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

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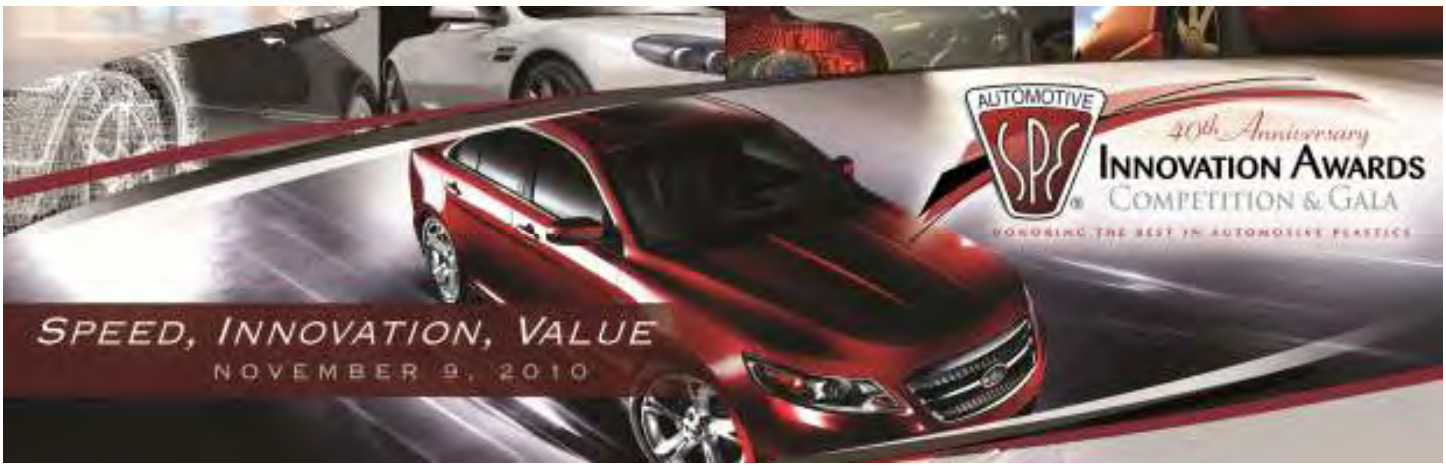

The Automotive Division of the Society of Plastics Engineers (SPE®) International issued a ***Call for Part Nominations*** for its 40th-annual ***Automotive Innovation Awards Competition***. For four decades, the parts competition has honored the "*Most Innovative Use of Plastics*" in automotive and ground-transportation applications, becoming the largest competition of its kind in the world and the oldest and largest recognition event in the automotive and plastics industries.

Since 2000, the group has also honored outstanding leadership among automotive and plastics industry executives that helps drive innovation. Part and executive award winners will be honored at the group's annual ***Automotive Innovation Awards Gala***, which this year will be held November 9, 2010 at Burton Manor in Livonia, Mich.

Call for Nominations

Nominate your Innovative Application for the 40th Annual Innovation Awards Program.

Visit www.speautomotive.com/inno for the nomination form.

Since 1970, the SPE Automotive Innovation Awards Competition has highlighted the positive changes that polymeric materials have brought to the automotive and ground-transportation industries, such as weight reduction, parts consolidation, and enhanced aesthetics and design freedom. At the time the competition started, many OEM designers

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Social Chair Report

Ben Soltisz

Over the past year, we have held several social gatherings around the metro Detroit area to aid in the growth and awareness of SPE in the automotive industry. These events were intended to be informal and provide an opportunity for new, current, and past members, friends of members and individuals possibly interested in becoming members to socialize with board members of the SPE Automotive Division. These events have grown in popularity.

The next event is scheduled to run from 5 to 8 PM on Thursday, September 30, 2010 at Bailey's Sports Grille in Dearborn. Additional events will follow. Stay updated by visiting www.speautomotive.com and look for emails about future events.
Please contact the Social Chair at social-chair@speautomotive.com, if you have an idea for future events.

Automotive Division Meeting Schedule and Special-Events Calendar

SPE Auto Division/ ACA Golf Outing Fieldstone Golf Club, Auburn Hills, Michigan	September 14, 2010
10th-Annual SPE Automotive Composites Conference & Exposition MSU Management Education Center, Troy, MI	September 15 & 16, 2010
Automotive TPO Global Conference Best Western Sterling Inn	October 3-6, 2010
Auto Division BOD Meeting Ticona Engineering Polymers Auburn Hills, MI	October 11, 2010
40th-Annual SPE Automotive Innovation Awards Program Burton Manor, Livonia, MI	November 9, 2010

Automotive Division Board of Directors meetings are open to all SPE members. All our events are listed on our website at
http://speautomotive.com/ec
Call Jeff Helms at (248) 337-6895 for more information.

Do you have a paper that you would like to present at the 2011 Society of Plastics Engineering Annual Technical Conference (ANTEC)?

ANTEC is the world's largest international gathering of engineers, scientists, and business professionals in plastics. ANTEC 2011 will take place in Boston, Massachusetts at the Hynes Convention Center and Boston Marriott Copley Center Hotel May 1–5, 2011.

Presenting a paper at ANTEC is a great opportunity to receive feedback and discussion from leaders in the plastics industry. It is also an opportunity for commercial exposure. There are two submission formats – commercial & technical. There are two styles of presentation – a podium & interactive poster.

Submit your abstract in the Automotive Division Session. The Automotive Division Session of ANTEC is well attended each year by leaders in the Automotive Industry. It is a great opportunity to interactive with leaders in the automotive industry. This year Chair of the Automotive Division is Tom Pickett. Also, helping organize the ANTEC Automotive Session is Dr. Norm Kakarala, Dr. Jay Raisoni, and Dr. Suresh Shah.

Authors must first submit an abstract by November 19, 2010. Listed below are website addresses to submit an abstract and to obtain more information on ANTEC 2011 and deadline dates:

To submit an abstract go to online manuscript submission sight: http://mc.manuscriptcentral.com/speantec
Additional information visit SPE ANTEC sight: http://www.4spe.org/conferences/antec-2011

- Abstract/Paper Deadline: November 19, 2010
- Review Deadline: December 11, 2010
- Final Revision Deadline: February 1, 2011
- Submission Formats: Commercial & Technical
- Two Presentation Styles: Interactive & Podium

Questions? Contact: Lesley Kyle, CMP, SPE International Senior Event Manager, lskyle@4spe.org, phone: 1-203-740-5452 or Tom Pickett, Chair of SPE ANTEC Automotive Session, tomjpickett@yahoo.com, phone 1-248-431-9724.

Chair's Message

Jeff Helms

We have just begun the new fiscal year for the our Division and with that comes new names to introduce you to as well as recognizing a few people who are continuing in either their existing or new roles with the Automotive Division Board of Directors. Anthony (Tony) Gasbarro, currently with Marubeni Specialty Chemicals, steps into the Vice Chair role. Gregg McDonald, from Polyone Corporation, is a new name to the Automotive Division Board and will now serve as Chair-Elect. Tom Pickett of General Motors has replaced Nippani Rao as the Division Councilor and also is the Technical Program Chair for ANTEC 2011. Nippani Rao continues to serve the Division as Director Emeritus and Technical Programming Chair for AutoEPCON. Bill Pippine of Takata Holdings, LLC has served as the Social Committee Chair and will now move to the role of Membership Chair. Ben Soltisz is replacing Bill as Social Committee Chair.

Other new names include Chuck Jarrett of SABIC Innovative Plastics who will serve as a Director through 2012 Innovative and Jane Aselage of Ford and Sheldon Brown of Toyota who will serve in Director roles through 2013. We also want to recognize the ongoing support we receive as a Division for our Board members who are continuing in their roles. Without the work and commitment of our volunteers, the Division would not be able to perform its function and serve our membership. A complete list of Board members is available on the back page of each newsletter and of course, on-line at **www.speautomotive.com**.

The Automotive Division is entering a very busy season with numerous technical and social activities over the next several months. In September, the 3rd Annual SPE Automotive Division and Automotive Composites Gold Outing will be held on September 14 at Fieldstone Golf Course in Auburn Hills, Michigan. Please plan on attending if you can. Information about the outing is available at www.speautomotive.com/golf.htm. This outing is a great way to network with customers and colleagues.

The 10th Annual SPE Automotive Composites Conference and Exhibition will occur on September 15th and 16th at the MSU Management Education Center in Troy, Michigan. This conference is historically well attended with technical presentations covering a wide range of fresh composites development and applications, sponsor booths with new product offerings and application examples and the networking opportunities either during the breaks, lunch or the late afternoon social time on the 15th. More information regarding the ACCE for this year is available at www.speautomotive.com/comp.htm.

October then begins with the 12th Annual SPE Automotive TPO Global Conference on October 3-6 at the Best Western Sterling Inn in Sterling Heights, Michigan. This conference is a must attend for those involved in TPO materials and applications for the automotive industry. A combination of technical papers, industry trend assessments, panel discussions, exhibits and social activities accompany this year's event with a focus on low cost or affordable light weighting. You can find the latest agenda at www.speautomotive.com/tpo.htm.

To close out the Fall program for this year is the 40th SPE Automotive Division Innovation Awards Gala on November 9 at Burton Manor in Livonia Michigan. Last year, approximately 600 people attended this event to see the latest in plastics innovations across the automotive industry. Planning for this year's event is well underway and we are anticipating an even larger turnout. This year, we will present the Division's Lifetime Achievement Award to Allan Murray. Allan has been an SPE member since 1972 and has served SPE and the Automotive Division in many roles over the last 38 years. It is also the 40th anniversary of this event, so we may have some interesting history to reflect on for those in the audience. The 1970s were not exactly a fashionable time for some of us, at least in retrospect.

We hope to see you at the upcoming technical or social events. The SPE Automotive Division Board is always looking for new ways to provide our membership with the best possible value proposition. Please stop and chat with us if you have the time. Many of the Board member pictures are on our website to help you recognize us. In addition, our Board meetings are held every other month at the American Chemistry Council office in Troy Michigan and are open meetings.

www.speautomotive.com

Innovation Awards Program

Continued from Page 1

and engineers thought of plastics as inexpensive replacements for more "traditional" materials. To help communicate that plastics were capable of far more functionality than their typical use as decorative knobs and ashtrays indicated, members of SPE's Automotive Division Board of Directors created the Automotive Innovation Awards Competition to recognize successful and innovative plastics applications and to communicate their benefits to OEMs, media, and the public. Over the years, the competition drew attention to plastics as an underutilized design tool and made industry aware of more progressive ways of designing, engineering, and manufacturing automotive components.

From its humble beginnings, the competition has grown to be one of the most fiercely contested recognition events in the plastics and automotive industries. Today, polymeric materials are no longer substitutes for more expensive materials, but rather are the materials of choice in hundreds of different applications throughout the vehicle. Without plastics, many of the auto industry's most common comfort, control, and safety applications would not be possible.

Current competition categories include:

- Body Exterior,
- Body Interior,
- Chassis / Hardware,
- Environmental,
- Hall of Fame,
- Materials,
- Performance & Customization (Automotive Aftermarket)
- Process / Assembly / Enabling Technologies,
- Powertrain, and
- Safety.

During the competition phase of the event, dozens of teams made up of OEMs, tier suppliers, consultants, and polymer producers work for months to hone submission forms and presentations describing their part, system, or complete vehicle module and why it merits the claim as the year's "***Most Innovative Use of Plastics***." To win, teams must survive a pre-competition review and two rounds of presentations before industry and media judges.

Part nominations are due September 16, 2010 for applications that are on vehicles available for consumer purchase prior to November 1, 2010.

SPE's ***Automotive Innovation Awards Gala*** typically draws 600-800 OEM engineers, automotive and plastics industry executives, and media. This glittering evening of celebration honors innovation and the hardworking teams that bring it to market. As is customary, funds raised from this event are used to support SPE educational efforts and technical seminars, which will help to secure the role of plastics in the advancement of the automobile.

The mission of SPE International is to promote scientific and engineering knowledge relating to plastics worldwide and to educate industry, academia, and the public about these advances. SPE's Automotive Division is active in educating, promoting, recognizing, and communicating technical accomplishments for all phases of plastics and plastic based-composite developments in the global transportation industry. Topic areas include applications, materials, processing, equipment, tooling, design, and development.

For more information about the ***Automotive Innovation Awards Competition and Gala*** or to download nomination forms and rules, visit the SPE Automotive Division's website at **www.speautomotive.com/inno.htm**, or contact the group at +1.248.244.8993.

Visit the SPE International Website for up-to-date information on training, seminars, and other career enhancing information.

www.4spe.org

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Murray to receive Lifetime Achievement Award

Allan D. Murray, Ph.D., who worked more than 30 years at Ford Motor Co. as a manager of research, manufacturing, and product development guiding many advanced products and technologies to market, has been named the tenth recipient of the prestigious **Lifetime Achievement Award** from the SPE Automotive Division. Murray will be honored at the 40th-annual SPE ***Automotive Innovation Awards Gala*** on November 9 at Burton Manor (**www.burtonmanor.net**) in Livonia, Mich. The award recognizes the technical achievements of automotive industry executives whose work – in research, design, and engineering, etc. – has led to significant integration of polymeric materials on vehicles.

When Dr. Allan Murray retired from Ford in 2001, he was the automaker's technology director for the Partnership for a New Generation of Vehicles (PNGV), a government-industry initiative established to develop technology for affordable, fuel-efficient vehicles. In this position, which he held for about five years, he led teams of government and industry researchers who were working on a wide range of technologies, including advanced vehicle construction, powertrains, fuel cells, batteries, and power electronics.

Prior to this, Murray was manager-Technology Strategy for Ford's Plastic & Trim Products Division (PTPD), where he was responsible for identifying multi-million dollar efficiencies for the organization's major products and manufacturing processes. Before this, Murray was manager-Advanced Technology Office, PTPD, where he led an innovative 40-person technical center in the development of leading-edge automotive plastic and composite products, processes, and methodologies.

His previous positions include of manager-Exterior Systems R&D, Plastics Division, and R&D department manager, Ford Vinyl Plant. Murray began his Ford career in 1970 as a senior research scientist in the Polymer Science Division of Ford Motor Research Staff where he initiated development of thermoplastic stamping with the Metal Stamping Division and Body Engineering.

During his Ford years, Murray was a frequent university recruiter for the automaker and he mentored numerous recent university-graduate employees, helping guide and develop their careers. He served as chairman and president of the non-profit Michigan Materials and Processes Institute (MMPI), which sponsored collaborative university-industry materials research. Under his leadership, MMPI successfully merged with the National Center for Manufacturing Sciences.

Dr. Murray holds a Ph.D. in Metallurgical Engineering and Materials Science from Carnegie Mellon University, an MBA from Wayne State University, and a B.S. degree in Metallurgical Engineering from University of British Columbia. He is a long-time member of both SAE International and SPE. He holds two U.S. patents and he has written many technical papers for industry publication and chapters for handbooks, as well as given presentations at conferences worldwide.

Since retiring from the automaker, Murray has kept busy as a judge for the Premier Automotive Supplier Award for Creative Excellence (PACE), an annual innovation awards competition presented to global automotive suppliers for outstanding innovative developments. He has also participated as a technical expert on several U.S. National Academy of Science (NAS) committees to determine the prospective benefits of advanced vehicle technologies, and also on an NAS committee to rank and select technology proposals for funding.

Additionally, Murray has used his technical expertise as a consultant for Oak Ridge National Laboratory (ORNL) and Pacific Northwest National Laboratory (PNNL) on commercialization of technologies for industrial applications. He also has consulted with several businesses on the development and marketing of advanced technologies. In fact, on behalf of one client, he coordinated a Small Business Innovative Research (SBIR) funding grant application with the U.S. Department of Defense (DOD), obtaining Phase I and Phase II SBIR funding.

Currently, Murray is chief technology officer for Allied Composite Technologies LLC, a startup company developing and commercializing proprietary thermoplastic composites technologies for the automotive, alternative-energy, and building & construction industries.

Allan Murray has a long history of service to SPE. He joined the international engineering society in 1972 and has been a member of the Automotive Division board since the mid-1970s where he has held numerous positions, including member or chair of various subcommittees, division treasurer, division chair, and national councilor. He was elected to the prestigious *Director Emeritus* position 10 years ago and was also named an Automotive Division *Honored Service Member* and a Detroit Section *Iron Man*. In fact, Murray was the first automotive engineer to be elected a *Fellow* of SPE.

-

Dr. Murray will be honored at this year's SPE ***Automotive Innovation Awards Gala*** on November 9 starting with the VIP Cocktail Reception, at 5:00 pm. At 5:30 p.m. the main exhibit area will open for general admission and guests can review this year's ***Automotive Innovation Awards*** part nominations, as well as enjoy the specialty and antique vehicles that are always a highlight of the show. Dinner will begin at 6:30 p.m. and the awards program itself will last from 7:00-9:00 p.m. For those who wish to extend merrymaking and networking activities, the ever-popular Afterglow will run from 9:00-11:00 p.m.

The Washington Update

By Suzanne Cole, Past Chair SPE Automotive Division and Environmental Divisions

Federal Government Opportunities – Selling Direct and Leveraging R&D Funds

The government market is huge. Federal purchases of goods and services will exceed $1.2 trillion in 2010. The federal government's fiscal year ends Sept. 30, and that often means accelerated purchasing activity at federal agencies as the curtain comes down on FY 2010. It also means loads of selling opportunities for savvy government marketers between now and Sept. 30. The rate of spending increases by at least 50 percent during the last couple of months in agencies' fiscal years at the federal level. The same is true for state and local governments, if they don't spend their budget, they will lose it.

If your plastics company is diverse and you make energy efficiency products, paint, coatings, or other end products, you may want to consider identifying opportunities and selling directly to the federal government. You most likely will not have time to capitalize on the fourth quarter but you can certainly position your company for first quarter 2011 and be in the hunt for accelerated opportunities in the government's FY 2011 4th quarter (July-September 2011).

Engaging with the Federal Government

A successful year-end strategy in the federal world should be one component of your overall B2G strategy. Companies should not expect any quick wins without relationships in place (direct with the government and also with other established contractors), which is also critical for R&D funding opportunities in this increasingly competitive market. This doesn't mean you should throw in the towel, as you have to start somewhere. If you are a small company and you have any "disadvantaged advantages" such as 8(a), veteran- or women-owned business designations, these should be leveraged to differentiate your firm from the competition and help the agencies meet their set-aside goals.

If you are a medium or large firm, identify current customer or supplier relationships that may enable your company to develop a "teaming" approach for either selling directly to or applying for R&D funding with the federal government.
In any vertical, and at almost any point in the fiscal year, it all comes down to relationships, as well as having a solid education/understanding on how this unique sector operates. Of course, a quality product/service from a reputable firm with a competitive price also factors into the decision-making process.

When attempting to win R&D funding for a specific project, it is advantageous that the targeted federal agency that you are applying to for funding knows your company, its strengths, expertise, R&D focus, as well as having interacted with your company in peer review, on Agency committees, participation in on-going research projects or other areas within the agency. There may be a sprint to the fiscal year end, but selling to the federal government and winning R&D funding is a marathon; it takes time and endurance, as well as some training.

The critical success factor is a top-down commitment from your CEO and/or Board of Directors that makes engaging with the Federal Government a priority. From designating focused personnel, allocating the time necessary to complete paperwork, applications and proposals, to engaging in a strategic relationship development program, it all takes time and no company can be successful unless it is committed to working with experts who can guide the company and to allocating the time necessary to enable success.

Stimulus Funding

The ARRA stimulus funding package

There's a lot of pressure to spend recovery act funding, and certain agencies have internal deadlines to try to exceed spending quarter over quarter. Note, however, that

the availability of that funding continues past the fiscal year end. So, my prediction is that some of these large deals that are hoped to be consummated before the fiscal year end (Sept 30) might slip because recovery act dollars are not "use it or lose it," like fiscal year-end money is.

It's taken a while for the government to organize itself around some of the increased transparency requirements of the recovery act and do the acquisition planning and source selection processes associated with all of that. That's the reason why recovery act money hasn't been getting spent as rapidly as everyone would like, but that spending is going to accelerate in 2011.

Federal Government Research and Development Funding Opportunities

Federal government research and development can be categorized into three areas: basic, applied and development research.

Basic research is defined as systematic study directed toward fuller knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind. Basic research means that research directed toward increasing knowledge in science. The primary aim of basic research is a fuller knowledge or understanding of the subject under study, rather than any practical application of that knowledge.

Applied research is defined as systematic study to gain knowledge or understanding necessary to determine the means by which a recognized and specific need may be met. Applied research means the effort that (a) normally follows basic research, but may not be severable from the related basic research; (b) attempts to determine and exploit the potential of scientific discoveries or improvements in technology, materials, processes, methods, devices, or techniques; and (c) attempts to advance the state of the art. When being used by contractors in cost principle applications, this term does not include efforts whose principal aim is the design, development, or testing of specific items or services to be considered for sale; these efforts are within the definition of "development," given below.

Development research is defined as systematic application of knowledge or understanding, directed toward the production of useful materials, devices, and systems or methods, including design, development, and improvement of prototypes and new processes to meet specific requirements. Development, as used in this part, means the systematic use of scientific and technical knowledge in the design, development, testing, or evaluation of a potential new product or service (or of an improvement in an existing product or service) to meet specific performance requirements or objectives. It includes the functions of design engineering, prototyping, and engineering testing; it excludes subcontracted technical effort that is for the sole purpose of developing an additional source for an existing product.

In 2007, the federal government provided 59% and industry provided 15% of the funding for basic research in the U.S. Industry funded 61% and the federal government funded 21% of the applied research. Industry funded 83% of development research and the federal government funded 15% and of that amount, 87% of the federal development funding was allocated to the Department of Defense (DOD).

Top R&D Funding Agencies by Character of Work, Facilities and Equipment, FY2008-FY2010
(Budget authority, dollar amounts in millions)

	FY2008 Actual	FY2009Estimate a	FY2010 Request
Basic Research			
Health and Human Services	15,739	25,035	16,739
National Science Foundation	3,704	6,045	4,477
Energy	3,461	4,425	3,813
Applied Research			
Health and Human Services	13,349	14,813	14,027
Defense	4,855	5,174	4,236
Energy	3,180	3,810	3,093
Development			
Defense	73,615	74,714	73,603
NASA	6,090	6,244	6,246
Energy	2,281	2,945	2,614
Facilities and Equipment			
NASA	2,349	2,194	2,365
Energy	885	1,887	1,220
National Science Foundation	456	1,312	412

Source: *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2010,* Office of Management and Budget, The White House, May 2009.
Note: Top funding agencies based on FY2010 request.
a. Amounts for 2009 include funding from P.L. 111-5.

The Washington Update

Continued from Page 7

Significant funding has been and will be allocated to the automotive and plastics sectors, in the form of federal loans and grants.

DOE oversees the Advanced Technology Vehicle Manufacturing (ATVM) program. Under section 136, the ATVM provides loans to automotive manufacturers and automotive parts manufacturers for the cost of re-equipping, expanding, or establishing manufacturing facilities in the United States to produce advanced technology vehicles or qualified components, and for associated engineering integration costs. Under Section 312 of the Energy and Water Development and Related Agencies Appropriations Act of 2010, Section 136 was amended to include ultra-efficient vehicles within the definition of advanced technology vehicles.

The ATVM program received approximately 150 applications and made commitments to Tenneco, Fisker, Ford, Nissan and Tesla.

Ford Motor Company

Ford will receive $5.9 billion in loans through 2011 to help finance numerous engineering advances to traditional internal combustion engines and electrified vehicles. In addition, these loans will help Ford convert two truck plants to the production of cars. Ford will be raising the fuel efficiency of more than a dozen popular models, including the Focus, Escape, Taurus and F-150, representing close to two million new vehicles annually and helping to transform nearly 35,000 employees to green engineering and manufacturing jobs in factories across 5 states including: Illinois, Kentucky, Michigan, Missouri, and Ohio. Ford is driving a major upgrade, leveraging a portfolio of technologies, including the direct injection, smart turbocharging EcoBoost engine, advanced transmissions, and new hybrid technologies. The facilities that will be impacted include: Chicago Assembly, Louisville Assembly, Dearborn Assembly, Dearborn Engine, Livonia Transmission, Michigan Assembly, Van Dyke Transmission, Kansas City Assembly, Cleveland Engine, Lima Engine, and Sharonville Transmission.

Nissan

Nissan will receive $1.6 billion to produce electric cars and battery packs at its manufacturing complex in Smyrna, Tennessee. The loan will aid in the construction of a new battery plant and modifications to the existing assembly facility. These fully electric cars are an important milestone for vehicles produced in the United States by a major international automaker. These cars are energy efficient, using electricity at a gasoline-equivalent rate of more than 350 mpg. This new state of the art facility is a notable effort by a major automaker with well-established US operations to produce its most advanced vehicles and lithium-ion batteries. Nissan aims to manufacture a cost-competitive all-electric car, overcoming a major obstacle to widespread adoption of pure electric vehicles. Nissan will offer electric vehicles to fleet and retail customers, and plans to ramp up production capacity in Smyrna up to 150,000 vehicles annually. Nissan anticipates the project may result in an increase of up to 1,300 jobs in Smyrna when full production is reached.

Tesla

Tesla Motors will receive $465 million to advance electric vehicles. The first loan will finance a manufacturing facility for the Tesla Model S sedan. This vehicle demonstrates how the emerging electric car is becoming more affordable: the Model S is expected to be roughly $50,000 cheaper than Tesla's first vehicle, the Roadster. The all-electric sedan consumes no gasoline and runs entirely on electricity from any conventional 120V or 220V outlet. The sedan's fuel efficiency will purportedly be the equivalent of more than 250 miles per gallon, far exceeding the 32.7 mpg minimum efficiency required for large sedans. Production of the Model S will begin in 2011 and ramp up to 20,000 vehicles per year by the end of 2013. This integrated facility expects to create 1,000 jobs in Southern California.

The second major federally funded R&D program was the Advanced Battery Manufacturing and Component Systems development program, which allocated the following grants:

- $1.5 billion to U.S. based manufacturers to produce advanced batteries and their components and to expand battery recycling capacity;

- $500 million to U.S. based manufacturers to produce electric drive components for vehicles, including electric motors, power electronics, and other drive train components; and $400 million to purchase thousands of plug-in hybrid and all-electric vehicles for test demonstrations in several dozen locations; to deploy them and evaluate their performance; to install electric charging infrastructure; and to provide education and workforce training to support the transition to advanced electric transportation systems.

Saft America, Inc. received a $95 million grant to construct a new plant in Jacksonville on the site of the former Cecil Field military base, to manufacture lithium-ion cells, modules and battery packs for military, industrial, and agricultural vehicles. **A123 and Johnson Controls will receive a total of approximately $550 million** to establish a manufacturing base in the state for advanced batteries, and two others, **Compact Power and Dow Kokam, will receive a total of over $300 million** for manufacturing battery cells and materials.

Large automakers based in Michigan, including **GM, Chrysler, and Ford, will receive a total of more than $400 million** to manufacture thousands of advanced hybrid and electric vehicles as well as batteries and electric drive components. **Navistar will receive a $39 million** grant to manufacture electric trucks which the company reports will ultimately will create or save hundreds of jobs when full scale manufacturing at the site commences. Three educational institutions in Michigan, the University of Michigan, Wayne State and Michigan Tech will receive a total of more than $10 million for education and workforce training programs to train researchers, technicians and service providers, and to conduct consumer research to accelerate the transition towards advanced vehicles and batteries.

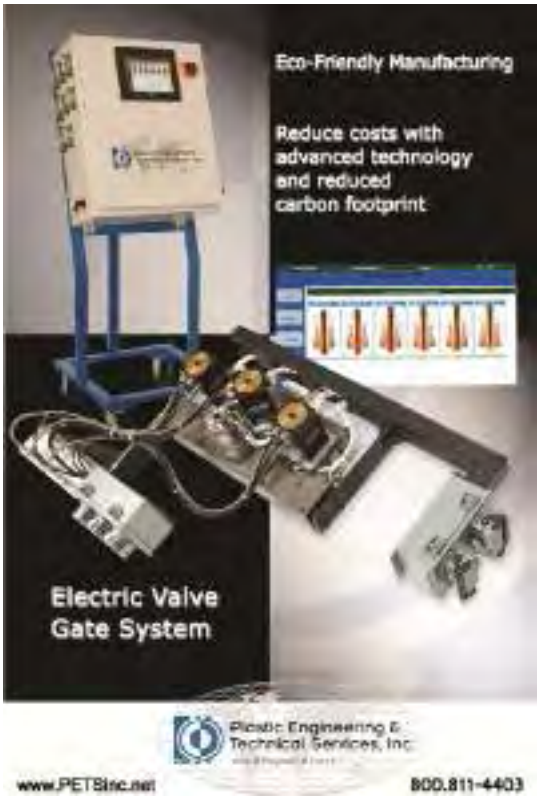
Celgard, in Charlotte, North Carolina, announced it had **received a $49 million grant** for the company to **expand its polymeric separator production capacity to serve the expected increased demand for lithium-ion batteries from manufacturing facilities in the U.S.** Celgard will expand its manufacturing capacity in Charlotte, NC and Aiken, SC. Celgard's new separator production came online this year and they expect hundreds of jobs to be created.

Three other **grants supporting manufacturing and educational programs in Missouri** include a **$30 million grant to Ford Motor Company to advance the manufacturing of plug-in hybrid electric vehicles in Kansas City and in Michigan; a $73 million grant to Chrysler, for the manufacturing of 220 plug-in hybrid and electric pickup trucks and minivans in St. Louis and in Michigan**; and a $5 million grant to Missouri University of Science and Technology, in Rolla, Missouri, to fund educational and workforce training programs on advanced vehicles technologies.

Overall, significant funding has been and will continue to be allocated for the manufacturing of advanced hybrid and all electric plug in vehicles and components. New legislation was recently sponsored in Congress for additional advanced automotive technology funding; and only days remaining before the August recess, Senate Majority Leader Harry Reid, D-Nev., plans to move forward with an energy-only bill that would address the Gulf of Mexico oil spill, establish energy-efficiency targets, promote natural gas-fueled vehicles and boost water- and land-conservation measures.

For more information, contact Suzanne Cole, CEO Miller Cole LLC in Washington at 202.621.1899 or email at: suzannecole@miller-cole.com.
Web site: www.miller-cole.com

Miller Cole works on behalf of businesses to add their products and services to the U.S. General Services Administration's (GSA) Federal Supply Schedule. Miller Cole also provides business-to-government sales strategy, business development support and R&D Appropriations support including direct Congressional R&D requests and Agency R&D grant and loan funding.



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AutoEPCON Highlights Innovative Technologies to Add Value, Reduce Cost in Automotive Applications

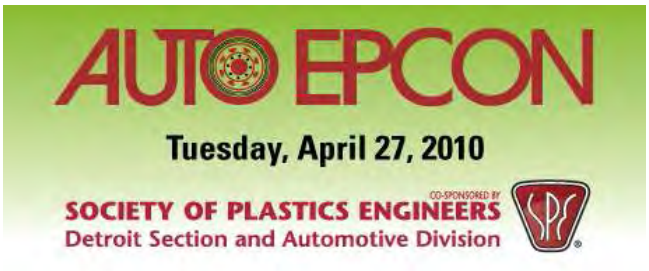
The ***SPE Automotive Engineering Plastics Conference (AutoEPCON),*** organized by the Detroit Section and Automotive Division SPE, returned for its fifth year on April 27, 2010 for a full day of technical presentations, keynote addresses, exhibits, and a networking reception sponsored by SPE at day's end. Despite several years of severe cutbacks in both the automotive and plastics industries, this year's show was well attended and full of presentations on new technologies to help automakers add value and reduce cost and weight of components with engineering plastics.

The conference featured four keynote speakers who helped frame both the challenges and opportunities facing the supply community as well as automakers as this industry struggles to emerge from the record downturns of the past few years. Right after opening remarks by 2010 ***SPE AutoEPCON*** event chair, Nippani Rao, Dale Gerard, Ph.D., senior manager-North American Materials, General Motors Corp., spoke on "*New Developments at the New GM: Plastics & More*." He was followed by Volker Warzelhan, Ph.D., senior vice-president, Polymer Research-Thermoplastics at BASF SE, who gave a talk entitled "*Innovation Pipeline – Engineering Plastics*." Before lunch, Vivek Jain, Ph.D., global R&D director, Ticona Engineering Polymers, presented a talk entitled "*Driving Innovations in the Automotive Industry*." Following lunch Koen Devits, business unit director, DSM Engineering Plastics-Americas discussed "*Innovative Sustainable Solutions Utilizing Engineering Plastics*."

The 16-presentation technical program featured two parallel technical tracks morning and afternoon and a surprising number of the talks highlighted new materials and process technologies. Topics included a new nylon said to double the service life of powertrain components, flame plasma surface treatments to increase adhesion to polymer surfaces, new polyphenylene sulfide (PPS) compounds specifically formulated for battery coolant-system applications, and an innovative new direct coating/skinning process to produce high-quality decorative surfaces in a single shot.

Other presentations highlighted the use of silicone adhesives as a sealant for thermoplastic engine components, innovative PPS blow-molded air ducts, new liquid crystal polymers (LCPs) to facilitate miniaturization of automotive electronics; copolymer polyoxymethylene (POM, acetate) for high-strength, high-impact applications; long-fiber thermoplastics for weight and cost reduction on vehicle interiors; reduction of volatile-organic compounds (VOCs) on vehicle interiors for sustainability and passenger comfort; and new materials developed to meet the challenges of hybrid/electric vehicles.

"Given the tremendous difficulties our industry has experienced in the last two years," said Norm Kakarala, Ph.D., senior technical fellow, Inteva Products LLC, "it's



really remarkable that we're seeing this level of innovation so early in the recovery process. Clearly, the supply community has responded to automakers' need to take cost and weight out by developing more efficient materials and processes that add value to components." Kakarala, a former SPE Automotive Div. chair, founded the ***AutoEPCON*** show and served as its 2010 technical program chair.

Speaking about the 2010 show, Nippani Rao, said "At a time of great change in the automotive industry, ***SPE's AutoEPCON*** remains an excellent resource for keeping up-to-date on breaking innovations in engineering plastics. These high-performance materials keep making new inroads in thermally and chemically aggressive environments under the hood, in semi-structural applications in chassis/powertrain, and by meeting increasingly demanding aesthetic and cost challenges on vehicle interiors. Our 2010 program provided an excellent overview to the latest developments in these versatile materials for anyone working in design, engineering, manufacturing, or purchasing for ground transportation."

The 2010 ***AutoEPCON*** show was held at the MSU Management Education Center in Troy, MI, and focused on *Design, Materials, Processing, & Use of Engineering Plastics for the Global Automotive Industry*. Support for the 2010 event came from *Premier* sponsors, Ticona Engineering Polymers and DSM Engineering Plastics; *Associate* sponsors, AsahiKasei Plastics North America, BASF, JSP, Chevron Phillips Chemical Co., DuPont Automotive, Adell Plastics Inc.; *Break/Lunch/Advertising* sponsors, Entec Polymers LLC, Bayer MaterialScience, DatapointLabs, ANSYS, Detroit Testing Labs, and DME; as well as *Media/Association* sponsors, *Automotive Newswire* magazine, *Automotive Engineering International* magazine, *Ward's AutoWorld* magazine, *Plastics Technology* magazine, *Automotive Design & Production* magazine, and *Plastics Engineering* magazine.

The Detroit Section and the Automotive Division of SPE developed this one-day technical conference and exhibition to specifically focus on engineering plastics for the automotive industry. First held in 2006, ***AutoEPCON*** features technical presentations on the newest advances in materials technology, predictive engineering, process enhancements, and application developments for thermoplastic and thermoset engineering plastics for the automotive industry.

Progress in Simulations for Short and Long Glass Fiber Thermoplastic Composites

Gregorio M. Vélez-García, Kevin Ortman, Neeraj Agarwal, Peter Wapperom, and Donald G. Baird, Virginia Tech, Blacksburg, VA

Abstract

We study fiber orientation in simple and complex flow geometries for highly concentrated short and long glass fiber suspensions. Three important aspects are the implementation of new theories to model fiber orientation, the evaluation of model parameters from rheological experiments, and development of an accurate simulation tool based on discontinuous Galerkin Finite element method. A delayed-fiber orientation evolution model, model parameters obtained by simple flow experiments, fiber orientation measured experimentally at the gate, and coupled simulations help to improve the prediction of short glass fiber orientation in a center-gated disk.

In the case of long glass fiber, a Sliding Plate Rheometer (SPR) has been fabricated to acquire model parameter values for use in subsequent simulations of long glass fibers reinforced center-gated disks. In addition, a bead-rod model that accounts for the semi-flexible nature of the fibers is investigated to determine its feasibility for long glass fiber simulations.

Introduction

Short and long fiber composites have generated commercial interest in the manufacturing of lightweight parts used in semi-structural and structural applications, respectively. The improved mechanical properties in these materials are defined by the tridimensional structure of the fibers, established mainly during the forming stage of the parts due to the flow-induced orientation. In the case of short fibers (i.e. l < 1 mm, where l denotes the length of the fiber), they are rigid particles and the structure is well characterized by simply the orientation of the fibers. In the case of long fibers i.e. l > 1 mm, characterization is more complex due to the development of semi-flexibility of the fibers given by their length. Therefore, an accurate numerical tool capable of predicting the flow-induced orientation of short and long glass fiber in a commercial range of concentrations is essential to design better molding machinery, mold and process conditions.

This paper presents the efforts of our research group to improve the prediction of orientation for short fiber composites and the advances of using continuum models capable of describing the semi-flexibility in long fibers. For short glass fiber composites, a 2D solution based on Hele-Shaw approximation is used to simplify the balance equations. But contrarily to the commercial simulations available, the flow and fiber orientation equations are coupled and the evolution of orientation is modeled using the non-affine Folgar-Tucker model with model parameters determined from simple shear flow experiments[1].

In the case of long glass fiber composites, we have two objectives. First, we want to understand fiber orientation of long glass fibers in polymer melts and the associated rheology in well-defined simple shear flow. Specifically, we are interested in associating the rheological behavior of glass fiber reinforced polypropylene with the transient evolution of fiber orientation in simple shear in an effort to model fiber orientation in complex flow. Second, we explore the bead-rod model[2], in a complex flow, that takes the semi-flexible nature of long glass fibers into effect. We then compare these with experimentally determined orientation.

Theoretical Background

The Hele-Shaw approximation can be used to simplify the conservation equation based on the fact that the molded part's thickness is much smaller than the overall part dimension. When a center-gated disk geometry is considered, the Hele-Shaw flow approximation is described by

$$\frac{1}{r}\frac{\partial}{\partial r}\left(hr\bar{v}_r\right)=0 \tag{1}$$

$$-\frac{\partial p}{\partial r}+\frac{\partial T_{rz}}{\partial z}=0 \tag{2}$$

where r represents the radial or flow direction, z the gapwise direction, h the half gap width, $\bar{v}_r$ the average radial velocity along the gapwise coordinate, p the pressure, and T_{rz} the shear component of the extra-stress tensor. These equations are supplemented by the typical boundary conditions for pressure and velocity[3]. The flow is assumed to be symmetrical in the angular direction, θ.

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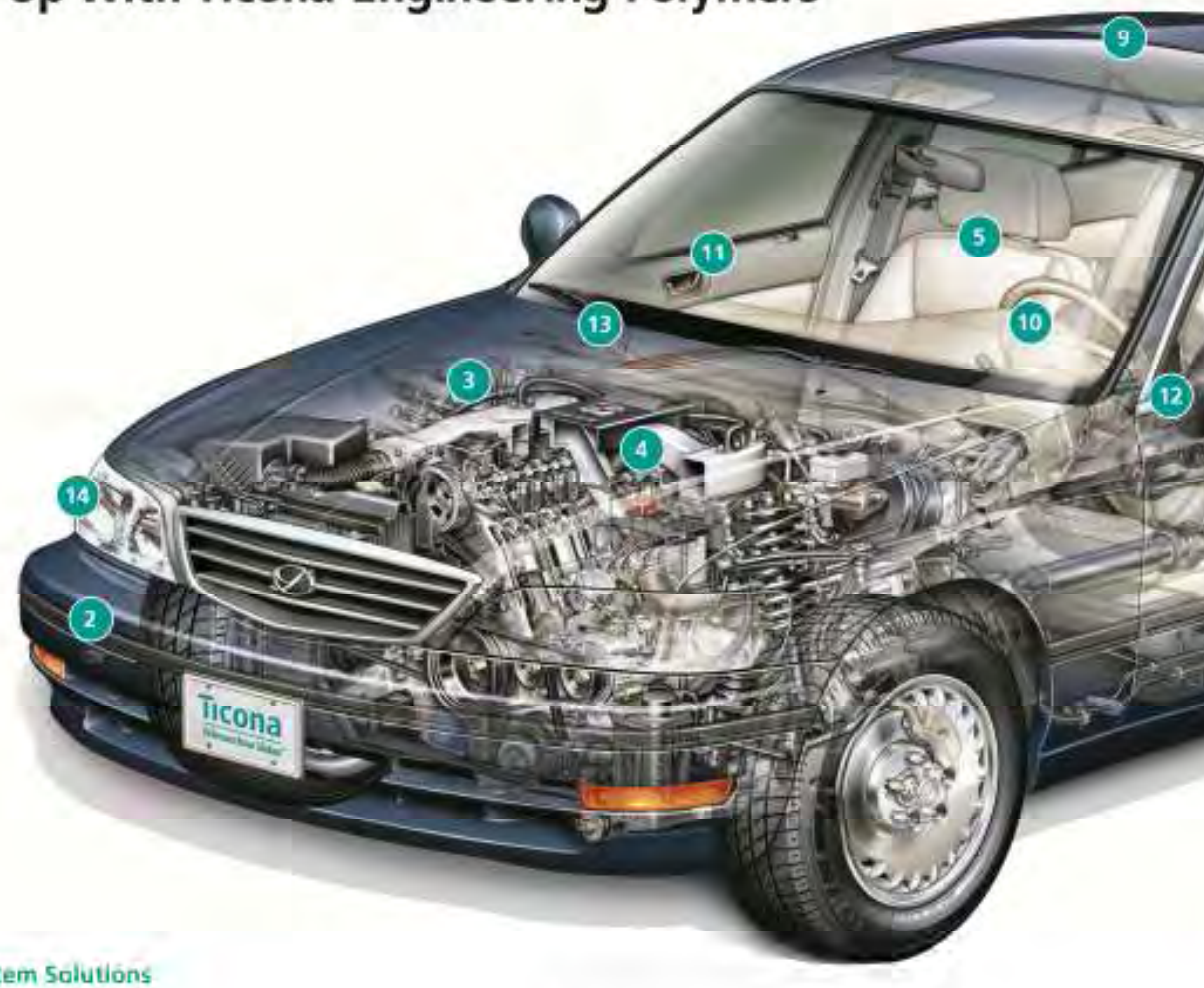

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Progress in Simulations

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Simplification of the Balance Equations for Long Glass Fiber

The flow field is assumed to be uncoupled from the fiber orientation dynamics and can therefore be solved analytically[3] for cylindrical coordinates:

$$v_r(r,z) = \frac{3Q}{8\pi hr}\left[1-\left(\frac{z}{h}\right)^2\right] \quad (3)$$

$$v_z(r,z) = 0 \quad (4)$$

where Q is the volumetric flow rate.

Description of Orientation Equation for Short and Long Glass Fibers

A short fiber is assumed as a cylindrical, rigid, straight rod. Therefore, its spatial orientation can be described using spherical coordinates with the azimuthal (f) and zenith (q) angles as is shown in Fig. 1(a). These angles are used to construct an orientation unit vector **p** parallel to the backbone of the fiber. This description can be extended to describe a population of fiber using tensors of orientation. The second order orientation tensor (**A**) is the most widely used tensor representation of the orientation state in the thermoplastic composite literature.

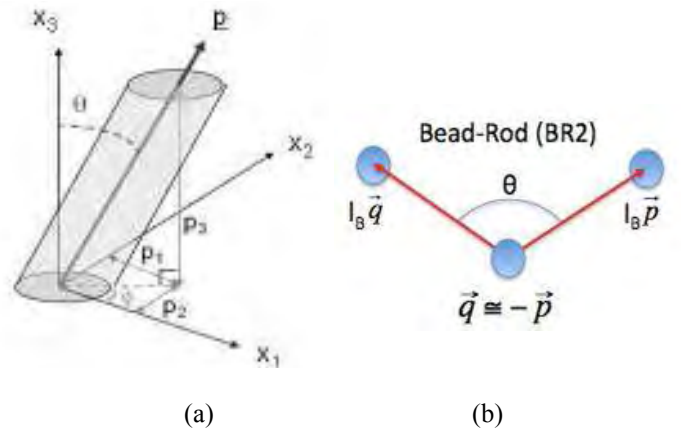
$$\mathbf{A} = A_{ij} = \langle p_i p_j \rangle \quad (5)$$

where $\langle _ \rangle$ represents the ensemble average of the dyadic product of the unit vector **p** over all possible orientations at a certain position and time.

The fiber orientation for long glass fibers will be predicted using a model that explicitly introduces the semi-flexibility for dilute solutions using Bead-Rod analogy[2]. This Bead-Rod model is a continuum model that provides a first approximation to flexibility. This is accomplished by modeling a fiber as two rods connected by a pivot allowing bead (Figure 1(b)).

The model constructs two rigid segments with length l_B that are allowed to slightly pivot about the connecting bead, with some restorative bending rigidity. Both ***p*** and ***q*** are unit vectors that represent the orientation of the corresponding fiber segments, with respect to the center bead. Then using this description the **A** and **B** tensors are defined. The **A** tensor is exactly defined by Eq. (5) while **B** is defined by:

$$B = B_{ij} = \langle p_i q_j \rangle \quad (6)$$



(a) (b)

Figure 1: Vectors of orientation used to describe (a) a short rigid fiber and (b) a long semi-flexible fiber

The time rate of change of **A** for a non-dilute suspension of short fibers is described by a modified version of Folgar-Tucker[4] model and a Newtonian model for the polymer matrix, with parameters determined from simple flow rheology. The non-affine Folgar-Tucker model accounts for the slow-down in the short fiber motion due to inter-particle interaction occurring in highly concentrated fiber suspension[1]. In the case of long fibers, the time rate of change of **A** and **B** is given by system of evolution equations described in detail in Strutins and Latz[2]. A distinctive feature of the bead-rod model is the model parameter k, used to account for the flexibility contribution.

Experimental Methods

Rheology of Short and Long Glass Fiber Suspension

The material parameters of short glass fibers were determined from steady shear and start-up of shear experiments using a cone-and-plate rheometer (CPR)[1]. The rheological measurements of long glass fiber composites with instruments like rotational and capillary rheometers present severe experimental problems such as inhomogeneous flow fields and excessive fiber breakage. To overcome these problems, a Sliding Plate Rheometer (SPR) incorporating a Wall Shear Stress Transducer is

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designed and fabricated. It presents various advantages over other standard rheometers.

Injection Molding Experiments and Fiber Orientation in Center-gated Disks

A 75% short shot center-gated disk of 30 wt% short glass fiber PBT with internal radius (r_i) of 2.98 mm, outer radius (R) of 30.81 mm, and thickness ($2h$) of 1.31 mm was used. In the case of long glass fiber composites the suspension contained 40 wt% long glass fiber PP. The outer diameter was approximately 53 and the thickness 2.05 mm. The initial length of long glass fiber specified by the resin provider was 11 mm. The filling time of the part was approximately 1 s and the injection pressure was estimated to be 20 MPa.

The initial orientations of the fibers were experimentally determined at the gate using the method of ellipses[5] from optical-reflection micrographs taken on a metallographically polished surface in r,z-planes. The samples were cut along a line of constant θ. The initial orientation tensor **A** was computed using a weighted average of orientations of all individual particles within rectangles of dimension $h/6$ in z-direction and $h/3$ in r -direction. For validation purposes the orientation was determined in a similar manner along the gapwise direction at 40% and 90% of (R-r_i).

Numerical Methods

In the simulations dealing with short glass fiber composites, the standard Galerkin finite element method (GFEM) is used in the discretization of the HS flow approximation of the balance equations. While in the simulation related to long glass fiber the analytical solution was computed. The discontinuous Galerkin finite element method (DGFEM) with a standard explicit Euler scheme is used to discretize the evolution equations. In the simulations only the top half of the domain was considered with no slip velocity at the wall and symmetry boundary conditions at z=0.

Discussion

Prediction of Orientation for Short Glass Fibers Center-gated Disk

The predicted evolution of orientation in the cavity is influenced by the asymmetric orientation at the gate and the simulation strategy, i.e, coupled or decoupled approach. Indeed, the initial orientation affects local values of orientation while the solution strategy affects the velocity of orientation evolution prediction. Figures 2 (a) and (b) show decoupled simulations results for the radial locations of 40% and 90% (R-r_i), respectively, focused on the upper half cavity. These predictions (lines) overestimate the A_{rr} orientation components while they underestimate the $A_{\theta\theta}$ and A_{rz} orientation components, when compared to the experimental results (symbols). The smooth predicted profile cannot reproduce a series of peaks and valleys observed in the experimental profile of orientation. These features in the orientation profile can be related to the layered structure formed at the gate, which evolves locally as the flow progresses[6]. This may imply that the decoupled simulation using the non-affine Folgar-Tucker model is evolving faster than the experimental evolution of orientation.

The results of the coupled simulation show improvement in the prediction of the orientation profile. Figure 2 depicts results for (c) 40% (R-r_i) , and (d) 90% (R-r_i). The results are sensitive to the use of the non-affine Folgar-Tucker model because the retardation of evolution considerably improves the prediction of A_{rr}, but the profile of the predicted orientation is smooth. In general the $A_{\theta\theta}$ is under estimated, but not as severely as in the decoupled approach. An interesting observation in coupled simulations is that the difference between experimental and predicted $A_{\theta\theta}$ is greater at 90% (R-r_i) than at 40% (R-r_i). This can be an effect of using the Hele-Shaw approximation, because this simplification ignores the existence of the flow front. It is well known that the front is a region dominated by extensional flow which is the driving mechanism for $A_{\theta\theta}$. Therefore, these coupled results suggest the need for full simulations, which are especially important in small geometries where the evolution of orientation never reaches the steady structure of orientation.

Prediction of Orientation for Long Glass Fibers Center-gated Disk

For both the Folgar-Tucker model and the Bead-Rod model a random initial orientation at the gate was specified. The model parameter k was set equal to a dimensionless value of 0.5[2]. Additionally, the segment length l_B was given a dimensionless value that approximately corresponds to 0.5 mm; however fiber attrition data may be needed for accuracy. The numerical results for the Bead-Rod model and

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experimental data are given in Figure 3(a), and those for the Folgar-Tucker model are given in Figure 3(b).

The Bead-Rod simulation predicts a much broader orientation distribution, as compared to what was obtained using the Folgar-Tucker model. Although the qualitative behavior of the orientation is better represented in this figure (especially for A_{11}), the results for A_{33} and A_{22} are different from what is observed experimentally. The simulation results with the Bead Rod model are therefore also not satisfactory in comparison with the results obtained experimentally. It should, however, be noted that the parameters available within this model should be more precisely determined, and/or fit, before full judgment of this model may be passed. This will therefore become the nature of future work.

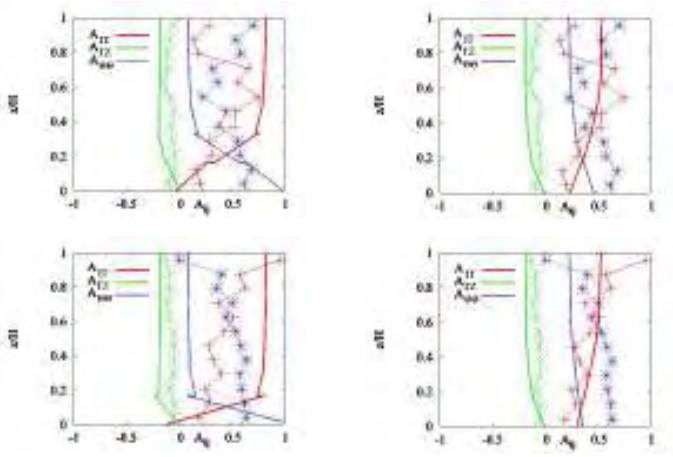

Figure 2. Experimental and predicted orientations from decoupled simulation at (a) 40% (R-r_i) and (b) 90% (R-r_i) and from coupled simulations at (c) 40% (R-r_i) and (d) 90% (R-r_i). The dimensionless simulation time was 290. The lines denote the predictions, while the symbols are used to indicate the experimental results.

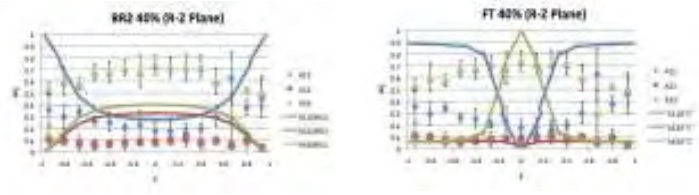

Figure 3: (a) Bead-Rod (BR2) and (b) Folgar-Tucker (FT) simulation and experimentally measured results, for the trace components of the orientation tensor, versus the dimensionless mold thickness. The components are give by "r = 1", "z = 2", "θ = 3."

Conclusions

A 2D coupled method for predicting the flow-induced orientation of short glass fibers in thin walled injection molded composite parts has been presented. The impact of inter-particle interactions and the orientation at the gate was investigated using parameters determined from rheometry. Our experimental results indicate that the profile of orientation at the gate cannot be assumed to be random for a center-gated disk. In addition, the orientation transient remains through the geometry. Results indicate that the non-affine Folgar-Tucker model is not able to retard the orientation evolution in decoupled simulations. However, the coupled simulations improve the prediction of A_{rr} components and suggest the need for simulations considering the frontal flow region.

Long fiber kinematics, in complex flow, is not accurately explained by the Folgar-Tucker or the Bead Rod models and/or the assumptions used in the simulation of these models. One solution to this would be to more accurately determine and/or fit parameters for the Bead Rod model (as was done with the Folgar Tucker model) and use initially determined orientations within the simulations. This would ensure that these particular models are

functioning most properly. If indeed these efforts still produce less than convincing results, the next step may be to first try to understand long fiber behavior in simple flow (rather than complex) by using well defined flows to study the desired behavior. Additionally, well-defined flows may be utilized to obtain rheological data, from which parameter data may be obtained. It is thus believed that studying long fibers in simple flow will provide a more fundamental opportunity to understand their behavior.

Acknowledgements

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Intersociety Report

Jackie Rehkopf

One of our goals in the SPE-Automotive Division is to network with other societies and provide additional benefit to our members through inter-society relationships. As our division name alludes, we deal with plastic and composite materials in the automotive industry, and cover chemistry, composition, manufacturing, mechanics of materials, modeling, testing, prototyping and production.

From the mechanics of materials, modeling, and testing perspectives, we have contacted the American Society of Civil Engineers – Engineering Mechanics Institute (ASCE-EMI), and the American Society of Mechanical Engineers – Materials Division (ASME-MD). SPE-Automotive shares a common interest in mechanics of composites with ASCE -EMI and ASME-MD, and in some cases our entities work on similar families of composites. For our respective members that share this significant common interest in mechanics of composites, a relationship between our organizations could be quite beneficial. The initial responses from both ASCE-EMI and ASME-MD have been positive and eventual relationships appear promising.

We have also reached out to the Society of Manufacturing Engineers (SME) and the Great Lakes Chapter of the Society for the Advancement of Material and Process Engineering (SAMPE) to develop inter-society relations to benefit our members.

We are inviting these other organizations to consider interacting with us in one or more of a variety of ways. Some of the options we've proposed include:

- links to each other's websites via our organizations' logos;
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Six Keynotes Highlight Trends, Opportunities for the Automotive Composites at the 10th Annual SPE ACCE

The tenth-annual ***SPE Automotive Composites Conference & Exhibition (ACCE)*** returns to the MSU Management Education Center in Troy, Mich. on September 15-16, 2010. Despite a still-challenging automotive market, the show is shaping up with a very strong technical program. For example, six keynote speakers will highlight important trends impacting composites for ground transportation and discuss emerging opportunities for suppliers and OEMs.

First up on Wednesday morning is a keynote on ***North American Vehicle Build Trends*** by Mike Jackson, director-North American Vehicle Forecasts at CSM Worldwide. A second back-to-back keynote, will feature co-presenters, Luciano DeOto, division chief-Advanced Composites Development Center, Automobili Lamborghini S.p.A. and Paolo Feraboli, assistant professor-Aerospace Structures & Materials, Department of Aeronautics & Astronautics, University of Washington, who will jointly discuss ***Carbon Fiber Composites Research & Development at Automobili Lamborghini.*** The lunch speaker that day will be Antony Dodworth, R&D manager, Bentley Motors Ltd., who will discuss next-generation vehicle work in his talk, *Birth of the T35 Sports Car: Releasing the Familiar & Secure to Embrace the New*.

The second day of the show will begin with a keynote from Roger Assaker, owner and CEO of e-Xstream Engineering S.A., whose analysis software is widely used in the automotive industry. He will give a talk on ***Predictive Modeling of Reinforced Plastic Materials & Parts: State-of-the-Art and Future Challenges.*** Thursday's lunch speaker will be Claudio Santoni, principal engineer, McLaren Automotive Ltd., who will describe the development of ***McLaren MP4-12C Carbon Fibre "MonoCell,"*** a groundbreaking new carbon composite-intensive, monocoque/safety cell The show will close with a keynote from Rani Richardson, CATIA composites product specialist, Dassault Système S.A., who will discuss technology transfer in: ***Flying Off the Line: How Aerospace Knowledge Can Accelerate the Use of Composites in Mass Produced Autos.***

In addition, the conference's technical program presents an equally diverse look at composite materials and processes. Traditional sessions for the event include Advances in Thermoplastic Composites (with updates on long-fiber thermoplastics (LFT) & direct-LFT, as well as nylon in oil pans and engine mounts); Advances in Thermoset Composites (with updates on sheet-molding compound, polyurethanes, and epoxies); Bio- & Natural Fiber Composites (featuring a variety of natural fiber reinforcements in thermoset and thermoplastic matrices); Nanocomposites (featuring graphite nanoplatelets and a new mesoporous silicate particle); and Virtual Prototyping & Testing of Composites (with papers on predicting fiber-orientation, strength, and creep, as well as scaling-down methodology and constitutive-property estimation).

The Enabling Technologies session is especially interesting this year with lots of presentations on processing breakthroughs ranging from a low-cost/ low-pressure variant on compression molding, to a new pelletized LFT process that gives the design complexity of injection with the retained fiber lengths of compression molded D-LFT or GMT, to production of thermoplastic prepregs for use in thermosetting vacuum bag, RTM, and infusion processes, to progressive forming of thermoplastic composites, to high-volume CFRP stamping processes, to a 10-minute cycle time for advanced composites.

Two new sessions have also been added this year. The first is a series of six papers on a collaborative effort by USCAR (United States Council for Automotive Research LLC (Southfield, Mich.)) members on Design & Development of a Structural Composite Underbody, and a second session, called **Composites: Business Trends & Technologies**, features broadly focused topics: *Technology Development for Automotive Composite Part Production – New Materials & Processes* (Frank

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Henning, deputy director, Fraunhofer Institute of Chemical Technology, Pfintzal, Germany); *Tap into Government: How to Leverage Government Money to Drive Innovation for Materials Development* (Susan Ward, CEO, ITECS-Innovative Consulting, New Smyrna Beach, Fla.); and *Plastics/Composites for Automotive Applications—Defending the Product Performance in Insurance Claims and Litigation Situations* (Jackie Rehkopf, senior engineer, Exponent, Inc., Menlo Park, Calif.). The auto industry's new interest in "green" is also in evidence at the conference with papers spread across multiple sessions and covering a variety of topics ranging from a new zero-VOC thermoset, to thermoplastic additives that reduce VOC emissions at the source, to a method to recycle automotive headliners otherwise headed for the landfill.

Despite how challenging both the automotive and plastics industries have been in the past few years, we are pleased to be able to offer a very strong technical program at the 2010 SPE ACCE. During our two-day show, organizations will be discussing new nanoparticles, new processing breakthroughs (for both thermoplastic and thermoset matrices), new types of prepreg materials, ways to obtain more accurate virtual-prototyping results, a collaborative program to design and develop a structural composite underbody, and more.

The first confirmed keynote will feature a joint presentation by Luciano DeOto, division chief for the Advanced Composites Development Center (ACDC), Automobili Lamborghini S.p.A. (Sant'Agata Bolognese, Italy), and Paolo Feraboli, assistant professor-Aerospace Structures & Materials, Department of Aeronautics & Astronautics at the the University of Washington (Seattle) on joint-development work for out-of-autoclave carbon fiber-reinforced plastics (CFRP) technologies for Lamborghini's supercars. Lamborghini has used polymer composites on its iconic vehicles since 1983, and advanced (CFRP) composites for all body panels and several sections of the space-frame structure of its *Murciélago*® coupé since 2001.

The ACCE typically draws over 400 speakers, exhibitors, sponsors, and attendees from 14 countries on four continents with fully one-third indicating they work for a transportation OEM involved in automotive, heavy-truck, agricultural, off-road, or aerospace/aviation. Held annually in suburban Detroit, the SPE ACCE provides an environment dedicated solely to discussion and networking about advances in the automotive composites industry.

Its global appeal is evident in the diversity of exhibitors, speakers, and attendees who come to the conference from Europe, the Middle East, Africa, and Asia / Pacific as well as North America and who represent transportation OEMs and tier suppliers; composite materials, processing equipment, additives and reinforcement suppliers; trade associations, consultants, university and government labs; media; and investment bankers.

For more information about the SPE Automotive Composites Conference, visit the Automotive Division's website at **www.speautomotive.com/comp.htm**, or the Composites' Division website at **www.compositeshelp.com/**, or contact the group at +1.248.244.8993,

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Since 1998, the **Detroit Section** of the **Society of Plastics Engineers (SPE®) International** has organized the ***SPE Automotive TPO Global Conference*** to help keep attendees up-to-date on the latest developments in thermoplastic olefins (TPOs). Now in its 12th year, the show has become the world's leading automotive olefins forum. It regularly features over 40 technical presentations, panel discussions, keynote speakers, networking receptions, & exhibits highlighting advances in materials, processes, and applications technologies for this versatile polymer family, along with a growing range of thermoplastic elastomers (TPEs) and thermoplastic vulcanizates (TPVs).

This year's show, which will be held **October 3-6, 2010** in the Detroit area, will feature special sessions on Thermoforming, Polypropylene Compounds, and TPEs and TPVs to help OEMs and molders improve their competitive advantage in the global market.

ENJOY EXCEPTIONAL GLOBAL NETWORKING OPPORTUNITIES

The ***SPE Automotive TPO Global Conference*** typically draws over 400 attendees from 20 countries on 4 continents who are vitally interested in learning about the latest in rigid and elastomeric TPO as well as TPE and TPV technologies. Fully a third of conference attendees work for a transportation OEM, and roughly 20% work for a tier integrator. Few conferences of any size can provide this type of networking opportunity with global leaders in materials, processing, and applications development.

OLEFINS: AMONG THE MOST VERSATILE & FASTEST GROWING POLYMER FAMILIES

For more than a decade, polyolefins have been the fastest growing segment of the global plastics industry. Their excellent cost / performance ratio have led to wide adoption in the automobile in applications ranging from semi-structural composite underbody shields and front end modules to soft-touch interior skins and bumper fascia. In recent years, the olefin supply chain has experienced major restructuring, which is now providing both challenges and opportunities for OEMs and the entire supply community. Attending the ***SPE Automotive TPO Global Conference*** is an excellent way to keep up-to-date on this rapidly changing market and technology offerings.

To learn more about the show, see the latest conference updates, or to register, please visit www.auto-TPO.com or www.speautomotive.com/tpo.htm.

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Auto TPO Conference Returns with Strong Program

Planning for the twelfth-annual SPE Automotive TPO Global Conference, the world's leading automotive olefins forum organized by the Detroit Section is well underway and, despite a still-challenging global automotive market, a strong technical program is shaping up for the two-and-a-half-day annual event. Four keynote speakers, a panel discussion, two networking receptions, and special new technical sessions on polypropylene compounding, olefin-based thermoplastic elastomers and thermoplastic vulcanizates (TPEs/TPVs), and thermoforming of olefins join traditional sessions on materials development, surface enhancements, and process enhancements, and applications.

Conference festivities begin Sunday evening, October 3, as the SPE Detroit Section welcomes sponsors and exhibitors who are setting up their displays before the conference begins with a networking reception that runs from 6:30-8:00 p.m.

Monday, October 4, 2010: Day 1 Highlights

After opening remarks by 2010 SPE Automotive TPO Global Conference chair, Bill Windschief, Advanced Innovative Solutions, Ltd., the event's first keynote address – **Greening the Blue Oval: Ford's Vision for a Sustainable Automotive Industry** – will be given by Debbie Mielewski, technical leader-Plastics Research at Ford Motor Company. This will be followed by brief comments by technical program chair, Norm Kakarala, Inteva Products LLC, on the event's technical program, and then the Olefin Materials Development session will begin. Moderated by Anthony Gasbarro, Marubeni Specialty Chemicals and Mitesh Shah, LyondellBasell Industries, the three-segment technical session will feature eight presentations.

After lunch, a second keynote entitled ***Braskem, A Continued Commitment to the TPO Marketplace*** will be presented by Robert Nadin, vice-president-Innovation & Technology, Braskem SA. After a break, the first of two planned sessions on Polypropylene Compounding will be moderated by Mike Balow, Asahi Kasei Plastics N.A. Inc., Jeff Smart, Mitsui Plastics, Inc., and Patti Tibbenham, Ford Motor Co. and features five talks. The day ends with an open networking reception sponsored by ExxonMobil Corp. to which all conference participants are invited.

Tuesday, October 5, 2010: Day 2 Highlights

The second day of the conference opens with a keynote by Dietmar Ostermann, director-Global Automotive Practice, PRTM Management Consultants on **Bankruptcy and Consolidation in the Global Automotive Supply Industry**. Immediately following this talk, two concurrent technical sessions will begin. The first, Polyolefin-Based TPEs/TPVs, will be moderated by Bob Eller, Robert Eller Assoc., LLC and Jeff Valentage, ExxonMobil, and features six presentations. The second session will have three presentations on State-of-the-Art in Olefin Thermoforming, moderated by Ed Bearse, Advanced Plastic Consultants LLC and David Okonski, General Motors Co. (GM), followed by a case study of four thermoformed olefin components: heavy-truck bumpers, chrome film on TPO parts, thermoformed parts for import, and TPO fender flares. After lunch, a panel discussion on The "New Normal" – Challenges and Opportunities will be moderated by Bob Eller and Ron Price, Global Polymer Solutions. To date, five panelists have been named: Simon Holmes, ExxonMobil, Kathy Minnich, Ford, Dale Gerard, GM, Larry Sak, Chrysler Group LLC, and Rose Ryntz, International Automotive Components (IAC) Group.

The panel will be followed by two more concurrent technical sessions. Rose Ryntz of IAC will moderate the first of two sessions on Surface Enhancements for High-Quality Parts, which features five presentations; and concurrently Mike Balow, Jeff Smart, and Patti Tibbenham return for the second Polypropylene Compounding session, which features five presentations. The day ends with a second networking reception open to all attendees and sponsored by SABIC Innovative Plastics.

Wednesday, October 6, 2010: Day 3 Highlights

The conference's last day begins with a keynote address on **Feedstock Drivers & Their Impact on Automotive Plastics** by Bryan W. Milton, vice-president-Basic Chemical Global Business Unit at ExxonMobil. Immediately following the talk, two parallel technical sessions will begin. The New Applications & Process Development session is moderated by Bob Eller, Tom Pickett, GM, and Suresh Shah, Delphi Corp. and features six presentations. Next door, Rose Ryntz returns with part two of Surface Enhancements for High-Quality Parts, which also features six talks. The conference ends at 11:45 a.m.

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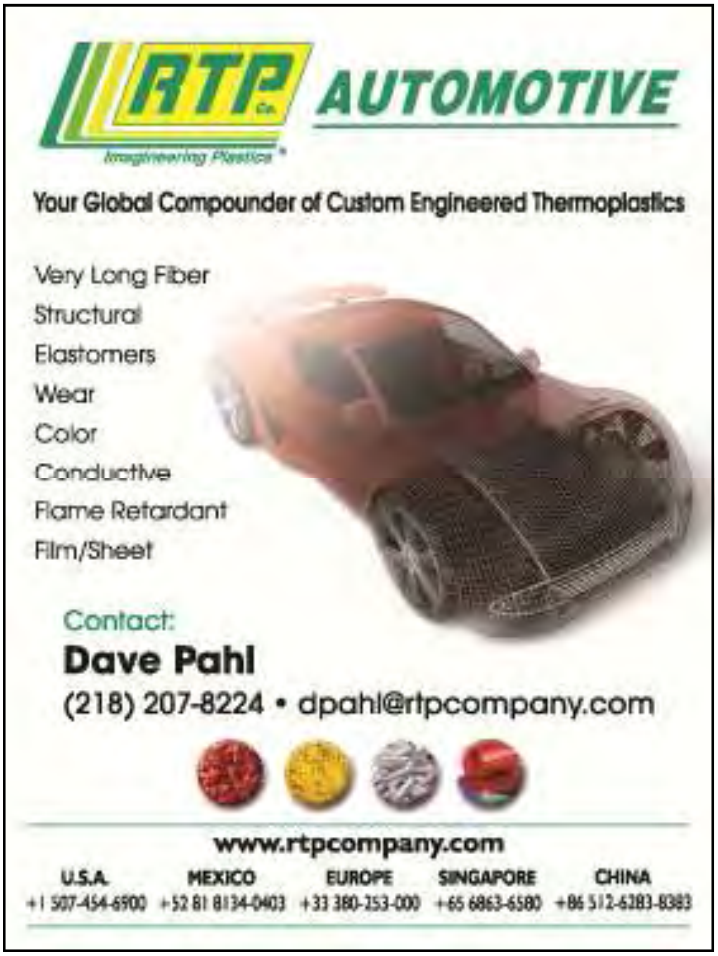

About the TPO Conference

Since 1998, the SPE Automotive TPO Global Conference has highlighted the importance of rigid and flexible polyolefins throughout the automobile – in applications ranging from semi-structural composite underbody shields and front-end modules to soft-touch interior skins and bumper fascia. Polyolefins have been the fastest-growing segment of the global plastics industry for a decade owing to their excellent cost / performance ratio. The polyolefin supply chain has experienced major changes in recent years, which are providing both challenges and opportunities for OEMs and the entire supply community. Three special sessions have been developed this year: Thermoforming returns for the first time since 2008, and completely new sessions on Polypropylene Compounding and Olefin-Based Thermoplastic Elastomers & Vulcanizates (TPEs & TPVs) have been added to help processors and end users learn about the latest technologies available from the rapidly changing world of automotive olefins.

The SPE Automotive TPO Global Conference is organized each year by a volunteer committee. The conference typically draws over 400 attendees from 20 countries on 4 continents. Roughly 35% of conference attendees work for an automotive OEM, with the balance made up of tier integrators and molders, materials or reinforcements suppliers, equipment OEMs, industry consultants, and members of academia. The event is held annually at the Best Western Sterling Inn (www.sterlinginn.com) in Sterling Heights, Mich.

The mission of SPE International is to promote scientific and engineering knowledge relating to plastics worldwide and to educate industry, academia, and the public about these advances. SPE's Detroit Section is active in educating, promoting, recognizing, and communicating technical accomplishments for all phases of plastics and plastic based-composite developments – particularly in the automotive industry. Topic areas include applications, materials, processing, equipment, tooling, design, and development.

For more information about the SPE Automotive TPO Global Conference, to view the conference's preliminary program, or to register to attend the event, please visit http://auto-tpo.com/ or www.speautomotive.com/tpo.htm , or contact the group at +1.248.244.8993

Society of Plastics Engineers
Automotive Division
1800 Crooks Road
Suite A
Troy, MI 48084 USA

Automotive Division Hotline

(248) 244.8993, visit our website at www.speautomotive.com or email info@speautomotive.com

SPE Automotive Division Directory

Division Officers and Executive Committee

Jeff Helms, Chair
Ticona Engineering Polymers
(248) 377.6895

Anthony Gasbarro, Chair-Elect
Marubeni Specialty Chemicals, Inc.
(248) 721.0276

Gregg McDonald, Vice-Chair
PolyOne Corporation
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Yvonne Bankowski, Treasurer
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Monica Prokopyshen, Secretary
Retired - Chrysler LLC
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Tom Pickett, Division Councilor
General Motors Corporation
(248) 431.9724

Maria Ciliberti, Past-Chair
Ticona Engineering Polymers
+49.6107.772.1551

Josh Madden, Director Emeritus
Material Engineering Services
(248) 505.2776

Dr. Allan Murray, Director Emeritus
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Nippani Rao, Director Emeritus
Rao and Associates, Inc.
(248) 444.1753

Committee Chairs

Dr. Norm Kakarala, 2011 AutoEPCON
Inteva Products
(248) 655.8483

Tom Pickett, 2011 ANTEC
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(248) 431.9724

Monica Prokopyshen, Education
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Bill Pippine, Membership
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Jeff Helms, 2010 Awards Program
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Fred Deans, 2010 Golf Outing
Allied Composite Technologies
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Jackie Rehkopf, Inter-Society
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