



# Western Plastics Pioneers Newsletter

Q1 2010

The objectives of the Plastics Pioneers Association shall be to recognize achievement in the field of plastics/polymer science, engineering, technology and management; to support industry-wide educational programs; and to promote the study and improvement of plastics, science engineering and technology.

## Western Plastics Pioneer's **EVENT INVITE**



### Ocean Institute and The Pilgrim

24200 Dana Point Harbor Dr.  
Dana Point, Ca 92629  
PH 949.496.2274 oceaninsitute.org

Private tour conducted by  
**Frank Capolupo & friends**

SUNDAY, March 14, 2010  
12:30PM *Pioneers meet at the coffee cart.*

\$6.50 adults (13 years plus)

\$4.50 youth (3 yrs – 12 yrs)

Free kids (2 yrs and under)

Includes: Private Guided ONE Hour Tour & The PILGRIM Docent Tour



The mission of the Ocean Institute is to inspire all generations, through education, to become responsible stewards of our oceans.

*Our Vision is to be the world's best experiential ocean educational organization.*

The Ocean Institute has become nationally known for its hands-on marine science, environmental education and maritime history programs. More than 110,000 K-12 students and 6,000 teachers annually participate in the Institute's 61 award-winning, immersion style programs.

To learn oceanography and science, students voyage onto the ocean to feel and taste the salty sea spray, sort through live specimens, observe migrating whales and collect scientific data.

To learn maritime history and literature, students spend an entire night aboard the brig *Pilgrim* - each student hauling lines, hoisting sails, standing night watch and swabbing decks.

**ADDITIONAL INFORMATION CONTACT EVENT B.O.D. Dee Ketner – 909.573.9035**

### **Board Members**

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[SLKnapp@aol.com](mailto:SLKnapp@aol.com)

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### Registration Form

Name \_\_\_\_\_ Telephone \_\_\_\_\_

Company \_\_\_\_\_ Email \_\_\_\_\_

Children # \_\_\_\_\_ @ \$4.50 = \$ \_\_\_\_\_ Adults # \_\_\_\_\_ @ \$6.50 = \$ \_\_\_\_\_ Total Enclosed \$ \_\_\_\_\_

Please make checks payable to: **Western Plastics Pioneer**

Mail to: Rusty Millier  
8410 Seranata  
Whittier, Ca 90603

## Pioneers Scholarship Program

The Western Plastics Pioneers scholarship program is in its second year. The board of directors voted to increase the individual 2010 award to \$2,000.00. Fall mailings have been sent to various colleges as prepared by the SPE Foundation which administers the program on our behalf. Student applications are due by February 15, 2010. Once reviewed by the SPE foundation for completeness and accuracy, all applications will be sent to the WPP board for review and selection.

The scholarship award is available to undergraduate students including those enrolled in associate degree or technical degree programs. Applicants attending a school in Arizona, California, Oregon or Washington who have demonstrated an interest in a plastics industry career will be considered for the \$2,000.00 award.

Our members' donations for the 2009 program were greatly appreciated. We extend a special thank you to those who donated \$100.00 or more; Lewis Barnett, Warren Buschmann, Frank Capolupo, Spencer Knapp, Greg Leighton, Richard Luciano, John La Fountain, Terry Price, and Brian Ray.

Once again you have an opportunity to make a donation for this wonderful program. Let's get the giving spirit in high gear and double the \$1125.00 donated last year. The recipient of the 2010 award will greatly appreciate the \$2,000.00 which will go a long way toward paying college expenses.

Please note our new mailing address:

**Western Plastics Pioneers**  
**1840 W Whittier Blvd. #143**  
**La Habra, CA 90631**

Name \_\_\_\_\_

Company \_\_\_\_\_

Amnt \$ \_\_\_\_\_ Check # \_\_\_\_\_ Date \_\_\_\_\_

*Thank you for your participation in the scholarship program.*  
*Richard Luciano, Vice President*

## Member Spotlight



Dr. James C. Leslie  
CEO, ACPT Inc.

Dr. James Leslie had received his Bachelor Science degree in Chemical Engineering from Penn State and both his Master of Science and Doctorate degrees in Chemical Engineering from Ohio State.

Working at Hercules Inc. from 1964 through 1978, he directed the fabrication of the first structural graphite composites to fly on an aircraft and to be utilized on a satellite. These applications included a wing tip for the Northrop F5, a spoiler for the Boeing 737, and the truss structure of the ATS Satellite. Other non-military graphite composites were used in the manufacture of sporting goods golf shafts and tennis rackets.

Dr. Leslie is the founder and CEO of ACPT, Inc. ACPT is internationally recognized for its excellence in developing and manufacturing advanced composite structures and hardware. ACPT has pioneered the transfer of aerospace design and manufacturing technology to commercial applications and has successfully developed and is currently producing composite drive shafts for automotive, marine, military, aircraft and industrial use. ACPT is also producing composite drill pipe for "short radius" drilling operations.

Jim has published more than 50 papers and has spoken extensively on the subject of Advanced Composites. He is internationally recognized for his knowledge and experience in this area.

Dr. Leslie has been very active in both SAMPE and the Society of Manufacturing Engineers (SME). He has served 2 terms on both the Board of Directors of SME and as an advisor to the Composites Manufacturing Association of SME and has been honored by SME through the awarding of the level of Fellow Member and the Jud Hall Award. The latter is awarded annually to an individual in recognition of outstanding achievement in the field of manufacturing with composite materials. He was honored by SAMPE by being awarded the level of fellow member in 2007 and was also presented the "Outstanding Engineering Alumni" award by Pennsylvania State University April 23, 2007.

Dr. Leslie is also currently serving as the program chair for the SAMPE 2011 International Symposium in Long Beach May 23-27, 2011.

If you would like to participate, please contact him at 714 895 5544 or [j1leslie@acpt.com](mailto:j1leslie@acpt.com). He is looking for session chairs, paper presenters, and/or any way that you could assist in generating a successful program for the Long Beach SAMPE ISSE 2011 event.

**C & G Mercury Plastics**  
Custom Injection Molders of Thermo Plastics

Gregory Leighton  
President

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MEMBER Society of The Plastic Industry

## Plastics History: Henry Ford's Soybean Car



*Henry Ford tries out his first car. What was it made from? Plant based materials- including hemp "the axe bounced, and there was no dent..."*

In the 1910s Henry Ford experimented with using agricultural materials in the manufacture of automobiles. Ford was partly motivated by a desire to find nonfood applications for agricultural surpluses, which existed then as they do now. He tried out many agricultural crops, including wheat.

Coil cases for the 1915 Model T Ford were made from a wheat gluten resin reinforced with asbestos fibers. Eventually he focused on soybeans, and in the 1920s began promoting soybean products at every opportunity. He recruited Robert Boyer, a young chemist, to lead the research. In the following few years, uses were found for soy oil in automobile paints and enamels, in rubber substitutes, and in the production of glycerol for shock absorbers. Viscous solutions of soy protein were extruded and "set" in formaldehyde bath to form fibers for upholstery cloth. But Ford's special interest was in converting soy meal into plastics. Soy meal is what is left after soy-beans are crushed or ground into flakes and the soy oil extracted with a hydrocarbon solvent. Soy meal is about 50 percent protein and 50 percent carbohydrate- mainly cellulose. The compositions of Ford's soy plastics, and the methods of their processing, evolved over time and varied according to the application. In general the resin core was made of soy meal reacted with formaldehyde to produce cross-linked protein (reminiscent of casein plastics and animal horn), but for added strength and resistance to moisture, phenol or urea was co-condensed with the protein. The resulting resin was part phenol formaldehyde (or urea formaldehyde) and part cross-linked soy protein; the soy meal was not merely a filler.

The condensation took place in the presence of the cellulose and other carbohydrates that were part of the soy meal. Fillers, up to 50 to 60 percent, provided additional cellulose fibers, from **HEMP**, wood flour or pulp from spruce or pine, cotton, flax, ramie even wheat. The final mix was about 70 percent cellulose and 10 to 20 percent soy meal. When additional strength became necessary, glass fiber was also used. Relatively low pressures and temperatures were used in the molding process. Soy meal plastics were used for a steadily increasing number of automobile parts- glove-box doors, gear-shift knobs, horn buttons, accelerator pedals, distributor heads, interior trim, steering wheels, dashboard panels, and eventu-

ally a prototype exterior rear-deck lid. Finally Ford gave the go-ahead to produce a completely prototype "plastic car," including an entire plastic body. The body consisted of fourteen plastic panels fixed to a welded tubular frame (instead of the customary parallel I-beam frame). The panels and frame each weighed about 250 pounds. The total weight of the automobile was 2,300 pounds, roughly two-thirds the weight of a steel model of comparable size.

Ford, a master at generating publicity, exhibited the prototype with great fanfare in 1941. But then, by late 1941, Ford no longer publicized the "plastic car". The reasons for this are unknown, but his media contacts, the strength of the DuPont organization and World War II are likely to have played a role. Also, technology was not yet well developed and limited options. Plastics have become more common, but plastics from renewable resources got sidetracked. This is where Hemp Plastics have continued with research projects and collaborations to re-visit and re-new the use of plant based plastics.

### **Natural Materials Are the New Job One at Ford**

Today a six-member engineering team at Ford is looking for new applications for soybeans and other sustainable materials in an industry-leading effort to replace hydrocarbon-based materials.

The group, formed in 2000, has had tremendous success to date. Soy-based foam seat cushions and backs will be used in more than one million Ford, Lincoln and Mercury vehicles by the end of this year, leading to a total reduction in carbon dioxide emissions of more than 5 million lb.

The first production model to use the new foam was the Mustang in 2007. It's now used in seven vehicles. Soy oil is used to replace hydrocarbon-derived oils to make polyols, one of the reactive components that produce polyurethanes.

### **Bioplastics' Potential**

Another area of interest, possibly farther out, is use of bioplastics. The big thing here is their compostability. That is, after the parts finish their useful life, they are sent to a landfill where they decompose. Current plastics used on cars are theoretically recyclable, but in fact are mostly sent to anaerobic landfills, where they stay for a very long time.

The big technical hurdle is timing the decomposition. "We're looking for switches, such as a microbe that would exist in a landfill but would never exist in the vehicle," says Mielewski, of Ford engineering. "With a switch, the material won't decompose until it's exposed to humidity, heat, and a microbe."

There's nothing in production yet, but closer may be use of compostable bioplastics for packaging, such as shrink wrap, used by Ford.

*Mielewski has three degrees in chemical engineering from the University of Michigan.*

*Source: [www.hempplastic.com](http://www.hempplastic.com) & [www.designnews.com](http://www.designnews.com)*





# 28<sup>th</sup> Annual Golf Tournament for Plastics Education



**!! Save the date !!**

Society of Plastics Engineers—Southern California. We have listened to you, our members and have moved the date to a Saturday. This year's tournament will be held at the Jurupa Hills Country Club. This privately owned club, open to the public celebrates it's 50<sup>th</sup> year of operation. It has just completed a two year renovation. A jewel of a course in a mature setting just off of the 15 freeway in Riverside.



We will have a Shotgun start, Scramble format with prizes for Longest drive, Closest to the tee and low score 4sum.

Start time 11:00AM. Putting contest before the start.

Bag lunch provided and awards banquet to follow the tournament.



SATURDAY JUNE 5 **KEEP THIS DATE OPEN** (registration opening soon)

**Help sponsor this event**

**Tee Sponsor \$100    Flag Sponsor \$250**

**For more details, email [golf@socalspe.org](mailto:golf@socalspe.org)**

2/11/2010 6:30 AM