# Polymer Valley News

The Newsletter of the Akron Section of the Society of Plastics Engineers Our 57<sup>th</sup> Year of Education and Service to the Plastics Industry

#### Newsletter Contents

Meeting Announcement	1
President's Message	2
April Meeting Preview	2
Meeting Information and Map	3
Join the Board	7
Advertiser Index	8
Technical Questions on Plastics	8
Akron SPE Past Presidents	8
Membership Report	9
New Directions Initiative	10
TOPCON sponsors	
Gold – Kuraray America	11
Premier – A. Schulman	12
Highlights of February meeting	13
Minutes of Board Mtg - 2/23	16
2014-2015 Program	19
Akron Section Board Members	19
SPE Educational Foundation	20
PMAD Challenge	21
Scholarship flyer	22
Scholarship application	23
Hall of Honor form	24
Who Can Help You at SPE	25
Member Benefits Guide	27
Insertion Order form $-2014/15$	29
SPE Membership Application	30

#### Costs, Schedules, Reservations

Unfortunately, this tour must be limited to the first fifty members who sign up and pay in advance.

Please read the rules (page 4-7) and get your reservation in quickly to make sure you are not disappointed.

No onsite registration will be allowed for this tour!

# **Technical Meeting**

# Monday, March 9, 2015 5:00 p.m. - Sign in

# **Thogus Molding**

33490 Pin Oak Parkway Avon Lake, Ohio 44012





#### thogus.com

#### <u>Thogus & rp+m Tour</u>

The March meeting will be a tour of Thogus Injection Molding and rp+m (Rapid Prototype + Manufacturing LLC) which share a site in Avon Lake, Ohio.

Tours will start at 5:15 P.M. Dinner will start at 7:00 P.M. at the Wood & Wine

> April 13 – Plastic Suppliers, Inc.





We have had two highly successful meetings so far this year. Our meeting in January on "Innovation at PolyOne Corporation" featured Dr. Chris Murphy, VP of R&D and Chief Innovation Officer at PolyOne. This was our joint meeting with ACESS and drew about 75 attendees from SPE and a number of ACESS member societies. We hope to repeat this joint meeting with ACESS next year and possibly have other joint meetings with organizations such as ACS or SAMPE. Likewise in February, in spite of the weather, we had a good turn out for the SABIC Innovative Products presentation on "Advances in Structural Foam Molding Materials and Processes". We were fortunate in having an alternate for our scheduled speaker who could not get out of Boston which was under seven feet of snow. Our alternate Tom Hall had 45 years of engineering thermoplastics experience with GE Plastics including 20 years of technical service working out of Cleveland and 5 years with SABIC.

Our next meeting on March 9 will be a tour of Thogus Injection Molding and rp+m, Rapid Prototype and Manufacturing, which share a site in Avon Lake, Ohio. Sign-up deadline for the tour is February 28. Attendance is limited to the first 50 pre-registering. There will be no on-site registration for the tour.

Planning for the October 2015 Vinyltec is progressing. The Technical Program Committee is well on its way to finalizing the program. We will be sending out a Flyer announcing the TOPCON and a number of these will be taken to the SPE ANTEC and the NPE Show in Orlando in March. Also we will be mailing out an Advanced Registration and Final Program brochure sometime in May-June. Stay tuned for more information.

*Viv Malpass,* 330-342-1120, 330-802-9428© *President 2014-2015 Akron Section of SPE* vivian.malpass@tek-mark.com

#### Coming up April 13 –

#### **Current Technology in Thin Gauge PLA films**

Randy Scott – Vice President of Sales and Marketing Plastic Suppliers, Inc.

Randy has been in the plastics industry his entire working career. His work background has been in blow molded/injection molded PET containers (Sewell Plastics), rigid calendared and extruded sheet (Klockner Pentaplast), blown PVC films and shrink labels (Alcoa Flexible Packaging), copolyester resins for packaging (Eastman Chemical), blown and cast PE and PP films (Pliant), and flexible packaging (Exopack).

Randy has been the VP of Sales & Marketing for Plastic Suppliers since early 2013 and focuses on growing the company's property product lines for thin and thick Polystyrene films ("Polyflex" brand) and its unique line of PLA based film ("Earthfirst").

Randy is a graduate of Harvard University with a degree in Economics and resides in the Chicago area.







#### About Thogus

Thogus started out as a tool and die shop, Master Mold & Die, founded by Jack Thompson and Walter Gus back in 1950. Jack quickly realized there was a lot of money to be made molding products, especially proprietary products and he developed a line of fittings. By 1958 the focus of the company had changed so much that they renamed it Thogus Products Company. For the next forty years the company was primarily a custom injection molder, while still molding and selling the line of fittings.

By the time Thogus moved into the twenty first century, Jack's grandson, Matt Hlavin, was working for the company and in 2008 he was promoted to CEO. One of Matt's goal was to turn Thogus into a one stop shop for product development, prototyping and plastic injection molding. To do this he started to upgrade the molding shop equipment, training the employees and adding engineers.

Matt had begun studying additive manufacturing in the nineties and realized the possibilities of using this technology for prototype production and to diversify into high value/low volume parts by eliminating the need for a mold or injection molding machine. He was very impressed by the Stratasys Fused Deposition (FDM) machine and even though the recession had started, he decided to order one. He quickly found jobs to pay for the machine and more equipment and engineers followed. Thogus also uses additive manufacturing to produce custom fixtures, gauges, and production aids such as shadow boards and racks for use in their molding shop. However the most valuable internal uses they have found are the production of end of arm tooling and other parts for automation of the molding process.

#### About rp+m

Due to the dramatic increase in demand for prototypes and low volume production using their additive manufacturing technology, equipment and diversified engineering skills a new company was formed in 2011. Rapid Prototyping and Manufacturing LLC (rp+m) focuses on creating solutions for customers using additive manufacturing technology in polymers and metals. The business is currently split equally between prototype and production parts.

Today Thogus is a family of companies; Thogus Injection Molding, rp+m, Jalex Medical LLC, Radiation Protection Technologies (RPT) and Thogus Fittings. Matt's goal of being a one stop shop for product development, prototyping, and any scale of production from one part into the millions has been met. Ironically, while they have moved into the fore front of technology for both rapid prototyping and injection molding, they are also now producing molds of polymeric materials and metals by additive manufacturing, which sort of takes them full circle, back to the company roots.

You can find more information about Thogus at www.thogus.com.

If you would like to meet Matt and the talented, enthusiastic people at Thogus and rp+m, find out how the company was reinvented and see what they do and how they do it, you need to come on this tour! Included in the tour is also a dinner at the Wine & Wood Restaurant where owner Ron Miller has created a custom menu for this event. He guarantees, you won't be disappointed in the food!

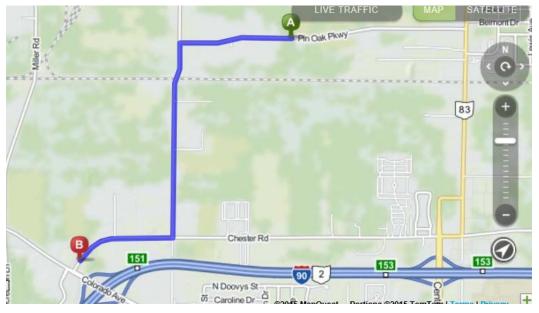






#### **Directions from Tour to Restaurant**

Start out going west on Pin Oak Pkwy toward Moore Rd. 0.6 mi Turn left onto Moore Rd. 1.0 mi Take the 1st right onto Chester Rd. 0.5 mi 38790 CHESTER RD is on the right





#### Rules for Thogus & rp+m Tour.

- 1. All attending the tour must be an SPE member in good standing (Dues paid for the 2014-2015 year).
- 2. Registration will be limited to 50 members. The registration will be by mail only and each registration must include a completely filled out registration and Visitors Access form for each attendee. Remember to circle your choice of meal. A check for \$25.00 made out to Society of Plastics Engineers, Cleveland Section must also be included.
- 3. The attendee will be accepted in the order that their paid reservation is received. All registrations must be received by February 27, 2015.
- 4. Thogus reserves the right to deny entry to their facilities of anyone for any reason. Registrant's who are denied will be notified by Cleveland SPE and their check will be returned.
- 5. The registration form and check must be sent to: Dan Crist, Cleveland Section SPE, P.O. Box 845, Brunswick, Ohio 44212.



# SAFETY GLASSES WILL BE PROVIDED BY THOGUS, BUT YOU MAY BRING YOUR OWN!



# Society of Plastic Engineers

1. Macaroni, Smoked Gouda and Wood Roasted Chicken

Cavatappi Macaroni, asparagus and roasted chicken in a smoked gouda cream sauce

2. Seafood Pasta

Shrimp, mussels, and lobster raviolis served with mushrooms, tomatoes, spinach, and a yellow tomato cream sauce

#### 3. Fresh Grilled Salmon

Atlantic salmon grilled and placed atop cavatappi macaroni with a spinach cream sauce.

#### 4. Pork Chop

Pan seared pork chop topped with strawberries and balsamic served with vegetable of the day and a rice pilaf.

House Salad included with each entrée

Soft drinks and coffee included. Cash Bar





330-343-7711 • 800-321-8805 • Fax: 330-364-9626 • www.doverchem.com

Heath Colvin, Midwest Regional Sales Manager Phone: 330-243-6158; Fax 330-365-3929 Email: hcolvin@doverchem.com





# www.4struktol.com

Struktol Company of America 201 E. Steels Corners Road | P.O. Box 1649 | Stow, OH 44224-0649 330-928-5188 | 800-327-8649 | Fax: 330-928-0013 | Email: customerservice@struktol.com



The Akron Section is in need of New Board Member as the new year begins.

Please consider becoming a Board Member to help support your Section.

Contact anyone currently on the board (see page 19)

if you are interested. Thank You!

#### **Advertiser Index**

A. Schulman	12
Akron Polymer Training Center	10
David Industrial Sales	9
Dover Chemical	7
Kuraray America	11
Polysort	9
Struktol	7

Picture your ad here ..... And also on our updated web site: www.akronspe.org

#### Technical Assistance Initiated On Akron SPE Web Site

Do you have a technical question on plastics, polymers, rubbers, etc. Our web site now has a place where you can detail your question and the Akron SPE Board will use their collective knowledge and resources to answer your questions. Check it out at http://akronspe.org/contact/. If you post a question we will post it in the following newsletter along with the answer.

**Akron Section SPE Past Presidents** 

57 years of excellence

1959-1960	Donald F. Siddall
1960-1961	Milan Krajcik
1961-1962	Foster J. Young
1962-1963	Dickson L. Stoker, III
1963-1964	Edward L. Hillier
1964-1965	John R. Russell
1965-1966	John R. Russell
1966-1967	Clyde H. Jones
1967-1968	Alan Corry, Jr.
1968-1969	Bernard M. Saffian
1969-1970	Harold R. Schick
1970-1971	Robert G. Hills
1971-1972	John J. Satterfield
1972-1973	Alexis M. Gross
1973-1974	Francis J. Maurer
1974-1975	Leverett A. Anderson, Jr.
1975-1976	Robert M. Hershey
1976-1977	Richard L. Fleshman
1977-1978	David Curtis
1978-1979	John A. Zelek, Jr.
1979-1980	Gerald W. Whitnable
1980-1981	Kathleen N. Bechter
1981-1982	Victor E. Giuffrida
1982-1983	James Steiner
1983-1984	Robert G. Hills
1984-1985	Anthony F. Dean, Jr.
1985-1986	Gene Buser
1006 1005	

Harry J. Barth

1986-1987

1987-1988 1988-1989 1989-1990 1990-1991 1991-1992 1992-1993 1993-1994 1994-1995 1995-1996 1996-1997 1997-1998 1998-1999 1999-2000 2000-2001 2001-2002 2002-2003 2003-2004 2004-2005 2005-2006 2006-2007 2007-2008 2008-2009 2009-2010 2010-2011 2011-2012 2012-2013 2013-2014

2014-2015

Judith A. Fallon William E. Tosko Robert C. Wegelin Geraldine R. Stromquist Spencer Kreiser Robert C. Wegelin Anthony F. Dean, Jr. Wayne Decamp Melanie Stewart Kevin Hershfield David Schultz John Raab Gary Taylor Kevin Malpass Kenneth L. Sharp Joseph E. Pfeiffer Robert C. Wegelin Joseph Mattingly Lloyd A. Goettler John Woodside Vivian Malpass Joseph Mattingly David A. Katz Lloyd A. Goettler David Schultz Kevin Malpass Dan Jones Vivian Malpass



Page 8

# Image: Second second

www.davidindustrialsales.com Richfield: (330) 659-3157 Perrysburg: (419) 874-1359

#### Membership report – February 2015

Akron Section has 301 active members. 5 new members added in February.

Mantheni, Dhruthiman Americhem, Inc., Cuyahoga Falls, OH

McNulty, John Akron, OH

Meldrum, Daniel Sajar Plastics, LLC, Middlefield, OH

Moore, Janice GOJO Industries, Akron, OH (Nice job Keith!)

Stanek, Lawrence ENPAC, LLC, Eastlake, OH

# If prospects can't find your website on Google, will it generate leads?

Polysort -- serving plastics companies for 18 years

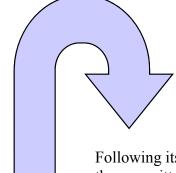
- Search Engine Optimization
- Website design
- Internet marketing

Contact us today for a <u>FREE</u> web site audit. Tel. 330.665.5918 ext. 2104 E-mail John Inama at johni@polysort.com





#### New Directions Initiative



An initiative has been undertaken to develop a set of new directions for the SPE Akron Section with the objectives of revitalization and operational efficiency. Elements to be addressed include technical program focus, section functioning, member involvements, intersociety interactions, meeting venues and liaisons with our local educational institutions.

Following its authorization by the Board of Directors at their June 2009 meeting, the committee comprising R. Sadeghi, S. Jana, V. Malpass, K. Malpass, K. Cavicchi, M. Holtman and L. Goettler (chair) has met to generate program concepts for

the upcoming year around developing technologies of local interest that involve both R&D and commercialization and are of general societal interest. Thrust areas have been identified as energy, biomaterials, medical/health applications of polymers and environmental concerns. Some program subjects being considered are medical plastic applications, e.g. implants, fuel cells, applications of nanofibers, biopolymers, alternate energy sources, water purification e.g. via desalination, photovoltaics, flexible displays, and the general process of technology transfer from lab to marketplace.

Please input your preferences and other ideas to us via the SPE website to insure that our programs are meeting your needs and interests.

The Akron Polymer Training Center (APTC) at The University of Akron provides short courses for the plastics, rubber, medical, corrosion, and adhesives and coatings industries.

#### **APTC plastics courses include:**

- Understanding Plastic Material Properties in Analyzing and Preventing Product Failures
- Making Properties and Profits: Twin Screw Extrusion Seminar
- Complete Injection Molding
- Polymer Compounding, Formulating and Testing of Plastics, Rubber, Adhesives and Coatings
- Rubber and Plastics Failure Analysis Physical and Chemical Analysis Techniques
- Plastic Material Selection and Testing
- Plastic Part Failure Analysis
- Chemistry and Technology of Polymeric Materials used in Medical Devices
- Validating Medical Molding Processes and Parts
- Color Theory and Applications

Visit uakron.edu/aptc for a complete list of APTC courses.

Customized training programs are also available. Contact APTC at 330-972-8303 or lbettinger@uakron.edu





# kura*ray*

#### UNIQUE MATERIALS THAT ADD VALUE

**Kuraray** provides a variety of elastomers. From SEP, SEEPs, SEBS, SEPS and SEEPS-OH, Kuraray SEPTON and HYBRAR are leading the way for HSBCs in the thermoplastic market. Beyond elastomers, Kuraray's KURARAY and LIR are leading the way in acrylic elastomers and liquid rubber additives.

# (**T**) A. Schulman Stronger and Improved

At A. Schulman, our innovations have inspired the world of automotive plastics for over 50 years. We are committed to our customers and to driving INNOVATIVE SOLUTIONS for the Automotive Industry.

Network Polymers + Ferro Specialty = A Stronger Solution

Through the acquisition of two innovative companies, A. Schulman has expanded its product offerings and technical abilities to better meet our customers' material needs.

#### AUTOMOTIVE PRODUCT SOLUTIONS

- Polyfort<sup>®</sup>
- Polytrope<sup>®</sup>
- Polytrope STR<sup>®</sup> = 0
- Gapex<sup>®</sup>
- Ferrex<sup>®</sup>
- Optum<sup>®</sup>
- Alcryn® MPR

Invision<sup>®</sup>

- Softflex<sup>®</sup>
- DuraGrip<sup>®</sup> TPE
- Eco-Flex<sup>®</sup>

**Come See the New ASI at the 2014 SPE:** Automotive TPO, Thermoforming, and Thermoplastics Elastomers Conferences

Call us today at 800.54 RESIN or email us at info@aschulman.com **★** A. Schulman

3637 Ridgewood Rd. • Fairlawn, Ohio 44333 www.aschulman.com/engineeredplastics

©2014 A. Schulman, Inc.

# **Highlights of February Meeting**



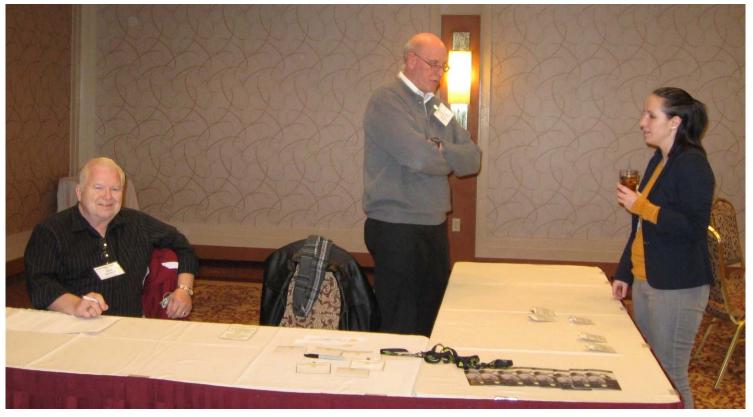
Social Hour



(left to right) Tom Hall, Speaker, Tim Farrel, SABIC and Vivian Malpass, Akron SPE President



# **Highlights of February Meeting**



(left to right) Bob Wegelin, Dave Schultz and Nicole Brostowitz

Dinner





# **Highlights of February Meeting**

Speaker Tom Hall



Question and Answer Session





Speaker Tom Hall (left) answers questions



## **Minutes of Board Meeting – February 23, 2015**

Call to Order: 5:30 PM at PEAC

**Present:** Viv Malpass, Dave Schultz, Joe Mattingly, Gary Taylor, Bob Wegelin, Robert Weiler, Tom McQuaide and Keith Pelfrey **Absent:** Dan Jones, Tony Dean, Kevin Malpass, Martin Mensch, Matt Crowder, Mark Holtman and Kevin Cavicchi

Viv had asked Keith Pelfrey- Chair-elect to handle meeting of BOD but he was present for Feb meeting - his Agenda format below:

#### Minutes - January

Organization

Review minutes from last meeting and approve

#### Reports 1 -

Technical Program -- Keith Pelfrey Sign ups for the Thogus Tour Status of the final Sustainability talk in April Planning for the 2015-16 program and committee

#### McQuaide

House -- Bob Wegelin Membership -- Rob Weiler Treasurer -- Gary Taylor Councilor -- Kevin Malpass Student Chapter -- Matt Crowder Public

Progress with Flyer/Banner for ANTEC

Old Business

Confirm attendance to 2015 Engineers week Banquet New Business

Upcoming ACESS events- March 3- STEM Event Confirm attendance at ANTEC and awards 2015-6 Pres Elect

Meeting called to order 5:30 PM January minutes reviewed briefly by BOD/Secretary, approved by BOD

#### **Organization**

Still valid GOALS need to have Action items for tracking!!

Section Goals - Reviewed bullet points

1-Close work with Cleve- status- Keith Pelfrey continuing to work very close with Ric Keeley- Cleve/Akron putting together a very diversified program for next year - dinner meeting planned

2-Increase involvement with Student Chapter - need representation present/communication - Joe Mattingly to touch bases with Matt Crowder Goodyear as well Tom McQuaide

3-Give better recognition- need to track new members monthly add to Newsletter and track / allow free first meeting - in process communications/ star on badge. Increase membership- need to do all plus more from above/ below Goals.

4-Work closely Vinyl Div- In process – moving forward

5-Continue to expand- D Schultz to contact local ACS- Chair for input, ideas

6-Continue recruitment- candidates being reviewed and considered.

Newsletter -- Tony Dean Awards -- Dan Jones - candidates for Hall of Honor and Zekan Award nominations Ed. Committee -- Kevin Cavicchi/Tom

Ed Committee activity schedule including May 18 Awards meeting Education Foundation -- Bob Wegelin Decision on any scholarship donations Vinyltec 2015 -- Viv Malpass/Rob Weiler Interest/Website -- Tony Dean Vinyltec

and planning for Adv Program Brochure



# Minutes of Board Meeting – February 23 (cont.)

#### Program- 2015-16-Keith Pelfrey

Rik Keeley and Keith soon to meet- reminder at least one ACESS Meeting- set Jan as past and need to consider Educational event as we move on PR for Akron Section.

Leadership- Making progress with getting new Members for BOD and Committees—Education, 2015-16 Technical Program, Awards and PR/Website Committees need members.

Tom McQuaide has officially joined Education Committee with Kevin Cavicchi and run through review of key items- will be making suggestions and working on major PR article for Section.

Mike Fulmer- Struktol- Product Manager Plastics Additives has informed his interest and reviewing potential for past President- PESO- Nicole Brostowitz to join BOD.

#### **Committee Reports**

#### Technical Program: Keith Pelfrey

Keith reviewed upcoming schedule- Thogus is set with Cleve- need to sign up and pay by Feb 27<sup>th</sup>- total 50 for Tour, April Meeting set at Hilton- need Abstract for speaker, May-Awards Night- in process of development-new location being considered- for higher visibility.

#### House: Bob Wegelin / Gary Taylor

Bob Wegelin and Gary Taylor inform that next venue is set- Akron- April. Noted that membership used our new pay option- worked well.

#### Membership: Rob Weiler

Rob reported membership at 301, 5 new members.

Keith Pelfrey has contacted last months new members.

Plans in place to contact and welcome new members from February list.

Plans to add STAR as New Member on badge at meeting and inform their first meeting is FREE.

Plus introductions will be carried out at meeting- NEW Member recognition.

Anticipate still would be good to track attendees from last year TOPCON as non-members- determine interest in joining their local section- determined by location they reside.

We still need to determine how best to track students and retirees after graduation and retirement as they are both valuable assets to our society.

#### **Treasurer: Gary Taylor**

Gary reviewed latest activity for calendar year 2015 with new format to include copy of bank statement on line. Bob Wegelin and Gary have secured help for review of finances 2014 - set for finalize by May. Current thoughts on Section financial responsibilities – in process of further review and modification.

#### **Councilor: Kevin Malpass**

He has asked for feedback- current Nominations- Intl late of Officiers plans to review list of items from Intl for sections- monies etc.

Viv Malpass, Kevin Malpass, Keith Pelfrey and Bob Weiler from BOD plan to attend as well as David Schultz.

#### Student Chapter: Matt Crowder - PESO Liaison

Viv requested added help to review current in -activity re Student Chapter.

Goal has listed- try to attract more student SPE members and to have added involvement in Section meetings and by local SPE members in PESO functions.

Need calendar of events as developed- Kevin Cavicchi/Tom McQuaide to aid along with Joe Mattingly. Suggestion made to review with company interns (univ students) currently employed by large local companie



## Minutes of Board Meeting – February 23 (cont.)

#### Public Interest/Website: Tony Dean

Web site is set for new 2015 year.

Need to get new advertisers for year.

Tony has asked for feedback on current website.

BOD has now listed as one of GOALS- we need to develop a PR article informing local Akron and surrounding areas about SPE Akron Section- very active, Awards and particularly monies over past many years for Scholarships - in process with Education Committee.

#### Newsletter: Tony Dean

Jenny needs BOD inputs on monthly basis.

#### Awards: Dave Schultz for Dan Jones

David confirms Hall of Honor recipient and supporting data is set plus reviewed Zekan candidate- will develop support data soon- Reviewed potential speakers for Awards Night- President of Akron section will make contacts.

Need as well to review potential Intl Awards for this or next year.

#### Education Committee: Kevin Cavicchi / Tom McQuaide

Kevin to inform soon re next Science Fair- March- Univ of Akron for 2015 as well as what could be done to help his efforts- added PR contacts at schools PTO, PTA, General Scholarship website, Akron Section website- searchable?? as well as PR in local papers- West Side Leader and ABJ.

#### **Education Foundation: Bob Wegelin**

BOD has asked for sub-committee to set up policy for funding from Akron Section to Foundation for Awards and Scholarships.

Suggested money raising event for 2015-16 year.

#### **TPE TOPCON:** Viv Malpass

Next TPE TOPCON set for Akron- Sept 2016.

#### VINYLTEC TOPCON 2015: Rob Weiler

Next meeting set for March 4th all items moving along Banner and new letterhead for flier.

#### <u>Old Business</u>

Confirm attendence to Engineers Week- Feb 26 2015

Confirmed that Dan Jones, Joe Mattingly and possibly Keith Pelfrey would attend.

#### New Business

STEM- Meeting set for March 3 at ESC-Cuy Falls

D. Schultz reviewed entire scenario as set up by Organizing Committee

Dr. Missi Zender Sakach, David Schultz and Christie Robinson

Webinars of monthly technical meetings – Dan Jones Dan Jones reported no progress, but would continue to try in new SPE year working with Intl- Scott Marko.

#### Adjournment

Meeting was adjourned at 7:11 p.m. The next meeting of the Akron SPE Board of Directors will be March 23, 2015 at the Univ. of Akron Polymer Engineering Center at 5:30 p.m. - may have to change as ANTEC/NPE set for March 22-26

Page 18

# **Programs for 2014 / 2015**

Sept. 16-18	<b>TPE TOPCON</b> <b>Building New Bonds</b> <i>Hilton Fairlawn</i>	Feb. 9	Sabic Innovative Materials Structural Foam Molding Processes and Materials Hilton Fairlawn – Akron*
Oct. 13	Nottingham Spirk Industrial Design, Tour at 11:00 a.m. Lunch buffet following at 1:00 p.m. Cleveland*	Mar. 9	Thogus Molding, Tour Two part molding / Over molding Avon Lake – Cleveland*
Nov. 10	<b>ColorMatrix / PolyOne Corp.</b> Liquid Coloring of Plastics Hilton Fairlawn – Akron*	Apr. 13	Plastic Suppliers, Inc. Current Technology in Thin Gauge PLA films Hilton Fairlawn – Akron*
Dec. 8	Holiday Celebration Wolf Creek Winery – Akron*	May 18	Akron Section Awards Night Hilton Fairlawn – Akron
Jan. 12	PolyOne Corp. Innovation at PolyOne Joint with ACESS Hilton Fairlawn – Akron*	Meetings are section deno	e joint with Cleveland Section with host

**Akron Section Board of Directors** 

Vivian Malpass <i>Tek-Mark International</i> President/Chair, Technical	330-342-1120 T 330-342-1134 F vivian.malpass@tek-mark.com	
Program, TopCon 2014	vivian.maipass@iek-maik.com	
Keith Pelfrey	330-255-6557 T	
GOJO Industries President/Chair-elect, Technical Program	330-255-6114 F PelfreyK@GOJO.com	
Dave Schultz	330-798-6535 T	
Harwick Standard Dist. Corp. Secretary s	330-798-9328 F chultzd@harwickstandard.com	
Gary Taylor	330-334-5323 T	
<i>Retired</i> Treasurer, House	taylorgandc@gmail.com	
Kevin Malpass	330-490-4743 T	
Diebold, Inc.	330-490-4788 F	
Councilor, Prior Past-President	kevin.malpass@diebold.com	
Dan Jones	330-338-8029 T	
Past-President	daniel.h.jones@sbcglobal.net	
Matthew Crowder Student - U Akron Polymer Eng. Director, Student Chapter SPE L	mjc71@zips.uakron.edu .iaison	
Bob Wegelin	330-414-1498 T	
Retired	robert.wegelin@att.net	
Director, Education Foundation,	House	

Kevin Cavicchi <i>U Akron Polymer Engineel</i> Director, Student Chapter Awards, Education	0
Tony Dean <i>Retired –</i> Director, Public I Website Manager, Newsle	, <b>U</b>
Robert Weiler <i>Amfine Chemical Corp.</i> Director, Membership	330-283-9024 T rweiler@amfine.com
Mark Holtman <i>U Akron Polymer Engineel</i> Director	330-972-6008 T ring 330-258-2339 F holtman@uakron.edu
Joe Mattingly <i>Goodyear Tire &amp; Rubber C</i> Director	330-962-5299 T Co. 330-896-7379 F joe@mattingly.us
Tom McQuaide <i>A. Schulman</i> Director T	330-630-7113 T 330-630-3349 F homas_McQuaide@aschulman.com
Martin Mensch Case Western Reserve Ur Director	570-441-8951 T niv. mwmensch@gmail.com



#### **Akron Section Society of Plastics Engineers Educational Foundation**



#### 1-15

The Akron Society of Plastics Engineers Educational Foundation operates exclusively for the benefit of and to carry out the purposes of the Akron Section of the Society of Plastics Engineers, which is to promote scientific and engineering knowledge relating to plastics by making educational scholarship grants to deserving students in the field of plastics engineering and related subjects. The Organization is supported primarily by contributions from the Akron Society of Plastics Engineers, the Society's individual members and corporations like yours affiliated with the polymer industry.

Since the inception in 1988, the Akron Society of Plastics Engineers Educational Foundation has grown to its current position through the hard work of many volunteers and the generosity of the local business community. Over the twenty three years that the foundation has been in existence, it has provided scholarships to over 245 young men and women totaling in excess of \$310,000 to assist them in furthering their careers in the polymer industry.

Our goal is to continue to grow the assets of the Foundation in order to increase the number of scholarships awarded, as well as the size of the awards, and to do so in perpetuity. In doing this, we hope to be able to contribute to the supply of well-trained individuals to support the growth of the polymer industry in the Northeast Ohio area today and well into the future.

When the Foundation began its fund raising activities in 1988, we offered those companies who contributed \$30,000 a scholarship in their name. To date we have five named scholarships, Newell/Rubbermaid, Goodyear, Ken Sharp Memorial and Jim Steiner Memorial scholarships. We are asking your company to help with the growth of well-trained individuals in the local polymer industry. Please print this page, fill out the information and mail it to Bob Wegelin, 13206 Kaufman Ave. NW Hartville, OH 44632.

Akron SPE Scholarship Donation Commitment

[ ] \$30,000 lump sum					
[ ] \$10,000/yr. next 3yrs.					
[ ] \$5,000/yr. next 6 yrs.					
[] Other:					
Company name:					
Contact person:					
Ph. # or email:					

Our named scholarship donors are recognized at the annual Awards Night of the Akron Society of Plastics Engineers. We invite you to present your tax deductible donation at our Awards Night, which is scheduled on May 18, 2015.

We are looking forward to your support of this very worthwhile cause by your fine company. Please contact me at (330) 414-1498 with any questions. Thank you for your consideration.

Sincerely, Bob Wegelin, Foundation Chair Akron Section Society of Plastics Engineers, Educational Foundation



The Polymer Modifiers and Additives Division of the Society of Plastics Engineers presents the:



The PMAD CHALLENGE is a technical writing competition designed to encourage student members to participate in SPE activities as well as to promote scientific and engineering knowledge relating to plastics. Monetary prizes will be awarded to the winners (both undergraduate and graduate students) of the competition who demonstrate excellence in technical writing and scientific creativity. The PMAD Challenge is sponsored by the Polymer Modifiers and Additives Division (PMAD) of the Society of Plastics Engineers.

<u>Awards</u>: There will be three graduate student awards (\$2,000 for 1<sup>st</sup> Place, \$1,000 for 2<sup>nd</sup> Place, and \$500 for 3<sup>rd</sup> Place) and three undergraduate awards (\$2,000 for 1<sup>st</sup> Place, \$1,000 for 2<sup>nd</sup> Place, and \$500 for 3<sup>rd</sup> Place). If a winning undergraduate student wants to carry on the proposed research, an additional award of \$1000 will be granted to support the research. This should be indicated on the **Entry Form.** As an incentive to improve the number of high-quality entries, PMAD is offering a FREE, one-year SPE membership (a \$144 value for new members) to the first five faculty members who are able to nominate 5 or more students to enter our contest (must be acceptable entries).

Entry Forms and more details are posted on the SPE Website : PMAD Challenge 2015 Link

**Eligibility**: Any current college student (graduate or undergraduate) is eligible to enter the competition. All participants, whose submissions are accepted, will receive a free one-year student membership to SPE sponsored by PMAD.

**Deadline:** Submissions must be completed and received by email by midnight, Monday, May 4, 2015.







# The Akron Section of the Society of Plastics Engineers (SPE)

**Education Committee** 

Announces:

# 2015 Essay Contest

First prize: \$100 Second prize: \$50 Sponsoring teacher: \$50 Please see attached entry form: Entries due Feb 13, 2015

# **2015 Scholarship Awards**

From \$250 – \$3,000 awarded per student annually For undergraduate students interested in polymer/plastics careers

Entries due March 13, 2015 Contacts below or www.akronspe.org for forms and rules

### For more information contact:

Robert Wegelin330-414-1498robert.wegelin@att.netDr. Kevin Cavicchi330-972-8368kac58@uakron.edu



# 2015 Scholarship Application & Renewal Akron Section - Education Foundation

1.	Applicant Name:				
2.	Your Home Address:				
	City:	Zip:	Home Phone:		
3.	Your Address at School:				
	City:	Zip:	School Phone:		
	Your Email address:				
4.					
	Course of Study:				
	Cumulative GPA:				
5.	School/College to be attended:				
	Proposed Course of Study/Major:				
	Expected Degree:		Expected Graduation Year:		
Ne	ew Applicants Only, please cont	tinue:			
6.	Please briefly describe how you inten	d to finance yo	our education:		
7.	Current and Past School Activities: (	attach separate	e sheet or resume if necessary – 1 page only please)		
8.	On a separate sheet of paper, type a sl	hort discourse	(no more than two pages) describing your		
	enthusiasm and interest in pursuing a career in plastics, as well as how your intended field of study				
	will help you achieve your career goa	ıls.			
9.	Have two (and only 2) academic refer	rences (instruc	tors or supervisors) provide the committee with a		
	letter documenting their insights on y	our scholastic	achievements and potential for future success in the		
	fields of plastics and polymers. Attac	ch these referer	nces to this application.		
	All application	s must inclu	ide a current transcript.		
	All Applicants return application by March 20 <sup>th</sup> , 2015 to the following address:				
		A 1 (1)			

Akron SPE Attn: Kevin Cavicchi 250 S. Forge St Akron, OH 44325-0301





#### NOMINATION FORM FOR ELECTION OF CANDIDATES TO THE PLASTIC HALL OF HONOR

Election to the **Plastics Hall of Honor** is conferred upon Akron area men and women who meet the following criteria 1. Displayed exceptional effort and accomplishment in the field of Plastics, and Polymers.

2. Displayed extraordinary dedication over many years that has contributed to the growth of the plastics industry.

3. Has not received national or international recognition.

The Plastics Hall of Honor seeks to recognize individuals for their quiet service, loyalty, and support over the years. They are the unsung heroes, the everyday foot soldiers of our industry - area employers, employees, and educators whose accomplishments are lacking only in recognition.

If you personally know such a deserving candidate, please forward your nomination to the selection committee, using this or any mailer.

Name of Nominee (include title)			
Address	Phone No	City	State
Zip code			
Present affiliations (Plastics, includi	ng dates and positions held)		
Former affiliations (Plastics, including of	lates and positions held)		
Specific contributions (Patents, publicat	ions, etc. to plastics industry)		
Related Plastics activities (Clubs, Organ	izations)		
Brief statement supporting the candidate	e (Attach additional pages, if necessary)		

#### Membership in SPE not required to Nominate or to be Nominated

Name of Nominator \_\_\_\_\_\_ Signature \_\_\_\_\_\_ Address Phone

#### PLEASE MAIL THIS FORM TO ARRIVE BY APRIL 24, 2015 to: Hartville, OH 44632 13206 Kaufman Ave. NW Bob Wegelin PHONE: 330-414-1498

#### E-mail questions to robert.wegelin@attl.net

Nominate a co-worker, employer, teacher, media person, leader, or any unsung hero who deserves this honor! Honorees will be installed in the Plastics Hall of Honor at the Annual SPE awards night 2014 Their names and photographs will be displayed in the Plastics Hall of Honor within the University of Akron

Nominate a co-worker, employer, teacher, media person, leader, or any unsung hero who deserves this honor!



# Who Can Help You Society of Plastics Engineers

6 Berkshire Blvd., Ste 306, Bethel, CT 06801 Phone: +1 203.775.0471 www.4spe.org

Academic Outreach	Marjorie Weiner	+1 978.618.5496	mweiner@4spe.org
Annual Awards	Kathy Schacht	+1 203.740.5430	kschacht@4spe.org
ANTEC Booth Sales	Chuck Herrholtz	+1 770.576.4974	cherrholtz@naylor.com
ANTEC Conference Management	Barbara Spain	+1 203.740.5418	bspain@4spe.org
ANTEC Paper Submission	Barbara Spain	+1 203.740.5418	bspain@4spe.org
ANTEC Conference Sponsorship	Barbara Spain	+1 203.740.5418	bspain@4spe.org
The Chain	Sarah Sullinger	+1 203.740.5425	ssullinger@4spe.org
Change of address	Customer Relations	+1 203.740.5403	customerrelations@4sp e.org
Communications	Sarah Sullinger	+1 203.740.5425	ssullinger@4spe.org
Communications Excellence Award	Kathy Schacht	+1 203.740.5430	kschacht@4spe.org
Conference Sponsorship (TopCons)	Sue Wojnicki	+1 203.740.5420	swojnicki@4spe.org
Dues Renewals and New Members	Customer Relations	+1 203.775.0471	customerrelations@4sp e.org
	+1 888.491.8833 At prompt please press 4.		customerservice+6463 9@support.boxwoodte
Employment Advertising	The extension is 1063		<u>ch.com</u>
Fellow & Honored Service			
Nominations	Kathy Schacht	+1 203.740.5430	kschacht@4spe.org
Governance Liaison	Kathy Schacht	+1 203.740.5430	kschacht@4spe.org
Managing Director	Russell Broome	+1 203.740.5471	rbroome@4spe.org
Membership Processing/Questions	Customer Relations	+1 203.740.5403	membership@4spe.org
Membership Programs/Retention	Sue Wojnicki	+1 203.740.5420	<u>swojnicki@4spe.org</u>
Mobile App – SPE Events	Barbara Spain	+1 203.740.5418	bspain@4spe.org
Pinnacle Award	Kathy Schacht	+1 203.740.5430	kschacht@4spe.org
Plastics Engineering magazine advertising	Roland Espinosa	+1 201.748.6819	respinosa@wiley.com

Sections, Divisions & Special Interest Group Administration	Kathy Schacht	+1 203.740.5430	kschacht@4spe.org
SPE Foundation / Scholarships &			
Grants	Gene Havel	+1 203.740.5457	ghavel@4spe.org
SPE Industry Resource Guide		+1 800.816.6710	spe@multiview.com
Student Chapters	Scott Marko	+1 203.740.5442	smarko@4spe.org
Topical Conference Planning	Sue Wojnicki	+1 203.740.5420	swojnicki@4spe.org
Topical Conference Registration	Sue Wojnicki	+1 203.740.5420	swojnicki@4spe.org
Webinars (non.registration)	Barbara Spain	+1 203.740.5418	bspain@4spe.org
			customerrelations@4sp
Event Registrations	Customer Relations	+1 203.740.5403	<u>e.org</u>
Website Administration	Pedro Matos	+1 203.740.5438	pmatos@4spe.org

# SPE MEMBER RENEFITS GUIDE

		SPE WEWDER DENERTIS	SUIDE /	N
	BENEFIT	DESCRIPTION	WEBSITE LINK	$\langle V \rangle$
NETWORKING	Business Networking Resources Local Section Affiliation Online Membership Directory Technical Affiliation	Connect to industry experts Network with members locally in over 75 countries Unlimited access provides the link to fellow members 24 Divisions represent major industry specialties	www.4spe.org/cc www.4spe.org/communities/sections www.4spe.org/membercenter www.4spe.org/communities/divisions	
MEDIA	Newsletters <i>Plastics Engineering (PE)</i> SPE Online Tech Focus	News & events about specific local & technical affiliations The official monthly publication of SPE Your 24/7 source for Society information Monthly electronic newsletter offering society & industry news	www.4spe.org/communities/newsletters www.4spe.org/pub www.4spe.org www.4spe.org/membercenter	
TECHNICAL	Online Technical Library Message Forums Special Interest Groups SPE Journals	Searchable database of technical articles & conference papers Online question & answer forum Emerging areas not currently covered by technical Divisions Read abstracts from our three technical journals	www.4spe.org/membercenter www.askpip.com www.4spe.org/communities/divisions/#sig www.4spe.org/pub/journal	
CAREER	American Management Association Awards Leadership Development Online Career Development Professional Recognition Scholarships & Grants Student Benefits Unemployment Services	Through a partner alliance, access AMA's educational resources Outstanding contributions recognized The opportunity to improve professionally & personally Career enrichment, job openings & resume database Distinguished grades of membership recognize accomplishments Awarded by The SPE Foundation Over 100 Student Chapters in nine countries Benefits for the unemployed member	www.4spe.org/membercenter www.4spe.org/awards www.4spe.org/communities/leadership www.4spe.org/membercenter www.4spe.org/membercenter www.4spe.org/foundation www.4spe.org/membercenter www.4spe.org/membercenter	
	Benefit	DESCRIPTION	Website Link	

# MEMBERS 10 SAVINGS

MEMBERS

10

REE

ANTEC **Career Coaching** TRAINING e-Learning Center In-plant Training Seminars **Technical Journals Topical Conferences Training Products Career Transition Services** 

OTHER Group Health Insurance **Online Job Posting** SPE BookStore SPE/MBNA Credit Card Largest annual technical conference in the industry For-a-fee services for career enhancement Online self-paced courses, live & archived presentations Seminar instruction at member's company Expert instruction on current plastics topics Subscribe to peer-reviewed articles. Available online and in print Targeted at specific technical & management disciplines Developed by SPE & other leading providers. Some Spanish titles

Outplacement program offered to member's company Health, disability & life insurance at attractive group rates A source for companies to find qualified staff Discounts on 250+ reference books & training products SPE Platinum Plus Mastercard® (US & Canada only)

www.antec.ws www.4careersolutions.org www.4spe.org/elearning www.4spe.org/training/seminars www.4spe.org/training/seminars www.4spe.org/pub www.4spe.org/conf www.4spe.org/training/products

www.4careersolutions.org www.4spe.org/membercenter www.4careersolutions.org www.4spe.org/training/products www.4spe.org/membercenter

#### Website links subject to change - check www.4spe.org for full benefits

# WHY JOIN ?

It has never been more important to be a member of your professional society than now, in the current climate of change and volatility in the plastics industry. Now, more than ever, the information you access and the personal networks you create can and will directly impact your future and your career.

> Active membership in SPE: • keeps you current • keeps you informed • keeps you connected

The question really isn't "why join?" but

WHY NOT?



Tony Dean, Advertising Manager 330-929-9916

#### Website, E-Blast & Newsletter Advertising

#### Insertion Order 2014-15

Polymer Valley News: Akron Section SPE Newsletter Delivered via email, stored at http://www.akronspe.org/newsletter.htm

Please check ad size wanted. One column is 3-7/8" wide.

This is the 56<sup>th</sup> year of the Akron SPE Section and rates are for entire season, September 2014 – Summer 2015. **Payable in Advance. Please let me know if you need an invoice.** 

Ad format must be electronic (but we can scan your original artwork). File size should be limited based on the size of the ad ordered. Oversized ads will be charged an additional fee. Acceptable formats are .bmp, .pcx, .jpg, .tif, .gif, or MS PowerPoint or Word (if you have any issues with format, please email us and we can provide assistance). **Color is Free! Color helps your ad stand out!** All ads included in newsletter, email blast and web site.

# Email artwork and this Insertion Order (completed) as an attachment to <u>francis@neo.rr.com</u>

If you don't include your email address, we have no way of sending you each issue!

(please X)	Ad Size	Dimensions	Price for year
	Business Card	One column by 2" high	\$100
	Double	One column, 2 to 4" high	\$150
	Triple	One column, 4 to 6" high	\$200
	Half Page	One column, 10" high	\$250
	Half Page	Page width (7.5"), 5" high	\$250
	Hotlink to company website	N/A	No Charge

#### The cost on a per issue basis will be calculated by dividing the "Year" price by 10

	Contact Person	Billin	g Information:
Company:			
Name:			
Address:			
Phone #:			
Fax #:			

Email address:

#### Mail checks, payable to AKRON SECTION SPE, to:

Akron Section SPE c/o Tony Dean Akron SPE 250 S. Forge Street Akron, OH 44325-0301

#### **Society of Plastics Engineers**

13 Church Hill Road

Newtown, CT 06470 USA

#### **Membership Application**

PH: 203-775-0471 • Fax: 203-775-8490 www.4spe.org • membership@4spe.org

□ Injection Molding - D23

□ Medical Plastics - D36

Delymer Analysis - D33

□ Rotational Molding - D42

□ Thermoforming - D25

□ Thermoset - D28

D New York

□ Ohio-Akron

□ Ohio-Cleveland

□ Vinyl Plastics - D27

□ New York-Rochester

D Pennsylvania-Pittsburgh

D Portugal

□ Quebec

□ Spain

Taiwan

□ Tri-State

□ Turkey

Virginia

D Pennsylvania-Susquehanna

□ Southeastern New England

□ Tennessee-Smoky Mountain

Texas-Lower Rio Grande Valley

□ Tennessee Valley

□ Texas-Central Texas

□ Texas-North Texas

Texas-South Texas

D Upper Midwest

D United Kingdom & Ireland

D Utah-Great Salt Lake

D North Carolina-Piedmont Coastal

□ Mold Making & Mold Design - D35

Delymer Modifiers & Additives - D38

□ Product Design & Development - D41

□ Thermoplastic Materials & Foams - D29

□ Plastics Environmental - D40

Contact Information Please print clearly Technical Division Member Groups - Connect with a global community of professionals in your area of technical interest. First Name (Given Name) □ Additives & Color Europe - D45 Middle Name Automotive - D31 Blow Molding - D30 Last Name (Family Name) Color & Appearance - D21 Composites - D39 Company Name/University Name (if applicable) Decorating & Assembly - D34 Mailing Address is: 
Home Business Electrical & Electronic - D24 Gender: I Male Female (for demographic use only) Engineering Properties Structure - D26 European Medical Polymers - D46 Address Line 1 European Thermoforming - D43 □ Extrusion - D22 Address Line 2 □ Flexible Packaging - D44 Address Line 3 Geographic Section Member Groups - Network with local industry colleagues. City State/Province □ Alabama/Georgia-Southern □ Australia-New Zealand Zip/Postal Code Country Phone D Benelux D Brazi California-Golden Gate Preferred Email (This will be your member login and is required for usage of online member services) California-Southern California □ Caribbean Alternate Email □ Carolinas Date of Birth (Required for Young Professional membership) □ Connecticut Graduation Date (Required for Student membership) Job Title Membership Types Check one □ France Student: \$31 (Graduation date is required above) □ Young Professional: \$99 (Professionals under the age of 30. Date of birth is required above) □ Illinois-Chicago Professional: \$144.00 \$129 (Includes \$15 new member initiation fee) □ India Choose 2 free Technical Division and/or Geographic Section Member Groups. 1. 2. □ lowa □ Israel Additional groups may be added for \$10 each. Add Special Interest Groups at no charge. □ Italy 1. 2. □ Japan 3. □ Kansas City Dues include a 1-year subscription to Plastics Engineering magazine-\$38 value (non-deductible). □ Korea SPE membership is valid for 12 months from the date your membership is processed. Payment Information Payment must accompany application. No purchase orders accepted. Check Enclosed Amount Charge: Visa Mastercard American Express Expiration Date: Account Number: D Middle East Last 3 digits from the back of MC/Visa. Mississippi Amount Authorized: CSC#: 4 digits from the front of AMEX. D Nebraska Cardholder's Name (as it appears on card):

#### Signature of Cardholder:

#### Payment by Wire Transfer Instructions

You must include account number +ABA

we may apply payment to the correct person.

USD: WELLS FARGO: 108 Federal Road, Danbury, CT 06811 USA ACCT #2040607562129 ABA #121000248 SWIFT CODE #WFBIUS6S

EURO: HSBC Bank: 9 Penn Road, Beaconsfield, Buckinghamshire HP9 2PT UNITED KINGDOM

ACCT #70841841 IBAN #GB03MIDL40051570841841 SWIFT CODE #MIDLGB22 SORT CODE #400515

The SPE Online Member Directory is included with membership. Your information is automatically included unless you indicate otherwise.

Exclude my email address from the Online Membership Directory

Exclude my address from 3rd party mailings

By signing below, I agree to be governed by the Bylaws of the Society and to promote the objectives of the Society. I certify that statements made in the application are correct and I authorize SPE and its affiliates to use my phone, fax, address and email to contact me.

Date

Signature

D Ohio-Miami Valley D Ohio-Toledo D Oklahoma □ Central Europe Ontario Colorado-Rocky Mountain Dregon-Columbia River D Pennsylvania-Lehigh Valley Eastern New England D Pennsylvania-Northwestern Pennsylvania □ Florida-Cental Florida D Pennsylvania-Philadelphia

- □ Florida-South Florida
- □ Hong Kong
- □ Indiana-Central Indiana
- Louisiana-Gulf South Central □ Maryland-Baltimore-Washington
- □ Mass/New Hampshire-Pioneer Valley
- □ Mexico-Centro D Michigan-Detroit
- D Michigan-Mid Michigan
- D Michigan-Western Michigan

- □ New Jersey-Palisades

□ Wisconsin-Milwaukee Special Interest Groups - Explore emerging science, technologies and practices

Advanced Energy - 024 □ Alloys and Blends - 010 □ Applied Rheology - 013 □ Bioplastics - 028 Composites Europe - 026 □ Extrusion Europe - 025 □ Failure Analysis & Prevention - 002 □ Joining of Plastics & Composites - 012 □ Marketing & Management - 029 □ Nano/Micro Molding - 023

U Washington-Pacific Northwest UWest Virginia-Southeastern Ohio U Western New England shaping the plastics industry. Choose as many as you would like, at no charge. □ Non-Halogen Flame Retardant Tech. - 030 □ Plastic Pipe & Fittings - 021

□ Plastics Educators - 018 □ Plastic in Building and Construction - 027 □ Process Monitoring & Control - 016 □ Quality/Continuous Improvement - 005 □ Radiation Processing of Polymers - 019 □ Rapid Design, Eng. & Mold Making - 020 □ Thermoplastic Elastomers - 006

Recommended by (optional)