

SPE THE SPECIALIST

Section MiniTec - TUESDAY, APRIL 20, 2010

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SYMPHONY ENVIRONMENTAL TECHNOLOGIES PLC

The Efficacy of Oxo-biodegradable Technology - Michael Stephens

Plastic Techs LLC is proud to host Mr. Michael Stephens, a leading expert in the plastic packaging industry and Technical Director for Symphony Environmental Technologies PLC. Mr. Stephens will discuss “Oxo-biodegradability - a pragmatic approach to plastic packaging waste.” There is considerable confusion and misinformation regarding oxo-biodegradable technology. This proven additive system incorporating transition metal salts has been used for many years. Lately it has become a well-publicised method to combat plastic packaging waste. There have been over enthusiastic claims related to its properties. But, these are merely exaggerations and do not detract from the genuine benefits of this material. There are a number of independent papers and test results presented that confirm the efficacy of this material. It will biodegrade, but not as rapidly as the compost biased standards prevalent in Europe and the USA today. Compost is not the only disposal route for packaging waste. Indeed in most societies it is a rare system of disposal. The oxo’ technology permits biodegradation at a rate comparable with Nature. It is harmless and allows petroleum derived polyolefin to be bio-assimilated leaving no harmful effects.

Michael Stephens has been involved in the plastic packaging industry for over 38 years. His background includes manufacturing, commercial sales and research & development. In the 1980’s and 1990’s Michael was Managing Director of Skymark Packaging International –a manufacturing company that he co-founded. This \$40million turnover company produced printed plastic packaging for food and non-food items. In 1997 Michael was invited to join Symphony as Technical Director. He developed the d2w range of oxo-biodegradable materials.

Plastic Techs LLC is a Minnesota company founded in 2009 by Raja N. Ghanem, Ph.D., to promote, distribute and market innovative plastic technology to address the growing problem of plastic packaging waste.

NATUREWORKS, LLC

Ingeo™ PLA: Product Stewardship from Cradle to Grave - Jeff Kolstad

NatureWorks Ingeo has been developed from a laboratory curiosity to a commercial reality over the past two decades. This talk will review some of the many issues which we have faced along the way, with a focus on end-of-life options and the journey to zero-waste.

Jeff Kolstad is Chief Scientist at NatureWorks, providing technical oversight across a wide range of process and product development projects. He has also served as project leader on a variety of technology development projects across the business, including development of the lactic acid production process (Cargill), lactide production and purification processes, higher heat polymer formulations, impact modification, foam formulation, and process modeling. Dr. Kolstad has been the inventor and co-inventor of more than 65 US patents and author or coauthor of several technical publications.

**For reservations or questions, email Jesse Lund at lund0751@umn.edu.
If you don't have access to the internet then call Jesse Lund at 651-329-8453
EMAIL IS PREFERRED**

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***** PLEASE INVITE A FRIEND TO JOIN YOU AT THIS EVENT *****

**April
2010**

Volume 37

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ANTEC

2010

MAY 16-20 2010

Orlando World Center
Marriott Resort and
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Orlando, Florida USA

President's Remarks

Dick Bopp

It'll be a Green Spring in the Midwest this Year!

As of the end of the day today, we will have made it through the 1st Quarter of 2010 while holding the much feared apocalypse at bay. In fact the business outlook is generally looking up with the Dow closing near its 12 month high of 10,907 and the rest of the year is looking cautiously optimistic. Inflation is in check and the FED has given every indication of continued "exceptionally" low interest rates for the extended future.



In a somewhat analogous way I'm seeing cautious optimism in the plastics industry with some strong examples from the upper midwest. For one I'm seeing a few more jobs advertised on the SPE and ACS LinkedIN sites. I'm also seeing fairly strong activity at industry conferences. For example, in early March the Plastics Environmental Division held their Global Plastics Environmental Conference (GPEC 2010) in Orlando with the theme "Sustainability & Recycling: Raising the Bar in Today's Economy," and the message was consistently one of the glass being half full.

Marc Verbruggen, CEO at NatureWorks, gave a plenary speech entitled, "Bioplastics—The State of the Union" in which he highlighted several milestones throughout the industry including NatureWorks increase capacity for Ingeo™ polylactide to 300MM lbs/yr, improved LCA (Life Cycle Assessment) to bring Ingeo greenhouse gas (GHG) emission and fossil fuel utilization to the lowest of all commercial polymers and NTR's affiliation with Biocor to begin the first collection and reprocessing of post-consumer recycle PLA back to the plant in Blair, NE. At the same time, Bob Engle, CEO Telles LLC, announced the commissioning of their 50 KT/year Mirel™ biopolymer plant in Clinton, Iowa. That said, according to Verbruggen the single most important factor limiting growth in the bioplastics industry today is the lack of capacity.

There were several other technical contributions from our section at GPEC indicative of sustained technical and commercial development. Of special note were three papers given by Prof. Chad Ulven and his colleagues from North Dakota State University, often teamed up with commercial partners like Sam McCord at MCG BioComposite and Steinwall.

- "Usage of Corn Cob as Reinforcement in Post-Industrial Recycled HDPE,"
- "Design and Evaluation of Bio-composite Materials for Injection Molded John Deere Component,"
- "Utilization of Natural Fillers to Reduce Coefficient of Thermal Expansion in Polypropylene."

Also, Jim Howard from Interfacial Solutions in River Falls, WI presented a stimulating paper announcing their new bio-based flame retardant product called deTerra™ which takes biopolymers squarely into durable applications:

- "The Introduction of deTerra™."

Two local companies were also selected as finalists in the GPEC 2010 "Clean Technology Business Forum & Competition:

Segetis: A Global, Bio-Based, Technology-Enabled, Specialty Chemicals and Plastics Company, A. Thakrar, Segetis, Inc., Golden Valley, MN.

Segetis "develops chemical and plastic product lines derived from a new, versatile monomer platform...built from levulinic acid, a chemical derived from cellulosic biomass and biobased hydroxyl compounds."

VAST Enterprises, LLC, A. van der Woude, Minneapolis, MN.

"VAST has invented and patented material science and manufacturing technology to create a composite material—made almost entirely from recycled scrap tires and recycled plastics—that is 1/3 the weight of concrete...for superior alternatives to concrete for the green building and construction market."

Continued on Page 9

WELCOME TO OUR NEW MEMBERS

Dan Mishek, Membership Chairman
 Email: Dan@vistatek.com • Phone: (651) 653-0400



Dan Mishek

We are very pleased to welcome the following new members who joined our section during the months of January and February 2010. Please take a minute to introduce yourselves to them at our next event, possibly the April MiniTec.

NEW MEMBER

Susan C. Claude
 Andrew Thoen
 Jenny Zhu
 Ted Larson
 Luke Rodgers
 Jacob Williams
 Greg Severson
 Jay Jennen
 Claude Lavallee
 Dennis Fall
 Jim A. Liddell
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SPOTLIGHT ON THE BOARD

Rolly Enderes, Newsletter/Online Editor

This issue's *Spotlight* features **Rolly Enderes**, who has been an SPE member since 2002 and been currently serving as our Newsletter/Online Editor 2007.

Rolly was responsible for launching the Upper Midwest Section's new website (www.uppermidwestspe.org) in 2009.

After receiving my bachelor's degree in Chemistry from the University of Minnesota (Minneapolis/St.Paul) in 2002, I joined the SPE to help gain further education in the various areas of the plastics industry. Shortly after graduating, I started my career as the Vice President of the newly conceived Chemstock chemical distributors. I was lucky to be able to choose where I wanted to start the company's headquarters so I chose to go back to my hometown of Chippewa Falls, WI. The company specialized in selling raw materials and additives into the plastics industry.

In 2009, I founded my new company, ChemCeed, LLC and I continue to maintain the same operations in Chippewa Falls, WI.

ChemCeed is a full line chemical supplier. The main products being sold into the plastics industry includes a line of plasticizers but we also offer solvents, alcohols, reagents, pigments and flame retardants commonly used in plastics. While ChemCeed also specializes in offering raw materials and additive into the plastics market, ChemCeed is also pursuing opportunities in the bioplastic and composites market as well.

My involvement in the SPE has helped me to gain the technical knowledge which has been useful in injecting ChemCeed in the plastic industry. It has enabled me to keep up with consistently changing technologies and has also helped in diversifying the markets in which the company serves. The SPE has also provided a great networking resource which has helped gain technical knowledge and develop new contact both locally and nationally.



Rolly Enderes



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Meal and Awards to follow

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WANTED

Archivist/Historian

Recently, our past and longtime editor of *The SPEcialist*, Nancy Kochenderfer, transferred all the past section newsletters to me. Nicely preserved in boxes and Tupperware containers is a treasure trove of historical information about our section and the plastics industry in the Upper Midwest going back many decades. It would be wonderful if these materials could be preserved and made more accessible.

So, I'm calling out to the membership for a volunteer who would be willing to serve on our board as the section archivist/historian. No formal training is required.

Some of the activities associated with this position might be to arrange for these materials to be scanned into computer files; working with Rolly Enderes, our Webmaster and Newsletter Editor, to get the materials archived on the section website; authoring a regular column in *The SPEcialist* with a reprinting of news items from days gone by; and possibly even working with a professional binder to assemble and better preserve these precious documents for posterity.

Anyone interested in applying for this position should contact, Dick Bopp, President at Richard_C_Bopp@NatureWorksLLC.com or (952) 742-0454.

Visit The Upper Midwest Section of SPE's Website
WWW.UPPERMIDWESTSPE.ORG

Acetals

Written by: Dave Erickson

Acetals are highly crystalline thermoplastic engineering resins that offer high mechanical properties and resist many chemicals. In particular, Acetals (POMs) are known for their high strength, fatigue and creep resistance, resilience, surface hardness and lubricity, toughness and excellent solvent and gasoline resistance.

A high degree of crystallinity makes Acetals stiffer and stronger than most thermoplastics, yet they are tough at ambient and low temperatures. Good dimensional stability is a key property. At room temperature, Acetals yield after strains of 8 to 10%.

Acetals absorb little water, minimizing its effect on their physical properties. They resist neutral oils, grease, petroleum-based fuels, and many organic solvents.

There are two basic types of Acetal resins: Homopolymer and Copolymer. The Homopolymer is a POM chain capped at both ends with an ester of an organic acid. Copolymers are made by reacting Trioxane (A trimer of Formaldehyde) with a Comonomer.

The Homopolymers' strength properties tend to be slightly higher than those of the Copolymers. They also have higher (short-term) heat deflection temperatures than Copolymers, but their continuous use temperature is 185 oF, compared to 212 oF, for Copolymers. The Homopolymers also tend to have somewhat greater surface hardness, and a slightly lower coefficient of friction.

The Copolymers, compared to Homopolymers, tend to absorb less water, are more resistant to Hydrolysis, and have superior processing characteristics, including reduced odor, gassing, and mold deposit. They offer faster cycling, better regrind utilization, and exhibit better long-term stability and retention of properties in elevated temperature, Acetal copolymers resist alkalies, but oxidizing agents and strong acids (pH under four) attack Acetals.

Specialized Acetal grades offer features such as:

1. High melt flow rates for thin wall molding.
2. Improved extrudability.
3. Low porosity important for machined parts.
4. Lubricants to reduce wear rates.
5. U-V Stabilizers to sunlight induced brittleness.
6. Impact modifiers to increase toughness.
7. Reinforcements to improve strength.

If there are materials you are interested in, please notify the Specialist Editor.

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Upper Midwest Section (S22) Membership

April 1, 2010

Section Total 434

Society Total14,866

OPEN Invitation to all Upper Midwest Section Schools/Colleges to JOIN the Society of Plastics Engineers (SPE)

Here are Top 10 reasons to join the SPE

Student Members of SPE have all the privileges of SPE membership afforded to other member grades, including:

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- Scholarships offered through the SPE Foundation, SPE Sections and Divisions; Cash Awards for Best Paper/Poster at many SPE-sponsored Conferences.
- FREE membership to your local SPE Section; FREE Division affiliation
- Section dinner meetings; technical programs and even Special Events.
- Professional contacts

... and much more!!!

Please contact

Shilpa Manjure, Education Chair – Upper Midwest Section SPE to learn more about the benefits of being a member of SPE and a few easy-steps to form a student chapter:
email smanjure@ntic.com or call (763) 225 6646

Councilor's Corner

Tom McNamara

The last Council meeting for SPE International was February 19, 2010. Many items were discussed and I will try to highlight the main topics.

First is the financial health of the organization. The 2009 year-end results show SPE with a net gain of \$16,000 and the SPE Foundation with a net gain of \$77,000. This provided a total net gain of \$93,000 against a budgeted \$104,000 net gain. Again, this result was only achieved thru fairly drastic reductions of staff at HQ and moving HQ into a smaller, less expensive building. The net gain numbers are before the sale of the HQ building.

Other activities that are in the process of being implemented include the reduction in the size of the Executive Committee. This and other continuous improvements activities are being brought forth by the Continuous Improvement Committee. A GAP analysis was done and revealed a desire to move more from 'governance and organization' to 'technology advancement', which is the primary function of SPE. One result would be the creation of new Special Interest Groups (SIG's) formed based on emerging technologies.

The venues have been set for five of the next six ANTEC's. They are as follows:

2010: Orlando – May 16-20

2011: Boston – May 1-5

2012: Orlando – April 1-5
(presumes co-location with NPE)

2013: Cincinnati – April 18-25
(dates proposed – not confirmed)

2014: location TBD

2015: Orlando – March 22-26
(presumes co-location with NPE)

ANTEC 2010 will be held at the Orlando World Center Marriott Resort and Convention Center. Booth space for exhibitors is available and about 50 companies have signed up so far. Nearly 600 papers and presentations have been scheduled, which is down slightly from previous years. Online registration opened in late September with fees at their lowest level since 1999 (\$550 member; \$700

nonmember). The advanced program will be published in the March issue of *Plastics Engineering*.

Two new member benefits were recently unveiled. The first is the SPE Online Encyclopedia, which may be accessed at www.4spe.org/plastics-encyclopedia. This is a dynamic list of current hot topics and new technology, with links to recent patents, journal articles, books, and conference papers. The second is SPE PRO (plastics research online), which may be accessed at www.4spepro.org. This new benefit provides new online articles each week pertaining to key areas of interest within plastics technology and polymer science. These 'briefs' will update SPE members on breakthroughs in research and technology, and keep them abreast of developments in their own technical areas of interest. The articles can be accessed by RSS feed or by email subscription and delivered directly to your desktop.

The main feature of the 2010 operating plan is to halt membership decline and return to growth of the SPE organization. SPE ended 2009 with 14,500 members and closed out January 2010 with 14,750. This is headed in the right direction but the goal is to grow to 16,000 members. The plan is to employ new pricing strategies, provide special renewal offers, and put on an aggressive email and direct mail campaign. Also, a major effort is in play to attract generation X and Y into the SPE. A new dues structure is being tested now, outreach to student chapters is increasing, more direct contact and partnering with universities, more use of Facebook and other new media, and working jointly with Sections and Divisions on strategies.

Again, you can help us grow and improve our Society. I implore all of your help in soliciting new members for our Section. Please pass on the word that our Section is operating with a full Board and have many exciting events planned for 2010. We continue to plan events in which we think professionals would like to participate including: technical mega and mini-techs, plant tours, networking sessions, golf outings, etc. Just have anyone interested contact any person on the Board listed on the last page of the newsletter. We need your help and welcome all.



Presidents remarks continued from Page 3

VAST was also a co-winner of the “Design for Sustainability” Environmental Stewardship award, shared with Amway Corporation.

And, the greening of the Midwest doesn’t stop there. Our Section is sponsoring an interesting MiniTec at Hennepin Technical College on April 20th focused on the question of polymer degradability: Additives vs. Bioplastics, featuring Mr. Michael Stephens, Technical Director at Symphony Environmental Technologies, PLC and Dr. Jeff Kolstad, Chief Scientist from NatureWorks LLC. This promises to be both informative and stimulating as the speakers give their unique perspectives on how to deal with end of life options or polymeric materials—both bio- and petroleum-based. You won’t want to miss it.

Just one week later (April 27th) the Iowa Section will be sponsoring an Alternative Materials MiniTech Conference on BioPlastics & Biocomposites featuring technical presentations from amongst others our own, Jim Howard, Interfacial Solutions, Chad Ulven, NDSU and Darin Grinsteinner, Composite Products, Inc., Winona, MN, Later in this newsletter you will see an announcement containing the entire program for this full day event.

With all this attention to biopolymers and biocomposites, one might think that we may have forgotten about our “bread and butter,” petroleum-based polymers. We haven’t. It’s just that everything looks green in the spring.

ADVERTISERS WANTED!!

The SPEcialist is the newsletter of the Upper Midwest Section of the Society of Plastics Engineers and currently circulates to over 800 plastics professionals in the region. At present, the newsletter is published and mailed four times a year. New this year is a website (<http://www.uppermidwestspe.org>) and our plan is to run the print ads on the website, too. Now when you advertise with SPE-Upper Midwest Section you will have even greater exposure than before and we plan to keep the rates we had in the past for the newsletter.

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Once the newsletter is published, you will be invoiced and instructed to issue a check to “SPE, Upper Midwest Section” for the appropriate amount and mail it to Marv Grussing (Treasurer) at 7-SIGMA, 4832 Winterset Drive, Minnetonka, MN. Terms are net 30.

Thank you for your support!
Bill Priedeman (Advertising Chair)
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PAYMENT MUST ACCOMPANY APPLICATION
No Purchase Orders Accepted

Checks must be drawn on US or Canadian banks in US or Canadian funds.

Dues include a 1-year subscription to *Plastics Engineering* magazine—\$38.00 value (non-deductible).
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By signing below I agree to be governed by the Constitution and 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.

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IOWA SPE SECTION (S79) PRESENTS:

Alternative Materials Conference 2010: BioPlastics & BioComposites

April 27, 2010 at 8:00 a.m. CDST

Cost: \$95 member, \$125 guest, \$25 student

Location: Hawkeye CC, Waterloo, IA

Overview:

“The objective of the Society of Plastics Engineers is to promote the scientific and engineering knowledge relating to plastics.” The Iowa Section of SPE has made many contributions to the industry and to its members by providing technical formats on various technologies as a way to help companies and members improve and advance their businesses and careers.

What is the planned topic for the event? BioPlastics and BioComposites, which use biomass materials, i.e., corn, soy, and other organic plant based. To provide a range of professionals, manufacturers, and educators to help with the understanding of what these materials are, how they are produced, and the impact they have in producing eco-friendly biobased products. By increasing the biocontent in biobased materials, the carbon footprint can be reduced in the manufacturing process and products.

What is the planned format for the event? To provide a venue for education and information on alternative materials for “Green Initiatives” and establishing goals for sustainability, renewability, and recyclability.

Space for exhibits has been planned for local manufacturers and suppliers to demonstrate their products and services. The speakers will be available for continued discussions at the networking breaks, lunch, and the “Afterglow & Networking” event to be held at the conclusion of the conference.

What is the target audience for the event? Small to large companies, both public and private, that use plastics for the production of parts and components for industrial, agricultural, and commercial applications.

Conference Agenda

8:00-8:30 am Registration-Main Entrance

8:30-8:45 am Conference Welcome, Dave Elbert, President Iowa Section (Channel Prime Alliance), Mayor Buck Clark, Waterloo

8:15-9:00 am Biomass 101- “Overview of Biomass and Biobased Materials”, MCG BioComposites, LLC, Sam McCord, CEO

9:00-9:45 am, Usage of Corn Cob as Reinforcement in Post-Industrial Recycled HDPE Evaluation of Composition, Properties and Potential Commercial Applications, Chad Ulven, North Dakota State University

- Bio-composite offerings
- Composition of biopolymers
- Potential applications for commercialization

9:45-10:15 am, Break/Networking/Exhibits

10:15-11:00 am, Bio-friendly additives for Polymers from unclaimed by-product or from bio-coal mining.

Dr. Joachim P. Roesler, President, New Polymer Systems, Inc., New Canaan, CT/Germany

11:00–11:45 am, Processing of biocomposites materials for injection molding applications

Mike McInnis, President, Kelly Plastics, Marengo, IA-Injection molding

12:00-1:00 pm, Lunch/Networking-Keynote Speaker-Cedar Valley Alliance & TechWorks Biomass Campus

Steven Dust, President & CEO

1:15-1:45 pm, Speaking from an OEM's Point of View, Jay Olson, Polymers Technology Manager, Materials Engineering at the John Deere Technology Innovation Center in Moline, Illinois

1:45-2:30 pm, Compression Molding of materials containing biomass materials

Darin Grinsteinner, Engineering Manager, Composite Products, Inc., Winona, MN, D-LFT equipment and why it works with Natural filler and resins, Historical materials trialed Challenges we've faced as a company commercializing Natural Products Applications utilizing currently or are being qualified as using Natural materials and/or recycled material at CPI

2:30-3:00 pm, Break/Networking/Exhibits

3:05-3:45 pm, NABL-National Ag Based Lubricants, Wes James, Assistant Director

3:45-4:30 pm, Introduction of deTerra™-Biobased Flame Retardant Polymers Interfacial Solutions

Jim Howard, New Business Development Mgr., River Falls, WI

4:30 pm,Wrap-Up-Dean Reck, Technical Sales Manager/Partner, MCG BioComposites

4:35-5:30 pm, Networking/Exhibits

5:30 pm, After Glow & Networking.

Join us at the Screaming Eagle American Bar & Grill, 228 East 4th St. Waterloo, IA 50703 (Corner of East 4th & Lafayette St.)Cash Bar

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Upper Midwest Section Board of Directors 2009 - 2010

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CALENDAR OF EVENTS

April 20, 2010

MiniTek

Hennepin Technical College, North Campus
Brooklyn Park, Minnesota

May 16-20, 2010

ANTEC

Orlando World Center, Mariott Resort & Convention Center
Orlando, Florida

July 20, 2010

Golf Outing

Oak Marsh Golf Club
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