Society of Plastics Engineers • Upper Midwest Section

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THE SPECIALIST

Upper Midwest Section combines with the SPE Medical Division

Our Upper Midwest Section co-hosted a very successful Medical MiniTec along with the SPE Medical Division. The MiniTec, entitled "Technology Advances in Plastic Materials and Processing for Medical Devices", was held on March 27th at the Hennepin Technical College in Brooklyn Park, MN. The MiniTech featured 14 speakers including a keynote address from the well respected Dr. Arthur E. Erdman from the University of Minnesota Medical Device Center. The event attracted a total of 90 attendees including a combined 30 students from UW-Stout and Hennepin Technical College.

Dr. Arthur Erdman opened the MiniTec with a very enlightening presentation about the recent developments at the University of Minnesota Medical Devices Center. That was followed by 13 presentations covering many medically approved plastic materials, various process technologies of these materials, and information on device design and application. Also available were 7 tabletop displays for attendees to visit for additional information on medical related vendor offerings. And finally a tour of the Hennepin Technical College plastics lab was guided by Dan Ralph, Plastics Instructor at the college.

We would like to thank our primary corporate sponsor, Boston Scientific Scimed, Inc and our tabletop sponsors: Boston Scientific, Arburg, Aspen Research, EMD Millipore, Advanced Technology Systems, Infinity Compounding, and Beaumont Technologies for their support. We also want to thank Len Czuba of Czuba Enterprises for moderating and being the SPE Medical Division liaison for organizing the MiniTec. Photos of the event are on page 9.

2014 ANNUAL GOLF OUTING

TUESDAY AUGUST 5, 2014

Registration begins at 9:30 a.m. • Tee TIme: 10a.m

OAK MARSH GOLF CLUB 526 Inwood Avenue North, Oakdale, MN 55128

Cost: $80.00 per SPE Member • $90 per NON SPE Member

If you sign up as a foursome, you pay the $80 rate for ALL players whether SPE member on non-member

Includes 18 holes with cart, lunch at the turn, awards and prizes

REGISTRATION: www.wpgolf.com/oakmarsh/spe.aspx

For more information, please contact Eric Swensied: EricS@Harbor-Plastic.com

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President's Remarks *Shilpa Manjure*

Hello to all the SPE members and a big THANK YOU to the board for trusting me with leading the activities of this Upper-Midwest section. I have been a SPE member for the past 15 years and a board member since 2008 and I am looking forward to working in this new role!!

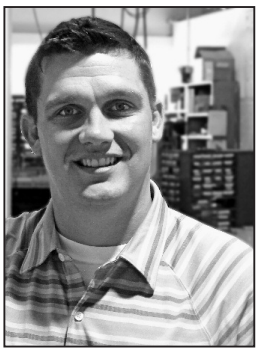
While I do have big shoes to step into as Dan Mishek, our previous president, has been a think tank firing out several ideas on how to educate the membership and have them benefit from being an SPE member, I do believe that we have a great group of very enthusiastic members on the committee willing to go that extra mile to make things happen. Hoping that you as members continue to show your support by attending our events that we have lined up this year for you – Plant tour, Golf Outing, Seminars, Networking socials and Awards Dinner!!

Our goal is to continue providing a platform for educational exchange and opportunities for networking that will help you to advance as a plastics' professional. We would also like to improve our educational program and add to scholarships for students that want to pursue a career in plastic materials and processing.

As always, new ideas and suggestions are welcome, particularly topics for seminars that you would like to see or other new events. Please do not hesitate to email me directly at shilpa.manjure@gmail.com with your suggestions!

Last but not the least – more helping hands are always welcome and I would like to invite plastic professionals for joining the board in an active role…! **See you all soon at our Plant Tour and Golf Outing this summer….!!!!**

Past President's Remarks *Dan Mishek*



I would like to thank the SPE Upper Midwest Chapter, the Board and my employees for their support over the last two years as president. I was able to learn, grow and fulfill my role as a manufacturer in giving back to an industry of plastics that continues to evolve, surprise and create opportunities for endless generations. I was able to expand my network base as well as expand my knowledge in polymers, processes and technologies. It shows that you are never done learning.

Reflectively, it was remarkable how much I learned from the past two presidents. I truly thank Paul Rothweiler and Richard Bopp. It was an honor to follow in their footsteps and to add them to my circle of friends. Each of them left their chapter post better than they had received it. As I leave my presidency chair in the chapter, I am proud to say that we continued to give scholarships to students in the plastics field of learning. I am also proud that we continued the tours of manufacturing facilities and continued our relationship with Hennepin Technical College while hosting Mini-Techs and Mega-Techs. The chapter hosted our first joint event, in a long time, with SPE National on a Medical Event (Mega-Tech) this past spring.

Moving forward, the chapter is poised to grow with Shilpa! We have an active board with a few opportunities to add to it. We have grown our balance sheet to truly make a difference locally whether it's in education, scholarships, programs, or other events. My request is simple… Don't be takers. Be givers. Give yourself to better your industry. Get involved and stay active. Add value and embrace the people that are trying to make a difference. Think about the future beyond tomorrow. Do what is right and make the difference. Now is YOUR time.

Thank you!

SPE Education Committee

Paul Rothweiler and Tom McNamara

Our Upper Midwest Section is proud to report that we have selected and awarded two scholarships to two deserving students. We selected a recipient for the Jerome Formo Scholarship Award as well as a recipient for the Tony Norris Scholarship Award.

The recipient of the Jerome Formo Award is Justin Claus of University of Wisconsin Stout. Justin is a senior in the Plastics Engineering program. He is currently working as a Research Assistant on developing biodegradable nano composites. He also is a Teaching Assistant for the Plastics Processing and Fundamentals course. Justin is also active in the SPE Student Chapter at UW-Stout. The Jerome Formo Award is a $500 scholarship award.

The recipient of the Tony Norris Award is Paula Pierce of Hennepin Technical College. Paula is in the final year in the Plastics Engineering Technology and the Manufacturing Engineering Technology A.A.S. degree. Paula is President of the SPE Student Chapter at HTC and is President of the HTC Student Senate. The Tony Norris Award is a $400 scholarship award.

Both awards were presented at the SPE Medical Device MiniTec. We want to again congratulate both recipients!!

WELCOME TO OUR NEW MEMBERS - Mahin Shahlari, Membership Chair

We are pleased to welcome our newest members of the Upper Midwest Section. As of May 31st, our section has 367 active members! Tell your friends and co-workers about the SPE Upper Midwest Section to help us grow and check out our website, www.uppermidwestspe.org, and the national website, www.4spe.org, to know all that SPE and this section has to offer

New Member	Affiliation
Marc-Henry Wakim	PlastiComp, Inc.
Paul Casciano	Plasticom
Brian Summerkamp	
Sharon McCord	McCord Executive Search
Heath Holste	Olsen Tool & Plastics.
Adam Loch	Hennepin Technical College
Blake Parks	Hennepin Technical College
Dana Thompson	Hennepin Technical College
Andrew Luedtke	
Jake Mulligan	Teel Plastics, Inc.
Jameel Qiblawi	
Dan Koughan	MN Rubber & Plastics
Ahmed Ahmed	Hennepin Technical College
Tim Coats	Hennepin Technical College
Kollie Jallah	Hennepin Technical College
Diamond Meaway	Hennepin Technical College
Mohamed Ahmed	Hennepin Technical College
Rachael Kusleika	Hennepin Technical College
Juan Nieves	Hennepin Technical College
Maureen O'Hern	Hennepin Technical College
Paula Pierce	Hennepin Technical College
Eric Shay	Hennepin Technical College
Jodi Zawaski	Hennepin Technical College
Andrew Zuis	Hennepin Technical College

New Member	Affiliation
Jason Hammerback	Darter Plastics Inc.
Nathan Hulstein	GVL Poly
Michael Bohnsack	Polaris Industries
Danielle Freitag	Target
Charlotte Havle	Target
John Schultz	UW- Stout SPE
Riley Schultz	
Denise Sawdey	
Shaun Riedesel	Falcon Plastics
Kayla Vangsgard	
Benjamin Adams	Hennepin Technical College
Rayshawn Bentley	Hennepin Technical College
Robert Cassell	Hennepin Technical College
Alex Charlton	Hennepin Technical College
Colin Cook	Hennepin Technical College
Gelate Disasa	Hennepin Technical College
Jason Ernst	Hennepin Technical College
John Francis	Hennepin Technical College
Himie Freeman	Hennepin Technical College
Sylvester Gayekpar	Hennepin Technical College
Joseph Hansen	Hennepin Technical College
Mohamud Hersi	Hennepin Technical College
Charles Hutchinson	Gotta Go Gotta Throw Inc.
Abdi Isak	Hennepin Technical College

New Member	Affiliation
Grams Kolleh	Hennepin Technical College
Thomas Lipe	Hennepin Technical College
Saosamprathna Oudom	Hennepin Technical College
David Solomon	Hennepin Technical College
Nicholas Stocker	Hennepin Technical College
Mary Sundeen	Hennepin Technical College
Chester Weah	Hennepin Technical College
Kongpheng Yang	Hennepin Technical College
Evan Collins	Winona State University
Nicholas Helberg	Winona State University
Ajay Kathuria	Michigan State University
David Bogenhagen	Airworthy Aerospace
Rick Burnton	Aspen Research
David Chou	Prophotosynthetics
Mark Schweitzer	Airworthy Aerospace
Jake Stephany	Wilbert Plastic Services
Sheridan Sparrow	LINDAR Corp
Matthew Lundblad	Winona State
Pierce Hanson	
Mike Gorzek	Alps (Air Logic Power Systems)

SCIENCE CORNER

The article presented in this Science Corner is chosen from the ANTEC 2014 proceeding on the ***EFFECTS OF SURFACE TREATMENT ON HARD TO BOND PLASTICS****, by Anne Forcum, from Henkel Corporation, Rocky Hill, CT.*

ABSTRACT: Difficult to bond plastics, such as polyolefins and fluoropolymers, are commonly used in various industries for some of the following reasons: the cost of the materials and their inherent chemical and thermal resistance. It can be challenging for manufacturers to find solutions to join these difficult to bond materials together. This paper will provide background information on difficult to bond materials, review techniques for quantifying the surface energy of a plastic, review the latest solutions for surface modification and introduce innovative adhesive solutions to meet the challenges of bonding these specific substrates.

INTRODUCTION: Difficult to bond materials, such as polyolefins, are commonly used in production, since they offer a variety of different benefits to manufacturers. These materials lead to issues when manufacturers need to join these plastics materials during production. This article will review some of the techniques that can be used in the assembly of these difficult to bond materials.

The first step will be to define what exactly is meant by a difficult to bond material. Difficult to bond materials are a classification of materials with low surface energy, smooth glossy surfaces, and poor wet out. These materials are commonly thermoplastics and/ or advanced engineering plastics.

The goal of this paper is to provide some techniques that can be used to improve the adhesion to these difficult to bond plastics. The techniques included are surface treatment modification techniques and innovative adhesive chemistries formulated to bond these materials

DEFINITION OF HARD TO BOND PLASTICS: There are two main reasons for low surface energy on plastics. The two different causes can be poor cleanliness of the parts and/or low surface activation.

All surfaces have some level of contamination no matter how clean they appear to be. Some common sources of contamination are mold release from the molding process and contamination from operators handling the parts. Contamination prevents the adhesive from coming in contact with the part and decreases the strength of the bonded assembly. One common way to reduce the level of contamination is to clean the part surface with Isopropyl alcohol.

Low surface activation also leads to poor wet out and poor adhesion on parts. There are several techniques that are used to increase the surface activation of a plastic, making it easier to bond. These techniques will be reviewed in the next section.

SURFACE MODIFICATION TECHNIQUES: ***Plasma Treatment :*** Plasma treatment is used to modify a plastic surface by bombarding a surface with ions of gas. The gas selected for plasma treatment can vary; some of the commonly used gases are Argon, Helium, Nitrogen, or Oxygen. This treatment results in the introduction of amine, carboxyl, hydroxyl, and aldehyde groups on the surface of the plastic. These functional groups increase the surface activation and surface energy of the plastic.

Corona Treatment : Corona treatment exposes the plastic part to an electrical discharge in the presence of air. This process results in the introduction of carbonyl, hydroxyl, hydroperoxide, aldehyde, ether, ester, and carboxylic functionalities. This allows for improved adhesive strength on the surface of the part. This process also modifies the surface by introducing roughness on the surface of the part. This treatment is commonly used on polyolefin based materials. Corona treatment is commonly used on line in a production environment, as it is designed to be implemented in-line in manufacturing. (Henkel Bonding Guide)

Primer : A primer is a basic chemical species applied to a surface through a solvent carrier. Once applied, the solvent is to allow a certain amount of time for the solvent in the primer to flash off. After the solvent evaporates, the active species of the primer is then left behind on the surface. This active species is a multifunctional reactive group, one reactive site reacts with the surface and the second site reacts with the adhesive. The overall effect of the primer is to increase the strength of the bonded assemblies.

Flame Treatment : Flame treatment is accomplished by briefly exposing the surface of the parts to a flame. This treatment accomplishes an increase in surface energy by introducing hydroxyl, carbonyl, carboxyl, and amide functional groups. Flame treatment is most commonly used on polyolefin, polyacetal, and polyethylene terephthalate plastics. (Henkel Bonding Guide)

EXPERIMENTAL PROCEDURE: A study was performed to explore the effects of blown ion plasma, variable chemistry plasma, flame treatment, and primer on polyethylene and polytetrafluoroethylene plastic substrates.

The adhesives included in this evaluation were cyanoacrylate, epoxy, light cure acrylic, and urethane chemistry. In this study, the substrates were exposed to the designated surface treatment method and then bonded within 24 hours. The treated plastic lap shear substrates were bonded with a 1" overlap and the adhesive was allowed to fully cure. The assemblies were then pull tested in a shear mode to determine the adhesive shear strength with and without treatment and the effect of each treatment on the adhesive shear strength.

Table 1 shows the effect of blown ion plasma, variable chemistry plasma, flame treatment and cyanoacrylate primer on polyethylene. All of the treatments are effective in increasing the adhesive shear strength of the polyethylene plastic. It is important to select the surface treatment that is most compatible with the adhesive being used, since certain surface treatments work better with certain adhesives. For example if a polyethylene assembly is being bonded with a cyanoacrylate, the best surface treatment is the cyanoacrylate primer. If an epoxy is being used on a different assembly, the blown ion plasma treatment is a better choice.

Table 1: Effect of surface treatment on Polyethylene.

Surface Treatment	Cyanoacrylate Average Strength [MPa]	Light Cure Acrylic Average Strength [MPa]	Epoxy Average Strength [MPa]	Urethane Average Strength [MPa]
Control	0.15	0.59	0.48	0.40
Blown Ion Plasma	1.5	2.2	4.3	2.8
Variable Chemistry Plasma	0.94	1.1	1.5	2.4
Flame Treatment	1.4	2.2	2.5	2.4
Cyanoacrylate Primer	2.9			

ADHESIVE SOLUTIONS FOR DIFFICULT TO BOND PLASTICS: As shown in the previous section, surface treatments modify a plastic's surface to increase surface energy. This increase allows adhesives to wet out the surface more easily and improves adhesion. Innovative adhesive solutions are

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available to overcome the issues associated with difficult to bond plastics.

Cyanoacrylate adhesives are commonly used for difficult to bond materials, based on their compatibility with the primer systems. The cyanoacrylate adhesive with primer show very high bond strength to these materials and result in substrate failure of some plastics. Structural acrylic adhesives are also commonly used to bond some of the low surface energy plastics. Henkel Corporation has developed a new methacrylate adhesive specifically designed for polyolefin bonding.

Cyanoacrylates: Cyanoacrylate adhesives are one component adhesives that bond very well to a variety of different substrates including plastics. Cyanoacrylate adhesives are also known as instant adhesives, because they build strength very quickly when enclosed between two substrates. The chemistry behind the cyanoacrylates is an acid base chemical reaction. The cyanoacrylate adhesive is stabilized in the container prior to use by a weak acid. The moisture on the surface of a part is a weak base that reacts with the adhesive to overcome the acid stabilizer and allow the adhesive to start curing. The adhesive cures into a thermoplastic adhesive when the curing is complete. A thermoplastic adhesive is an adhesive that softens when it is exposed to very high temperatures. Some of the most important processing benefits of the cyanoacrylates are that they are single component materials that do not require any mixing and that they cure under ambient conditions without the need for any external energy source. One of the most important performance benefits of the cyanoacrylate is the ability to bond low surface energy.

Cyanoacrylate adhesives are used in a wide variety of different bonding applications, such as medical devices, appliances, and sports equipment.

Structural Acrylics: Structural acrylics are adhesives that show very high shear strength and impact strength values. These adhesives are two component materials that require static mixing to cure. The curing reaction takes place via a free radical polymerization, which forms a crosslinked thermoset acrylate adhesive. The adhesive and the activator need to be mixed in the correct ratio in order to develop the high strength properties of the adhesive. The typical ratios of structural acrylic adhesives are 1:1 and 10:1 (adhesive: activator). As mentioned above, these adhesives have very high shear, impact and peel strength. The high strength is due in part to the level of rubber modifiers built into the adhesive's network. These materials are designed for bonding a variety of different substrates including metals, plastics, and composite materials.

Structural adhesives are used in applications that require a large impact resistance or toughness. Some examples of typical applications are truck panels, hand held devices, wind blades and appliances.

CONCLUSIONS: Hard to bond plastics are very popular due to the benefits they provide to manufacturing, such as improved heat and chemical resistance. The difficult to bond materials are also typically less expensive, which drop the overall cost of the assemblies being produced. One technique to improve the overall adhesion of difficult to bond materials is to select a surface treatment process that can increase the surface energy of the plastic prior to applying the adhesive. There are a variety of different surface treatments available, including plasma treatment, corona treatment, flame treatment and application of a primer. The surface treatment should be selected based on the substrate being testing, the adhesive selected for the application and the ability to implement the process into manufacturing.

There are also various adhesive options available for bonding difficult to bond plastics, such as polyolefin substrates. Cyanoacrylate adhesives and structural acrylic adhesives are the two most commonly used adhesives to bond low surface energy plastics.

REFERENCES: Henkel Plastic Bonding Guide, Volume 6, 2011.

Medical Extrusion Challenges Today

Many of the challenges of medical extrusion, today, are much the same they were 40 years ago; those being to provide the device industry with smaller, more complex, tubing structures while making them to tolerances that are as tight as an can be applied.

In our Digital Age, these challenges are compounded by the necessity to take these requirements to the next control level while, amongst other needs: appeasing the ever-shortening timelines of development teams; accommodating the burden of quality creep; and bending to the wishes of learned procurement specialists.

Development teams typically want their extrusion needs met immediately. If you aren't able to deliver the goods before the quote comes in from the other potential supplier, your organization is not fast enough. In a world where 4-6 week average lead-times used to be the norm, it is now necessary to make good on promises made for delivery in a third of that time for the bulk of the prototypes and in a day or three for enough customers, often enough, to at least have them call you back the next time they have an extrusion need.

Quality creep is a gremlin that can be conceived after acceptable prototypes have been produced and an agreement to specification has been defined. It often transforms itself over a period of months and years with given components. The seeds of origin are usually extruded components in the hands of production assembly-line personnel.

When 'improvements' are made to downstream processes, over time (usually for reason of efficiency, or to accommodate a process failure), it can render current extrusion quality unacceptable. As a result of transformed specifications it is now necessary for the extruded component to meet new demands…and often with no change to pricing!

After spending days, weeks, and sometimes months working with development teams to make a challenging extrusion part of a finished assembly it can be frustrating to find that the released version of the print, that the long-awaited repeat order is received for, now has eleven notes attached it that pertain to fourteen already critical, tightly toleranced parameters…when this happens it is time for those who can do…. to do again!

Along with quality creep there is a foundational need, as a supplier to the medical device industry, to have your quality system accommodate the needs of hundreds of other quality systems. Too, your quality system needs to be a living system. Yes, having ISO certification aligns your quality system with the outline of controls that every other ISO certified organization follows, but no matter how many ISO audits clearly support the system you have in place, there are customer, and customer independent auditors that peruse the chapters of your quality system and supporting documentation and inevitably find that there are one, two, or three nodes of your quality system that somehow conflict with the their interpretation of compliance needs. Because of this, adjustments need to be made to your system if you wish to have an opportunity of supplying these organizations extruded materials.

In regard to the touching on the aforementioned 'bending to the wishes of procurement specialists'….I'll tread lightly. Not all fit into the following category, because there are many purchasers who grew up in this industry, but it can make life very difficult when a development project is handed over to operations and the needs for producing this unique, custom, highly demanding device are placed in the hands of individuals that have had specialized training in procurement theory extracted from the contracted purchase of widgets.

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MEDICAL EXTRUSION CHALLENGES

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Requests for quotes for the extrusion go to the Cloud and get rained down on the industry by warming one spot on a touch-screen. As a result of these national, and international inquiries, companies (that may never have produced even a similar component) make promises on a quote that are used as leverage to chip away at your hard-earned, quality supported, position for supply. Yours may be the only company of the face of this blue earth that can produce what you have recently qualified for use and the pressure is immediately on for you to provide rock-bottom pricing with a 5% year-over-year price decrease as your cost to manufacture increase (and remember that adjusted print).

While we need to take all of the above in stride as we work through each new day, the biggest of all challenges (from my perspective) for medical extrusion today has to be finding technical people that can see well beyond the page; from product concept thru to production processing support. Finding, or nurturing, enough people that are fully capable of dealing with the technical challenges on today's playing field every day is a difficult thing for any growing organization.

With that, there cannot be enough said for development engineers and leaders of development teams that embrace the idea of working with the suppliers of extruded components to come to terms with specifications that meet the needs of the device (and secondary operations to manufacture the device) while accommodating the normal process variation of an extrusion process that they have supported the proper characterization of. While some customers make demands others will ask what they can do to help make the yet-unrealized a reality as effectively as possible; knowing that the strength of your existence is a foundation for theirs. Capable processes are not usually characterized by average people and successful product lines do not happen by chance.

For those who have spent any real time in the industry, all of the above really goes without saying; that the struggle to keep up with the ever-increasing physical demands in and of the extrusions utilized in this industry has always been there and always will be there. Exactly what those demands are may change; but the fact that they are there won't change as long as extrusion is used as a vehicle to deliver more for medicine.

In closing, let me say that above all else, it is necessary for a medical extrusion company to exude the integrity of its people. Remember… as a supplier to the medical device industry everything that comes to the door is an opportunity and everything that goes out is your signature.

Mike Ferrandino

Gen. Mgr., Optinova-MLE, Plymouth, MN

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Fifth Annual Awards Gala

The Fifth Annual Awards Gala was held on March 15, 2014. Social hour, meal and presentation were held at Embassy Suites in St. Paul, MN. This was followed by Cyrano a play at the Park Square Theatre. The event was attended by 23 people. Guests of honor were Thomas McNamara and his wife, Sally and Marv Grussing and his wife Mary. Marv was honored with a plaque for being a long time treasurer (12 years) of this organization. Thomas McNamara was honored for being the Upper Midwest Distinguished Member Hall of Fame. Finally, guests enjoyed Park Square Theatre's presentation of Edmond Rostand's comedy Cyrano.

Everyone enjoyed the Park Square Theatre's presentation of Cyrano.

Marv Grussing receives the Distinguished Service Award. Marv served as treasurer for 12 years

Thomas McNamara receives the Distinguished Member Hall of Fame Award

Guests enjoyed the social hour at the Embassy Suites prior to the awards presentation

MINITEC 2014

Attendees network at the 2014 Medical MiniTec

MiniTec attendees visit one of the 7 tabletop displays

Networking continues during a break

Justin Claus of UW-Stout receives the Jorome Formo Scholarship Award from Paul Rothweiler and Tom McNamara

Justin Claus says a few words to the audience

Seven of the presenters at the 2014 Medical MiniTec

Paula Pierce and Dan Ralph of Hennepin Technical College receive the Tony Norris Scholarship Award from Tom McNamara and Paul Rothweiler

Paula Pierce expresses her appreciation for the Tony Norris Scholarship

Councilor's Corner

Paul Rothweiler - Councilor - Upper Midwest Section

We are midyear and there is a lot to be positive about. We just came off an exciting conference at ANTEC, there are a number of novel compounds to explore entering the market, consumer confidence, the S&P 500 and manufacturing numbers are doing better. And let's not forget, it looks like summer may finally be on its way.

There is a lot to share with you regarding what is going on in SPE, but I need to be brief because of the limited space allowed Councilor's Corner in the newsletter. So I encourage you to hit the SPE website to learn about the items I don't have room for here, and to see the details for the items I do cover in this newsletter.

Upcoming SPE events you should have on your calendar include; NPE/ANTEC in Orlando March 23, 2015, European ANTEC in Brussels September of 2015 along with an upcoming TopCon in China. And please don't forget our Section's golf event (covered in this newsletter).

Also keep an eye out for a new SPE social media tool called "The Chain" due out in September. It is designed to bring together content plastics professionals need to stay on top of what's happening in the industry. Items like membership directory, a resource library, blogs, an event manager and discussion groups.

You will also notice the 4SPE.org website has been enhanced to include access to all technical papers and back issues of Plastics News, with the ability to download them to read later. Because of National's update to their webserver, our local Section is researching whether we should move our website back onto their servers. There is a lot to consider and your comments are welcome.

To address future governance, SPE is instituting the "Next Generation Advisory Board" (NGAB). If you are a professional in the first ten years of your professional career, you should consider getting involved with NGAB. It will help to build a better SPE and provide you with development opportunities you can use in your working environment.

In closing I want to share a story that emphasizes why I think its important for you to be a member of SPE. At the end of April I experienced some significant setbacks. SPE members from the Upper Midwest Section, the professionals at the National Office and

SPE members that I barely know from across the US heard of my situation, and each extended their sincerest sympathies along with offers to assist in any way they could. I was dumbfounded to find that I had a support group that numbered in the hundreds, if not thousands of people, just because I was a member of SPE. Not only was it emotionally beneficial, but it was also constructive and led to resolving a number of issues I was facing. If you are not a member of SPE, or know a colleague that is not a member, I would encourage you to consider my story, and how it might benefit you and your colleague. In closing I would like to take say a personal "thank you" to the Upper Midwest Section's Board and members, the SPE National Office professionals and members attending ANTEC that supported me.

Don't forget to keep talking with us in-person, on the Upper Midwest Section SPE inFacebook, Twitter, Linked-In, or the Section's website at uppermidwest-spe.org. See you at the next SPE event, and invite a colleague!

SOCIETY OF PLASTICS ENGINEERS MEMBERSHIP APPLICATION

13 Church Hill Road, Newtown, CT. 06470 USA
Tel: +1 203-775-0471 Fax: +1 203-775-8490
membership@4spe.org www.4spe.org

European Member Bureau
Tel: +44 7500 829007
speeurope@4spe.org www.speeurope.org

Applicant Information: (please print)

My Primary Address is home_____ or business_____ (check one)

Name _____ _____ _____
First MI Last

Phone Number_____ Home___ Work____ Cell___

Organization Name_____

Job Title_____

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Email(Required Field)_____

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Alternate Email _____

City_____State_____

Date of Birth_____ Graduation Date*_____

Zip/Postal Code_____ Country_____

Gender: Male _____Female_____ *Required for Student Membership

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Choose up to 2 Member Groups on the back of this application.

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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 the 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.

Signature_____ Date_____

Recommended by_____ ID#_____

The SPE Online Membership Directory is included with membership. Your information will be automatically included.
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Dues include a 1year subscription to *Plastics Engineering* magazine-$38.00 value (non-deductible). SPE membership is valid for twelve months from the date your membership is processed.

www.4spe.org

Upper Midwest Section Board of Directors 2014 - 2015

CALENDAR OF EVENTS

GOLF OUTING.....August 5, 2014
GOLF OUTING.....September 11, 2014
MEGATEC.....November, 2014
ANTEC / NPE.....March 23-27, 2014

Upper Midwest Section
(S22) Membership

October 2013

Section Total 399

SOCIETY OF PLASTICS ENGINEERS
Upper Midwest Section
Mahin Shahlari
P.O. Box 69, Circle Pines, MN 55014

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