myers, Florida. Terry had elected early retirement from DuPont but was still active in auto industry programs and projects as a “snow bird who will travel”. Terry contributed a great deal to the SPE Automotive Division and

Detroit Section, and he was thought to be largely responsible for turning our Innovations night into the gala it is now. Through DuPont support, he greatly increased the Audio Visuals and publicity of awards night, turning it from a local restaurant event to essentially the 700 person event we have now. We will miss Terry.

In Memorium

A PUBLICATION OF THE AUTOMOTIVE DIVISION OF THE SOCIETY OF PLASTICS ENGINEERS.



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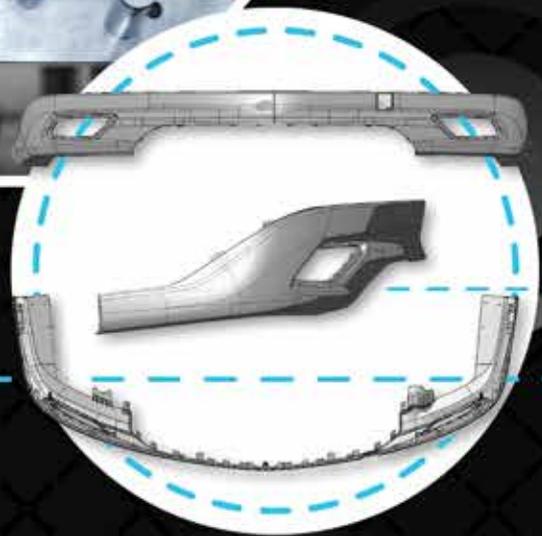
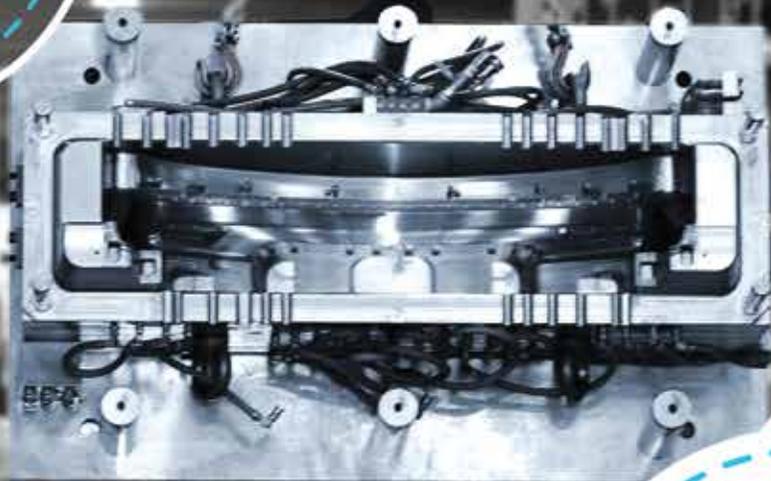
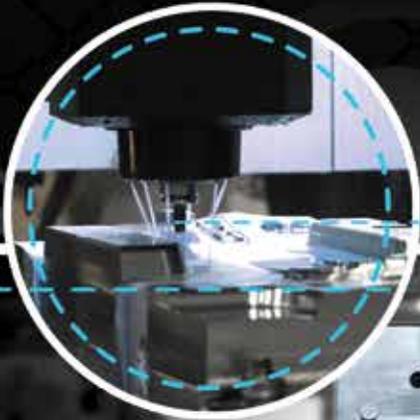
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DON'T MISS THE 18TH ANNUAL SPE AUTO TPO CONFERENCE

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The 18th-annual **SPE TPO Automotive Engineered Polyolefins Conference** returns on Monday, Oct. 3rd and runs for 2½ days. Exhibitor set-up is on Sunday, Oct. 2nd, at noon. Sunday includes special workshops starting mid-afternoon with a reception to follow — all happens at the Troy Marriott in the northern suburbs of Detroit.

This year's program "TPOs Delivering Performance" promises to set all kinds of records with the largest sponsorship/exhibition in the event's history and a professional technical program highlighting the latest global developments in TPO and engineered polyolefin materials.

This year we'll have five industry leaders as our keynote speakers who were specially selected to bring you the latest news about our ever-changing industry.

Betsy Jackson, TPO Conference Executive Chair & Exterior Product Engineering Director, General Motors

Rob Morgan, Vice President, Advanced Composites Inc.

Bernard Rzepka, CEO, A. Schulman

Tom Pilette, Global Vice President Product & Process Development, Magna

Laurie Harbour, President & CEO, Harbour Results Inc.

Since 1998, the **SPE TPO Automotive Engineered Polyolefins Conference** has highlighted the importance of rigid and flexible thermoplastic polyolefins (TPOs), thermoplastic elastomers (TPEs), and thermoplastic vulcanizates (TPVs) throughout the automobile — in applications ranging from semi-structural composite underbody shields and front-end modules to soft-touch interior skins and bumper fascia. Engineered Polyolefins have been the fastest-growing segment of the global plastics industry for more than a decade owing to their excellent cost / performance ratio. This event has become the *world's leading automotive engineered polyolefins forum* and typically draws over 800 key decision makers and some of the world's foremost authorities on transportation polyolefin applications, economics, and market trends from 20 countries on four continents who are interested in learning about the latest in rigid and elastomeric TPO as well as TPE and TPV technologies. As such, it continues to provide outstanding networking opportunities with key members of the automotive TPO, TPE, & TPV supply chain, and the opportunity to learn about designing lighter, less costly automotive components using the latest technologies and applications for these versatile materials.

The sponsors registered for the 2016 TPO Conference as of August 10, 2016 are listed on the following page.



DR. SASSAN TARAHOMI, IAC



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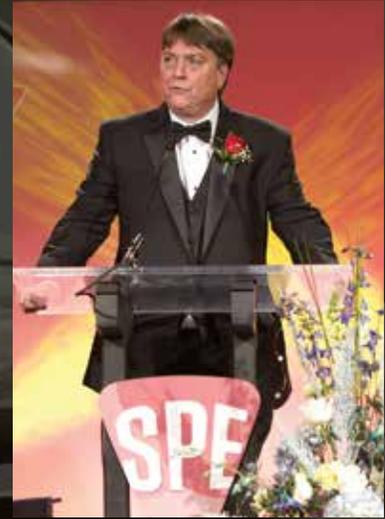


ADVERTISING



About the Automotive Innovation Awards Competition & Gala

The time is getting close for the nomination deadline for this year's 46th SPE Automotive Division Innovations Awards Gala on November 9th at Burton Manor in Livonia Michigan. Nominations are due by September 15th with first round judging on September 29-30 and the Blue Ribbon judging on October 10th. The competition details and part nomination form can be found at <http://www.speautomotive.com/inno.htm>. In addition, this year Professor Lawrence Drzal, university distinguished professor of Chemical Engineering and director-Composite Materials and Structures Center at Michigan State University's College of Engineering (MSU, East Lansing, Mich., U.S.A.), will be recognized with the Automotive Division 2016 Lifetime Achievement Award. Drzal, the first academic winner of the award, is a composites expert who has specialized in surface and interfacial aspects of adhesively bonded joints plus the fiber / matrix interphase in composite materials and their processing; adhesion fundamentals; sustainable bio-based structural composite materials; and nanocomposite materials. During his career Drzal has given over 400 invited presentations at national and international conferences, published over 375 research papers, and has been awarded 35 patents.



Jeffrey Helms,
SPE Automotive Division
Awards Program Chair
Celanese Corp.

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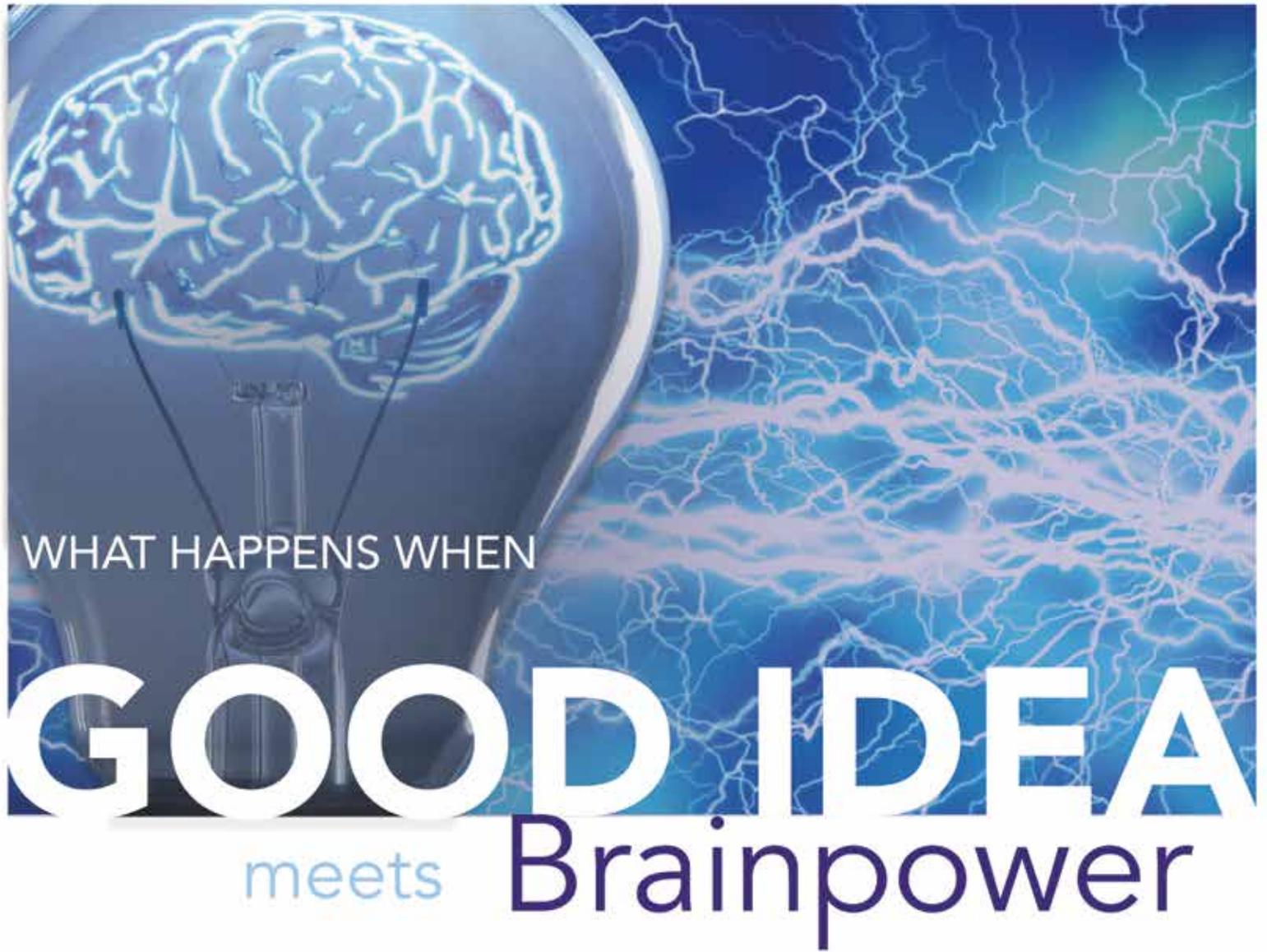
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MEMBERSHIP REPORT

Steven VanLoozen,
SPE Automotive Division
Membership Chair
BASF Corp.



The Automotive Division currently has 946 active members with 112 lapsed memberships in the 2016 calendar year. We will be reaching out to our lapsed members in the coming weeks to better understand the reasons behind their decision to abandon membership and hope they will reconsider.

Teri Chouinard has been handling the Membership Chair position for the past two years while I served as Division Chair and she will continue to support me as I assume this role once again. Teri has done a great job and I would like to extend my thanks to her. Together Teri and I will work to grow the membership in the Automotive Division in 2016 and 2017 through new events geared toward bringing in some of the new plastics engineers in our industry.

Membership

The average years of membership in the Automotive Division currently stands at 28. We know this represents a vast well of knowledge and firmly believe that the new faces we all see every day in the Automotive Industry can derive a lot of value from establishing relationships with our seasoned membership.

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AUTOEPCON

2016 AutoEPCON Conference Update

BY DR. GARY J. KOGOWSKI



AutoEPCON 2016 was another great success! Three hundred and twenty eight persons registered for the one day SPE Detroit Section, Automotive Division, and Injection Molding Division conference. The participants included 58 members from automotive OEM staffs, 95 SPE members, 90 non-members, 8 students, and 3 media attendees. This was another record breaking attendance for the SPE AutoEPCON. Proceeds for the conference will be used for the education scholarship budget, Plastivan, as well as special events such as the “Kids Christmas Toys Program”.

David Compeau (Advanced Development Engineering Plastics and Advanced Materials group leader at FCA US LLC) the conference OEM Executive Chairperson, introduced the conference theme for 2016; “Engineering Plastics in High Gear”. David brought an OEM perspective to the conference theme and provided a summary of the conference that focused on light weighting, injection molding processes, enabling technologies, and a 3D workshop.

David Compeau continued the conference as the first key note speaker and presented the topic entitled “Accelerate the Future Use of Engineered Plastics”. David’s presentation focused on unique technologies including alternate fibers augmenting the traditional glass fibers, process improvements, the ability to accurately predict manufacturing processes, to accurately predict the behavior of parts including fatigue and crash behavior. Additionally, there is a need to develop more engineers and designers with the know how to properly design engineered plastic components.

Dr. Saad Abouzahr, (FC USA LLC Head of Organic Materials Engineering, Material Engineering Group) presented the second key note entitled “Structural Composites Opportunities and Challenges”. Dr. Abouzahr stated the implementation of structural composites will depend on the resolution of issues such as economics, manufacturing, vehicle assembly, design, vehicle performance, environmental, legal, as well as customer perceived value.

Richard Holman, (General Motors, LLC, Sr. Manager Global Foresight and Trends) was the third keynote speaker. Richard’s talk provided an overview of several of the mega trends used by GM innovation teams to help them better understand the future and determine where to spend innovation resources.

This year the SPE AutoEPCON conference had three great moderators, Dward Kue, Daniel Balavitch, and Eve Vitale. Dward Kue is a senior at Kettering University majoring in Chemical Engineering with a minor in Material Science. He has interned with Asahi Kasei Plastics, NA for 3 years, working in Product Development as a lab technician and technology with the Applications Development group. Dward is part of the Sigma Chi Fraternity, where he was Social and Philanthropy Chairman. Dward was our Salon ABC moderator for the Materials Sessions of the conference.

AUTO EPCON

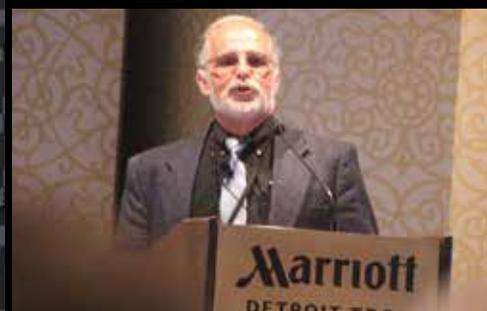
Daniel Balavitch recently graduated from Michigan State University this May and earned a Bachelor's degree in Chemical Engineering. At Michigan State he lead their student chapter of the Society of Plastics Engineers as the 2015-2016 student president. Daniel is currently looking to enter the plastics industry as a full-time engineer. Daniel was our Dennison Salon moderator for the Enabling Technologies Sessions of the conference.

Eve Vitale currently sits on the Board of Directors of the Detroit Section of SPE and is liaison to the Kettering University SPE student chapters. She is principle of Series One, an engineering consulting firm that specializes in innovative post-industrial plastics recycling. Eve was our afternoon Salon D moderator in the Injection Molding sessions.

With twenty five sponsors, the 2016 AutoEPCON remains a key conference for networking, communicating new product development, and OEM attendance. We are grateful for the support of our premier sponsors; A. Schulman, DSM, DuPont Automotive, Polyplastics, Trinseo; our Associate sponsors Albis, Arkema, BASF SE, Lanxess, Nylene, and SigmaSoft. Our exhibitors Addcomp, Adell, Asahi Kasei Plastics, Ascend Performance Materials, Autodesk, Beaumaont Technologies, EMS-Grivory, Entec Polymers, M. Holland, Md Plastics, Toyobo, and Victrex. Thank you to our break sponsor, UMass Lowell.

Many thanks to our committee members who worked very hard to make the SPE AutoEPCON a success

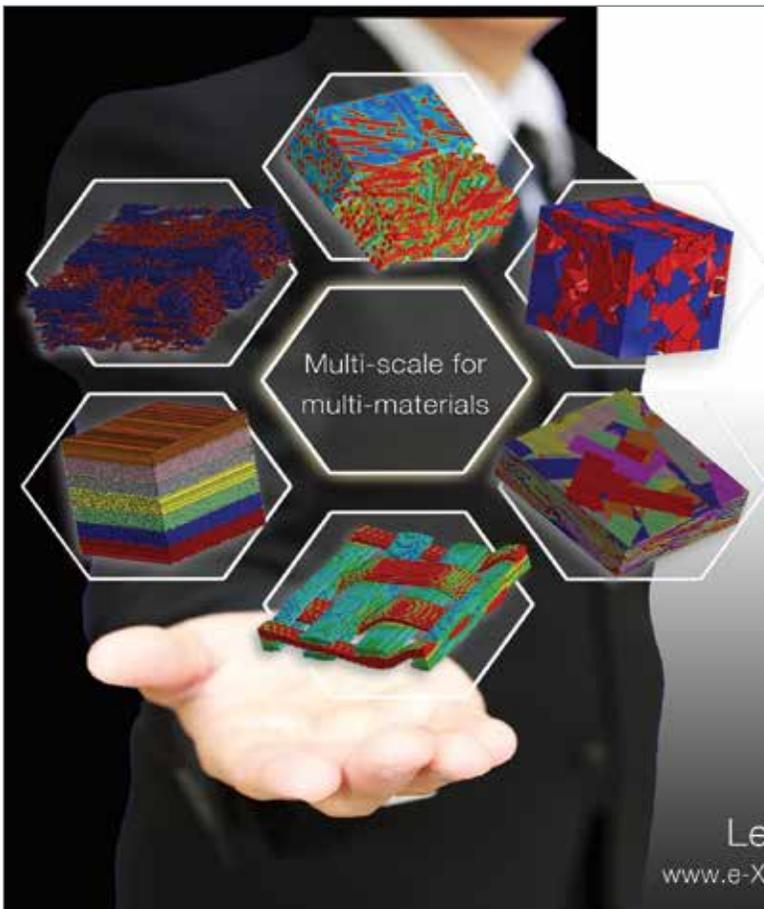
- **Dr. Gary J. Kogowski** – Ravago Holdings Americas – Co-Chair – exhibits, Marriott, brochure
- **Sandra McClelland** – Solvay Specialty Polymers – Co-Chair, technical papers, brochure
- **Ed Luibrand** – Fiat-Chrysler – sponsorship chair
- **Hala Stevens** – Fiat-Chrysler – sponsorship, technical papers, brochure
- **Glenn Cannavo** – DSM - Marriott, A/V, exhibits
- **Scott Marko** – SPE National
- **David Okonski** – GM / SPE Injection Molding Division
- **Suresh Shaw** – Delphi Retired – key note speakers
- **Chris Surbrook** – Midland Compounding – sponsorship liaison
- **Sameer Mehta** – Asahi Kasei – sponsorship liaison
- **Karen Rhodes Parker** – SPE Detroit Section – brochure, committee logistics
- **Steve Van Loozen** – BASF / SPE Automotive Division – keynote speaker, presenters



AUTO EPCON

- Keith Siopes – DSM – moderators
- Tom Miller – BASF – student liaison
- Eve Vitale – Series One – moderator – Kettering University student interface
- Stu Allen – Nylene, committee member
- Mike Price – M. Holland – committee member
- Vince Holmes – Channel Prime Alliance – committee member
- Pete Grelle – SPE Injection Molding / Detroit Section
- Fred Deans – SPE Automotive Division – committee member
- Bill Windschief – Advanced Innovative Solutions – committee member
- Norm Kakarala – SPE Automotive Division – committee member
- Umesh Gandhi – SPE Automotive Division – committee member
- Nippani Rao – Emeritus member, MSU student interface

The 2017 AutoEPCON is scheduled for Tuesday, May 2, 2017 at the Detroit-Troy Marriott located at 200 W. Big Beaver Rd, Troy, MI 48084. Please mark your calendars.



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ANTEC Report

BY DR. NORM KAKARALA
ANTEC AUTOMOTIVE DIVISION CHAIR



ANTEC® 2017 CALL FOR PAPERS

The SPE Annual Technical Conference (ANTEC) will take place in Anaheim, California, USA **May 8 – 10, 2017**. Do you have a paper that you would like to present to the world's largest international gathering of engineers, scientists, and business professionals in plastics? It is an opportunity to receive feedback and discussion on your paper from leaders in the plastics industry.

Submit your paper in the Automotive Division Session. The Automotive Division Session of ANTEC is well attended each year

by leaders in the Automotive Industry. This year's Chair of the ANTEC Automotive Division Session is Dr. Norm Kakarala.

The deadline is **December 2, 2016** 11:59 p.m EST. The deadline is firm so do not miss the deadline.

Log on to the SPE website address and follow the directions to register and submit your abstract. The SPE website is: www.4spe.org/antec

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Treasurer's Report

BY BONNIE BENNYHOFF,
SPE AUTO. DIV. TREASURER

As of August 11, 2016, the division's account balances were:

Checking:	\$225,834.57 USD
Savings:	\$ 27,447.18 USD
PayPal:	\$10,416.55 USD
Total:	\$263,698.30 USD



It's been awhile since the Automotive Division reported on its financial health, so as the new treasurer, I'd like to provide reassuring news as of the start of our new fiscal year which began on July 1st.

But first I'd like to thank Dawn Stephens, past treasurer, for her efforts to shore up our accounting system and for the many hours she spent familiarizing me with QuickBooks!

As a 501(c)3 organization, our goal is to "reinvest" the funds we raise back into our industry by sponsoring educational programs, awarding student scholarships and promoting plastics innovation. I'd say we did a fine job achieving that goal for fiscal year 2015-2016 by awarding \$14,000 in college scholarships and paying \$28,350 to send the PlastiVan to 21 local middle and high schools (the PlastiVan program is an educational outreach from the Society of the Plastics Industry -SPI).

Most of you reading this know the Automotive Division by three major events we sponsor/co-sponsor annually – the Innovation Awards Gala in November (IAG), Automotive Engineering Plastics Conference (AutoEPCON) in May (with the Detroit Section), and the Automotive Composites Conference & Exhibition (ACCE) in September (with the Composites Division). We rely on the success of these programs, and thus our sponsors and participants, to maintain financial health and achieve our goals. A big thank you goes out to all of you!!

The budget for fiscal year 2016-2017 hasn't been finalized as of this writing, but should approximate \$750,000 USD and provide net proceeds of \$10,000 USD.

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SECRETARY'S REPORT

SPE Automotive Division Board
April 11, 2016 Minutes

ATTENDEES

Bonnie Bennyhoff	Brian Grosser	Ron Price	Mike Whitens
Teri Chouinard	Peggy Malnati	Monica Prokopyshen	Mike Masserant
Matt Carroll	Nipanni Rao	Andy Stecher	
Fred Deans	Tom Pickett	Steve VanLoozen	



Meeting was held at the ACC in Troy, 5:40 p.m. – 7:08 p.m.

EDUCATION – Bonnie Bennyhoff

Bonnie reported that Exporathon® was lots of fun and that the capacity audience of grade 9 – 12 students was captivated by the "Chemistry and Designing with Plastics" workshops held March 23, 2016. Several students stayed to ask questions afterwards. The SPEAD was represented by Elizabeth Johnston Tengler and Bonnie Bennyhoff. The Plastivan® program was represented by Elizabeth Egan.

Fred is working with the Bay Mills Community College, Great Lakes Composites Institute. He's seeking co-sponsors to cover travel for these students to the ACCE. Mike Whitens offered the students a tour of the Ford lab if they come to the conference.

MEMBERSHIP – Teri Chouinard

Teri proposed packaging the message of what the SPE AD is trying to accomplish, for example to educate and pass on knowledge to the next generation. How does SPE Automotive resonate with people? Student perceptions of the plastics industry were discussed by the group as well as the idea of internet broadcasts of conference sessions to students.

TREASURER'S REPORT – Bonnie Bennyhoff

The Division's tax attorney, a specialist in non-profits who also is a CPA, is setting up his own practice. Does the SPE AD wish to retain his services? The accounts are in a fine position. Steve recommended that we increase cash reserves because of the cyclical nature of the auto industry. The 2016-2017 Budget Meeting will be held June 27th.

COUNCILOR'S REPORT – Tom Pickett

There has been no council meeting since the February BOD meeting. Electronic elections for SPE International officers are scheduled for April. The next council meeting is May 21 and May 22, 2016 at ANTEC in Indianapolis, IN. The Pinnacle awards luncheon is Saturday at ANTEC.

2017 ANTEC – Suresh Shah

Suresh Shah and Matt Carrol volunteered to act as technical program co-chairs for next year's Automotive Division session. This year's morning and afternoon sessions are on Wednesday. Jeff Helms is giving the plenary talk for the automotive session.

IAG

Nov. 9, 2016, Burton Manor, Livonia. Nov. *Plastics: Innovation in Motion*

MARCOM – Peggy Malnati

Automotive Composites Conference & Exhibition (ACCE): Sept. 7-9, 2016 A record number of abstracts has already been received. Fifty-nine abstracts have been accepted versus the usual 20-30 at this point in prior years. One keynote abstract has been accepted and another 12 profiles (without abstracts) are in the system. Three press releases have been distributed and print ads and web banners are running in magazines and on web portals around the world.

Innovation Awards Gala (IAG): Media swaps for 2016 have been confirmed. Web buttons and banners have been distributed to media. The initial press release is ready to go. The Lifetime Achievement award (Dr. Larry Drzal, Michigan State University) release has been drafted and the HOF press release is awaiting the outcome of next week's Hall of Fame judging.

SPE AD Online: The site was updated to provide paid advertising capability for every page for up to five small skyscraper banner ads. These ads are available for a cost of \$500/month. Jan 2016 holds the all-time record at 76,457 unique hits followed by March 2016 (72,530) and Feb. 2016 (72,204). SPEAD doesn't pay for position. We now have enhanced web statistics. Most visitors are from North America– the balance from Asia, Europe and Australia. Each visitor averages 1.7 pages.

Automotive Plastic News: The June issue goes to press in late May. Reports are due May 15th. Peggy is looking for another volunteer to take on the newsletter – she's been doing it for four years.

NEW BUSINESS

1. Steve VanLoozen will send out an electronic ballot on the topic of digital-only versus print publication of the division's newsletter.
2. The SPE AD was involved in bringing in all of the keynote speakers for AutoEPCON.

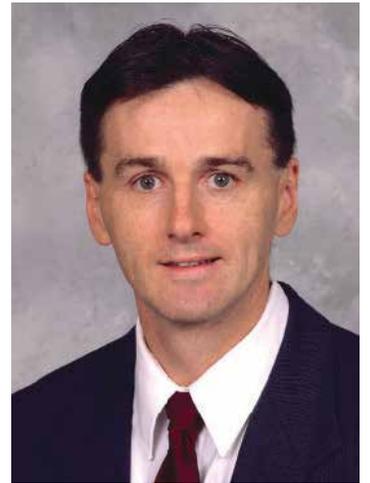
Next board meeting June 13, 2016
at American Chemistry Council (ACC) office





SECRETARY'S REPORT

SPE Automotive Division Board
June 13, 2016 Minutes



ATTENDEES

Tom Pickett
Matt Carroll
Steve VanLoozen
Fred Deans
Dave Reed
Peggy Malnati

Dominic Allam
Dhanendra Nagwanshi
Ed Luibrand
Crystal VanHouten
Dave Helmer
Teri Chouinard

Mike Whitens
Peter Bejin
Cynthia Flanigan
Alper Kiziltas
Ron Price
Jeff Helms

Norm Kakarala
Mark Lapain
Monica Prokopyshen
Suresh Shah
Nippani Rao
Mike Masserant

Meeting was held at the ACC in Troy, 5:30 p.m. – 7:34 p.m.

OPENING – Steven VanLoozen

Introduction of the following new members to the SPE Automotive Board: Dave Helmer, Cynthia Flanigan, Alper Kiziltas, Crystal VanHouten, and Dhanendra Nagwanshi.

MARCOM

Report on the Automotive Composites Conference, Innovation Awards Gala, Newsletter and Website.

Automotive Composites Conference & Exhibition (ACCE): (Peggy Malnati) A strong program with lots of new technology. Preliminary schedule to be published. Very good sponsorship with 69 sponsorships.

Innovation Awards Gala (IAG): (Jeff Helms, Peggy Malnati) Program guide template is completed. The theme is *Plastics: Innovation in Motion*. The Gala is scheduled for the evening of November 9, 2016 at the Burton Manor in Livonia, MI. Jeff Helms is the Chair of the event. Currently Jeff is coordinating the category captains. No nominations received to date but we typically will start receiving them in the next few months. Two IAG award winners from last year won the ANTEC Plastic Awards.

Newsletter: (Peggy Malnati) The June newsletter was sent to the printer and should arrive in the mail soon. It will be 28 pages to keep the cost down. Dave Helmer to take over as editor. The plan is to monitor the next three issues to see if the newsletter is losing money.

Website Traffic: (Peggy Malnati) There is a large drop off in the reported website traffic to the SPE Automotive website due to the change in how the internet provider counts the web traffic. We went from 72,350 hits reported in March to 4,281 reported in April and 5,197 in May. Owing to the large change in our numbers, subscription to Enhanced Web Stats was canceled and efforts to sell ads on the website were discontinued.

Voting on Newsletter: (Steve VanLoozen) The Auto BOD voted in favor of an electronic newsletter. 60% favored electronic newsletter. Moving to electronic is a cost savings. The plan is to go to an electronic newsletter by June 2017. We will revisit in January 2017 after additional data is collected.

EDUCATION – Fred Deans

Request to add two Plastivan visits to the Great Lakes Community College. The BOD responded if the budget allows. Community college students need to be informed of careers in plastics. The Plastivan content is best for grade schools and not for community

college. Need to find the best way to inform community college students about careers in the plastic industry.

MEMBERSHIP – Teri Chouinard

996 active members. Teri discussed a lunch social event to attract new members.

FINANCIAL – Steve Van Loozen

Account balances are Checking \$210,574.92, Savings \$27,432.52, PayPal \$14.26 for a total of \$238,021.70.

2017 ANTEC – Suresh Shah

The automotive session talks at ANTEC were well attended. The automotive business meeting was held after the last talk.

COUNCILOR'S REPORT – Tom Pickett

Highlights of the Councilor Meeting at ANTEC were presented. SPE International reported good cash flow. SPE International has hired a full time sales person to increase advertising revenue. The rebates in the future will be simplified. The Governance Reform will be presented and voted on at the next Council Meeting in August. Tom Pickett's term as Automotive Division Councilor has ended. Suresh Shah was elected by the board as the next Automotive Division Councilor. Tom presented the SPE Pinnacle Award and SPE Communication Award trophies to Steve VanLoozen and the Automotive Division Board.

GOLF OUTING – Teri Chouinard

The golf outing is scheduled for September 6, 2016.

NEW BUSINESS

- Concern with a composite conference in the Detroit area in June that is using SPE logo. Proposal that SPE Automotive Division not participate and support for-profit conferences. Any exceptions would have to be approved by the Automotive Board. Motion passed. Councilor will bring concern to SPE International at the next Councilor Meeting.
- Changes to the BOD and Committee Chairs: Matt Carroll - Chair, Suresh Shah – Councilor, Crystal VanHouten – Secretary, Norm Kakarala – ANTEC Committee Chair, Dave Helmer – Newsletter Chair, Dhanendra Nagwanshi – Intersociety Chair, Steve VanLoozen – Membership Chair. The updated Automotive BOD will be published in the September newsletter.
- Schedule of future Automotive BOD Meetings – August 22, 2016, October 3, 2016.

Thanks to our sponsors for making our 22nd golf outing a big success!

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COUNCILOR'S REPORT

May, 2016 Council Meeting Minutes
Indianapolis, Indiana

by Tom Pickett, SPE Automotive Div. Councilor



Highlights from the May 2016 Councilor Meeting in Indianapolis, Indiana.

- **ANTEC:** The 2019 ANTEC will be held at the Marriott GM Renaissance Detroit, MI.
- **President Remarks:** President Scott Owens discussed the goals for the year. Owens plans to continue to make uniform the society efforts. Also, Owens plans to focus on a 3 year operating plan and the governance reform.
- **Governance Reform:** Scott Owens provided an update on the Governance Body (GB). The Governance Task Force (GTF) plans to continue to work on Governance Reform and to present for approval in the August Councilor meeting. The GB will be a small group of functionally qualified and accountable individuals that would provide direction and oversight of the society governance matters. Council retains ultimate authority to overturn governance actions.
- **Elections:** Results of the electronic elections: President Elect – Dr. Raed Al-Zu'bi. Sr. Vice President – Thierry D'allard. Vice President – Rochelle Lemieux. The electronic election system was considered successful. SPE offers the electronic election system at no cost for Divisions and Sections to use.
- **Financial:** The financial audit showed no major issues. SPE revenue is behind the target budget for advertisement and membership revenue. Revenue for advertisement is at \$26,555 versus budget of \$120,800. Membership revenue is at \$366,336 versus a budget of \$413,332. SPE International has hired a full time sales person to increase advertisement revenue. SPE International expenses are under control. Cash flow is good.
- **Rebates:** In the future the rebate system will be simplified. The \$10 to join the division will have 100% go directly to the division.
- **Bylaw Changes:** Change name of Premium Member to Professional Member. A member of a SIG is required to be at least an E member.
- **Awards Task Force:** The committee is investigating having 5 separate Pinnacle Awards for 5 categories that include outreach, education, communication, programming, students / new generation. The committee would like to have the award presented at the local level in front of peers.



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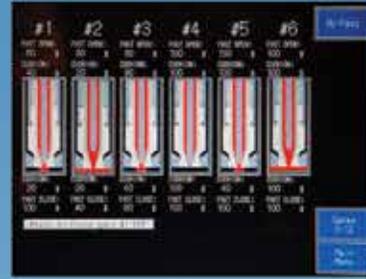
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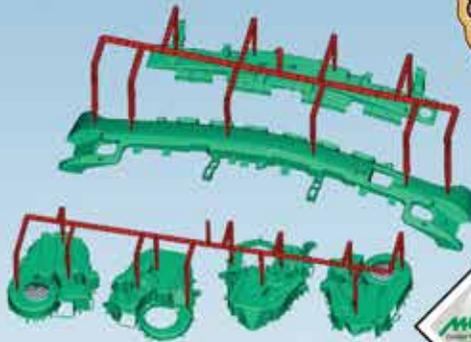
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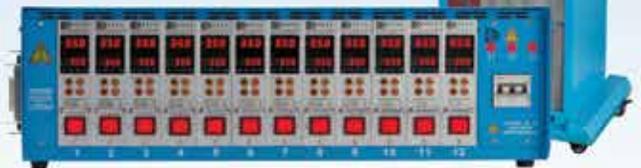
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Technical Report

Progress on the Characterization of the Process-Induced Fiber Microstructure of Long Glass Fiber-Reinforced Thermoplastics

Sebastian Goris and Tim A. Osswald

Polymer Engineering Center (PEC), University of Wisconsin-Madison

Abstract

Over all stages in processing long fiber-reinforced thermoplastic (LFT) materials, the configuration of the reinforcing fibers changes, which ultimately affects the mechanical performance of the finished part. In order to gain a fundamental understanding on the effects of processing on the microstructural properties of the finished part, accurate and reliable measurement concepts are necessary. This article presents progress on new measurement approaches to determine the full three-dimensional (3D) fiber architecture that was developed at the Polymer Engineering Center (PEC). The analyses include local cauterization of fiber orientation, fiber length, and fiber density distributions by applying sophisticated measurement techniques, such as micro-computed tomography (μ CT) as well as an automated process to determine the fiber length distribution. A comprehensive study of the process-induced microstructure of injection molded samples was carried out for a glass fiber-reinforced polypropylene at a weight fraction of 40% and the heterogeneity of the fiber architecture was analyzed.

The results of this work show that the assumption of a uniform fiber length and fiber density distribution throughout injection molded parts is not valid. The number (weight) average fiber length increases from 0.64 mm (1.63 mm) close to the gate to 1.12 mm (2.81 mm) at the end of the flow path. Similarly, the fiber density varies along the flow path from 37.7 wt% in the gate region to 44.6 wt% at the end of flow. Moreover, the fiber density measurements across the part thickness suggest a significant fiber agglomeration in the core of the part with consistently 20 to 45% more fibers in the core layer than in the shell regions. The potential impact of the heterogeneity of the process-induced microstructure can be critical and the simplified assumptions of uniform fiber length and fiber density distribution might not be appropriate for accurate material modeling approaches, especially when considering LFT materials.



ABOUT SEBASTIAN GORIS

Sebastian Goris, a doctoral student and graduate research assistant at the University of Wisconsin-Madison (UW-Madison) was selected as a winner of the **Dr. Jackie Rehkopf Best Paper Award** by the peer-review committee for the **SPE® Automotive Composites Conference & Exhibition (ACCE)**. He co-authored a paper entitled *Progress on the Characterization of the Process-Induced Fiber Microstructure of Long Glass Fiber-Reinforced Thermoplastics* that he will present at the sixteenth-annual SPE ACCE conference. Originally from Germany, Goris holds a B.S. degree from the Department of Mechanical Engineering at RWTH Aachen University (Aachen, North Rhine-Westphalia, Germany). In 2012, he received a full one-year scholarship from the German Academic Exchange Service (DAAD) to attend graduate school at UW-Madison where, under the direction of Prof. Tim Osswald, he completed his M.S. degree in Mechanical Engineering and now is pursuing a doctorate in the same discipline as well as a minor in Business Administration. Already Goris has authored or co-authored papers in six conference proceedings as well as a chapter on Composites Manufacturing Processes for the Mechanical Engineering Handbook, 2nd edition. Additionally his work has been featured on posters and presentations given at conferences in the U.S., Germany, and Israel. Besides working as a graduate research assistant, Goris also holds the position of chief engineer at the Polymer Engineering Center (PEC) at UW-Madison. In 2013, Goris' course project placed second in the Ratner Award Competition at UW-Madison. The following year he was a recipient of an SPE ACCE graduate scholarship from the SPE Automotive and Composites Divisions as well as an Academic Achievement Award from the Division of International Studies and International Services at UW-Madison. In 2016, he won a Dr. Jackie Rehkopf scholarship also from the SPE Automotive and Composites Divisions. After graduating, Goris plans to work in research and development for composite materials and processes in the transportation industry.

Introduction

Injection molding of long fiber-reinforced thermoplastics (LFTs) is a widely used process to manufacture parts with advanced mechanical properties. Especially in the automotive industry, LFTs have gained importance due to their exceptional lightweight properties and cost-efficient manufacturing processes. With favorable specific stiffness and impact strength, LFT materials can potentially replace denser materials like metals for structural parts and decrease the overall weight of automobiles. However, the local properties and global performance of the finished part greatly depend on the final state of the fibers [1]. During mold filling, the configuration of the fibers changes significantly, reflected in the form of fiber attrition, fiber orientation, fiber jamming and fiber matrix separation [2]. Locally, the length and orientation of the fibers as well as the fiber concentration can vary considerably, both of which influence the performance of the finished part. With some molding processes, a considerable fraction of the total production is defective due to extensive fiber attrition or fiber-matrix separation phenomena. In order to accurately address the process-induced fiber microstructure, a fundamental understanding of the physics behind fiber motion is required and the interrelationship between fiber orientation, fiber-matrix separation and fiber breakage has to be determined. Without the ability to control and predict the final properties in the finished part, the full potential of LFT materials cannot be reached.

Over the last few decades, the ability to predict the microstructure properties of LFT materials has made significant progress. Particularly, fiber orientation predictions show a robust degree of reliability for simpler geometries and are routinely used in the part or mold design process. Although sophisticated models exist to predict fiber length and fiber density distributions, these models are still in development [2, 5]. Furthermore, the properties of the fiber microstructure have commonly been addressed separately and available modeling approaches predict the final state in a decoupled scheme. The interrelationship between the microstructure properties has not been fully understood and a fundamental understanding of the physics behind process-induced microstructure in LFT processing has yet to be established.

A major challenge has been, and remains to be, the availability of reliable measurement techniques that allow accurate fiber attribute measurements of sufficiently large samples in a timely manner [11]. The full characterization of the 3D fiber microstructure for fiber-reinforced composites has not been standardized yet. While various studies have been published since the 1970s, only a few publications show statistically meaningful data of all microstructural properties. However, reliable experimental data is necessary to validate predictive tools as well as to develop new models for LFT materials. In order to exploit the potential of LFT materials for structural applications, it is essential to be able to predict the mechanical performance from the process-induced microstructure. The ultimate objective is to gain a fundamental theoretical connection between the process, the material and the final properties of the molded part. Current approaches in material modeling assume properties such as fiber length and fiber density to be uniform throughout the part. However, injection-molded LFT parts are truly heterogeneous and process-induced variations need to be taken into account accordingly for adequate material modeling and structural analyses.

This work presents the first set of results of a full 3D characterization of the fiber microstructure for a simple injection molded plaque measured using μ CT. Additionally, the measurement techniques developed at the Polymer Engineering Center of the University of Wisconsin-Madison are described and discussed. The analysis includes measurements of fiber orientation, fiber length and fiber density distribution throughout the molded part for a commercially available LFT material.

EDITOR'S NOTE: Read the rest of this award-winning paper in the SPE ACCE Archives at:
http://speautomotive.com/SPEA_CD/SPEA2016/pdf/VPT/VPT11.pdf

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