

The South Texan

2003 Marx Isaacs Award for Outstanding Large Section Newsletter

Voted "Best Newsletter" at 2009 AIChE Leadership Development Conference



Meeting Sponsor



Monthly Meeting November 5, 2009

Location: Pelazzio Banquets (West side of Houston)

This month's meeting sponsor is Victrex: *Viktrex plc is the leading global manufacturer of high performance polyaryletherketones, including the versatile VIKTrex® PEEK™ polymer.*



This month's meeting is jointly sponsored by STS and the South Texas Section of the Society of Plastic Engineers.



PAEK in the Oil Patch: High Temperature Thermoplastics as Metal Alternatives

Speaker: Alan Wood, Victrex

Abstract: This talk focuses on Poly(aryl ether ketones) [PAEKs] – a range of thermoplastics with truly outstanding all-around performance. The factors which determine the selection of PAEKs over other materials will be considered in the context of the general properties of these materials, and specific examples will be used as illustrations. PAEKs are often seen as *metal-replacement materials* and some current developments at Victrex will be reviewed which are aimed at furthering the penetration of PAEKs into applications which would normally be considered to be the domain of metals. The properties of a finished product made from a thermoplastic often depend heavily on the technique of manufacture. The developments showcased in this presentation will involve novel processing techniques aimed at optimising the properties of PAEK.



Bio: Alan graduated in 1974 with a degree in Polymer Science and Technology (Chemistry) and started his professional career working for a company which manufactured a broad range of plastics and rubber processing equipment. After eight years as an *engineering apprentice* Alan moved into academia at the University of Manchester, UK, progressing to Senior Lecturer before joining Victrex plc in August 2003. While working at the University, Alan's main interests lay in polymer processing, in particular with melt temperature determination. Alan is currently the Principal Scientist in the Global Applied Technology team at Victrex Headquarters, UK.

NEW LOCATION: Pelazzio Banquets (Formerly Omni Palace), 12121 Westheimer Rd, Houston (Westheimer and West Houston Center Blvd). For details, see page 3.

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Workshops begin at 5:30 PM

Process Engineering/Operations (PE/PO) I: Polyetherketone PEEK Composites: The benefits over thermosets and an introduction of novel processes

Speaker: Alan Wood, Victrex

Abstract: As the industry moves to more aggressive and demanding operating environments, technology will play a significant role in the drive to reduce the overall cost of hydrocarbon recovery. The selection of the correct material is a key component towards the failure or success of overcoming these technical challenges. The role of high performance materials is becoming increasingly important in the design and development of applications ranging from seal rings and downhole electrical connectors to electrical cables and pipe. We will take a closer look at innovative piping solutions delivered to the oil and gas industry, as well as ideas for emerging applications.

Bio: Alan Wood is our dinner speaker as well. Please refer to Page 1 of this newsletter for his bio.

Process Engineering/Operations (PE/PO) II: Polyetherketone PEEK Pipes: The next generation pipe technology for superior reliability under harsh conditions.

Speaker: Guglielmo (Bill) Pernice, Victrex

Abstract: As the industry moves to more aggressive and demanding operating environments, technology will play a significant role in the drive to reduce the overall cost of hydrocarbon recovery. The selection of the correct material is a key component towards the failure or success of overcoming these technical challenges. The role of high performance materials is becoming increasingly important in the design and development of applications ranging from seal rings and downhole electrical connectors to electrical cables and pipe. We will take a closer look at innovative piping solutions delivered to the oil and gas industry, as well as ideas for emerging applications.

Bio: Bill graduated in 1987 with a BS in Biochemistry and then completed his MBA 1990 at the University of Houston. Bill started his career with Belleli an oil and gas service company involved in the manufacture of HPHT pressure vessels and offshore platforms. Bill then moved on to Arkema in the Technical Polymers group progressing from Technical Sales to Global Marketing Manager handling various fluorinated and polyamide product lines. After eight years with Arkema Bill joined Victrex and is now the Emerging Market Development Manager responsible for developing VICTREX® PEEK™ pipe business opportunities and applications throughout the Americas.

Professional Development (PD): Resume Review (Bring yours!) and STS's CE/O

Speaker: Jim "Red" Murphy

Abstract: This session demands each participant bring his/her resume. Mr. Murphy will speak in generalities without mentioning specific names. Many STS members have benefited by using CEO. Depending upon the economic circumstances, CEO has placed 1-5 members per month. For years, we mailed out our "Profiles" monthly at great expense, but for the last three years we have used the Internet and can reach 1200+ companies per month. We also work with 24+ job placement firms.

Bio: Jim "Red" Murphy was awarded the Joseph P. Kennedy, Jr. Foundation scholarship to Notre Dame. Upon graduation he began work for Monsanto Company in St. Louis; Chocolate Bayou, Texas; New York City; Houston, Texas; Newport Beach, CA. After 18 Years in Tech Service, E&C, and Sales/Marketing, he joined Church & Dwight (Arm & Hammer baking soda) for 15 years in Sales/Marketing and Research. Later, he joined Naylor/Pasadena TX and Actrachem/Chicago & Lakeland FL, both companies mainly in Sales & Engineering. Mr. Murphy has been an STS member since 1962. He has worked 39 of 40 OTC meetings. He began his CE/O work in 1990 and has been reviewing resumes ever since.

Environmental (ENV): Refrigerated Vapor Recovery

Speaker: Townsend Hilliard, Purgit Emission Control, Townsend.hilliard@purgit.com

Abstract: This is a short review of refrigerated vapor recovery including its benefits and limitations and brief comparison to combustion systems. The technology has various industrial applications (tank degassing and tank loading). The regulatory compliance issue associated with various degassing application will be discussed.

Bio: Townsend Hilliard graduated from Texas A&M in 2003 and have been working with Purgit helping to develop the process of mobile units. A year ago, Townsend switched to a marketing role to bring in new customers. In addition, he has been an active participant in tank degassing regulation using closed loop system and technology development for tank/ship/barge loading applications.

Meeting Registration Information

Membership in STS-AIChE is a bargain at \$20/year. If you wish to become a member, you may join through our secure online shopping cart (please use the provided link).

	<u>Pre-Registration</u> <u>Members</u>	<u>Pre-Registration</u> <u>Non-Members</u>	<u>At the door</u> <u>Members</u>	<u>At the door</u> <u>Non-Members</u>
Regular/Retired	\$15	\$20	\$25	\$30
Student/Unemployed	\$10	\$15	\$20	\$25

NOTE: You have until 4 PM the day before the meeting to pre-register online. After that, you will be required to pay the higher cost at the door.

Register now using our online shopping cart:

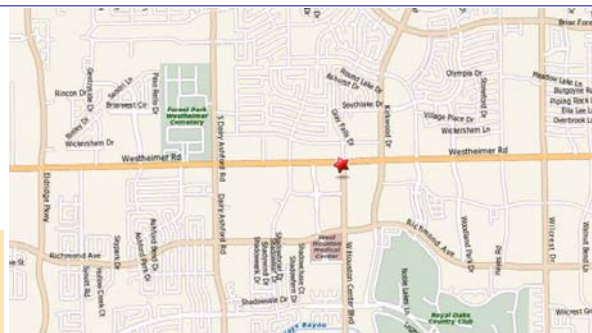
<http://www.sts-aiche.org/register.php>.

Our shopping cart requires the use of COOKIES. If you have cookies turned off, you may get a "session timed out" error. Please refer to the FAQ page in the shopping cart for details on how to turn cookies on.

Attendees of the meeting will earn 1 PDH for the Texas Professional Engineer Continuing Education Programs. Remember to track your hours!

New Meeting Location - Pellazio Banquets!

This month's meeting will be held at Pelazzio Banquets, 12121 Westheimer Suite 130, Houston, 77077. This is the former Omni Palace banquet hall. Double click on the map to the right for directions from your location.



Future Meetings

Date	Sponsor	Location	Dinner Speaker Topic	Comments
December 3, 2009	None	Spaghetti Warehouse	Holiday Special—Murder Mystery!	Arranged by Young Professionals. Bring your spouse, significant other, friends and colleagues.
January 7, 2010	URS	Brady's Landing	Greenhouse Gas Emissions/Mark Lockhart	
February 4, 2010	Shaw Energy & Chemicals	Marriott Westchase		
March 4, 2010		Brady's Landing		Energy Forum

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Upcoming Young Professional Events

Oct. 30th Flying Saucer 6:00 – 10:00 pm
 Nov. 14th Annual Picnic 11:00 – 2:00 pm



With Halloween being on a weekend this year, our YPs will be enjoying the festivities at the **Flying Saucer Friday, October 30th** at 6:00 PM. Come out and have a drink with us as we celebrate Halloween in style in downtown Houston!

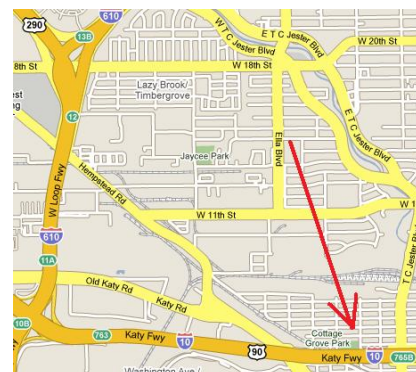
Visit our **new** STS-AIChE YP Facebook page with news for all YP events and other Houston area news and events. Be sure to also check our webpage at <http://yp.sts-aiche.org/> for additional information on these and other events!

Our YP Group is looking for new leaders for the upcoming year. If you are interested in joining the planning committee please e-mail us at info@sts-yp.org.



Third Annual STS-AIChE Picnic

The Young Professionals will be hosting our 3rd annual STS-AIChE Picnic, **Saturday November 14th** from 11:00 AM – 2:00 PM at Cottage Grove Park. Cottage Grove Park is located west of TC Jester off I-10 and the Service Road. Bring the family out for great food, games, and prizes!



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Young Professional Events Recap

Young Professional Events Recap

Our YP Group has been quite active this fall!

Last month we hosted an event for all our adrenaline seeking YPs with rock climbing at the Texas Rock Gym. On the left is Kelly Richardson anchoring Omar as he climbs for the new record to the top! Dharmendar shows off his skills on the right as he climbs on the expert course!

We had many wonderful YPs volunteer at the Process Technology Conference this past month. Below are a few YPs taking a break from the many interesting sessions.



ioMosaic Presents.....

Effective Emergency Relief Systems Design Training

ioMosaic has developed an Effective ERS Design course with the objective of offering operating companies, engineering firms and regulatory agencies with a structured and comprehensive training program for a wide range of ERS design, risk management and compliance issues. This program offers core modules plus a wide choice of electives directed towards more complex ERS design challenges and methodologies.

Practical Emergency Relief Systems Training

October 19 - 21, 2009 | ioMosaic Houston Office

Overview

The Practical ERS Design module serves as an ERS primer and focuses on industry codes / standards, regulatory requirements, ERS contingencies, calculation methodologies, and long-term ERS data management.

This two and a half day course will help process / safety engineers and managers better understand, plan and execute future ERS design work for plant projects such as PHAs, unit expansions, debottlenecking studies, etc.

Auditing Emergency Relief Systems Training

October 21, 2009 | ioMosaic Houston Office

Overview

The Auditing ERS module provides guidance on how to conduct efficient and effective ERS design audits to ensure compliance safety, and reliability. Special emphasis is placed on how operating companies can leverage past efforts to bring their existing ERS documentation into compliance.

This half day module will help process / safety engineers and managers achieve compliance and address potential discrepancies in their ERS documentation.

Contact us for more information:

ioMosaic Corporation

2401 Fountain View Drive, Suite 850

Houston, Texas 77057

Tel: 713.490.5220 Fax: 832.553.7283

www.ioMosaic.com | sales@iomosaic.com

STS-AIChE 2008 Annual Awards Announced at October Meeting

Eight STS members were honored at the October Monthly Meeting in Galveston for their achievements in 2008. Congratulations to all the winners!

Note: Photos will appear in the December newsletter.

2008 STS Best Applied Paper

The 2008 STS Best Applied Paper is "Synthesis of High Aspect-Ratio Carbon Nanotube 'Flying Carpets' from Nanostructured Flake Substrates", Cary L. Pint, Sean T. Pheasant, Matteo Pasquali, Kent E. Coulter, Howard K. Schmidt, and Robert H. Hauge, *Nano Letters*, 2008, 8 (7), 1879-1883. All of the 2008 Best Applied Paper Award recipients are associated with Rice University.

2008 STS Best Fundamental Paper

The 2008 STS Best Fundamental Paper is "Observing Metal-Catalyzed Chemical Reactions *in Situ* Using Surface-Enhanced Raman Spectroscopy on Pd-Au Nanoshells", Kimberly N. Heck, Benjamin G. Janesko, Gustavo E. Scuseria, Naomi J. Halas and Michael S. Wong, *Journal of the American Chemical Society*, 2008, 130, 16592-16600. All of the 2008 Best Fundamental Paper Award recipients are associated with Rice University with the exception that Dr. Heck is now associated with Texas A&M University.

2008 STS Work Shop Programming Award

The 2008 STS Work Shop Programming Award recipient is [Jack Chosnek](#) of KnowledgeOne for his continued work in the Process Safety Management Workshop.

2008 STS Outstanding Young Professional Award

The recipient of the 2008 Outstanding Young Professional Award is [Yoojung Kim](#). Yoojung obtained her B.S. in Chemical Engineering from University of Illinois at Urbana-Champaign in December 2004. Currently, she is a Production Engineer at Ascend Performance Materials, supporting Acrylonitrile plants and optimizing their operations to maximize product recovery. Prior to her current position, she worked three terms as a co-op engineer at Lyondell while attending University of Illinois at Urbana-Champaign.

Upon graduation, she joined Lyondell as a process engineer where she supported ethanol plant from daily operations to capital projects. Yoojung has been actively involved with AIChE, both locally and nationally. She became a board member of AIChE South Texas Section Young Professionals in 2007 and worked with the STS-YP board to develop and execute plans to attract more local young professionals to join and get involved in AIChE. She served on the STS Executive Committee as the Communications Chair in 2008. She is also the national YPAB board member and presented at the national conferences on topics that are relevant to students and to encourage their continual involvement in AIChE post-graduation.

2008 STS Distinguished Service Award

[Charles A. \(Mickey\) Reeves](#) is the recipient of the 2008 STS Distinguished Service Award. A write up will appear in the December *South Texan* after the Award is presented at the November 5th Monthly STS Dinner Meeting.

Best Paper Judging Committee Member Recognition

The STS Awards Committee would like to recognize the folks who assisted our Best Papers Judging Chair, Easwar Ranganathan (Shell Global Solutions US Inc.) with voting for the Best Paper Awards this year. A total of 3 papers were received in the applied category and 7 papers were received in the fundamental category. The best papers were selected based on the reviews provided by the judging committee. This Judging Committee (All affiliated with Shell Global Solutions US Inc.) consisted of:

Leandro Balzano
Kailash Dangayach
Sujatha Degaleesan
Dave Denley
Smita Edulji
Luis Filobelo
Puneet Gupta
Zhongxin Huo

Sriganesh Karur
Timothy King
Anand Nilekar
Chen Ramachandran
Easwar Ranganathan
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Mike Reynolds
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STS Member Recognized at London Thermodynamics Symposium

STS Member Norman Carnahan Honored at 2009 Imperial College of London Thermodynamics Symposium (Reported by Patsy S. Chappelear)

The **Thermodynamics 2009** conference, held at Imperial College in London, was the 21st meeting in a series of thermodynamics conferences founded in 1964 by John Rowlinson and Max McGlashan. Our own Norman Carnahan was invited to present one of the plenary lectures, on the occasion of the 40th anniversary of the publication of the Carnahan-Starling equation of state [EOS] for hard sphere fluids. His presentation was both interesting and informative.

Forty years ago Norman was beginning the second year of his PhD studies with Professor Ken Starling, at The University of Oklahoma. On "a dark and stormy night" – October 31, 1968 – as he did door duty for the local parade of trick-or-treaters, he was reviewing the mountainous stack of all of the research articles and papers he had read, in preparation for a major meeting with Starling the next day. He went to bed long after midnight. The next morning, while having a quick breakfast, he began making notes, on a paper napkin, summarizing the key points that he wanted to discuss with Starling later that day. Trying to remember the then-known coefficients of the virial series of the hard sphere fluid, he noted that they were almost whole integers and that, when rounded to the nearest whole integer, they appeared to follow a recursion formula $[n(n+1) - 2]$. He discussed this with Professor Starling later that day. Both thought he must have seen this in one of the many papers he had read. But, on further searching, Norman was unable to find it in any of the papers or reference books. Norman was intrigued with the equation and continued to work with it, converting it into a more useful form for calculating PVT and thermodynamic properties of the rigid sphere system. The recursion formula led to the form of the equation that is more useful for calculating properties of the rigid sphere fluid system. That is,

$$P V/N k_B T = [1 + y + y^2 - y^3]/(1 - y)^3$$

where: y = reduced density = $b/4V$;
 b = van der Waals co-volume;
 k_B = [Boltzmann constant](#)

The following week, Professor Zevi Salsburg from Rice University was visiting OU to give a guest lecture to the Chemical Engineering Department faculty and graduate students. Starling discussed this result with Salsburg. The department secretary knocked on Norman's small graduate student office, in the sub-basement, and he was requested to go to Starling's office right away. Imagine his surprise! Zevi asked a few questions about the formula and its derivation, and then assured them that this was a new development and urged immediate publication. With a name like Salsburg backing you, that was quickly accomplished ... and history was made. [N. F. Carnahan and K. E. Starling, "Equation of State for Nonattracting Rigid Spheres", *Journal of Chemical Physics*, **51**, [pp. 635-636 \(1969\)](#)].

The Carnahan-Starling equation pertains to the fluid phase of the rigid sphere system. It is quite accurate and has been useful in many areas of scientific and engineering work, mainly in fields of fluid studies, such as chemical physics, physical chemistry and chemical engineering. In its simplest application, it is used as an improvement over the repulsion pressure term in the van der Waals genre of equations of state for real fluids. It has also been useful in emulsion technology, and in ongoing enhancements of the equation of state for real fluids and their mixtures, e.g. the SAFT model. Many of the NIST handbooks and publications of refrigerant properties are based on equations of state that use the Carnahan-Starling model to approximate the repulsion behavior of real fluids.

This article completes on Next page →

Vital Links

South Texas Section website: <http://sts-aiche.org>

South Texas Section Young Professionals Group: <http://yp.sts-aiche.org>

National AIChE website: <http://www.aiche.org/> (Needs Flash Plug-in)

Earn CEP credits at AIChE functions: http://www.sts-aiche.org/Texas_PE_CEP_Rule.html

Download the CEP log form: http://www.sts-aiche.org/STS-AIChE_CEP_Log.xls

Previous Newsletters (PDF format): <http://sts-aiche.org/newsletterArchives.htm>

Link to THIS newsletter: <http://sts-aiche.org/newsletter/news2009/news1109pdf>

STS Member Recognized (Continued)

Today, the "Carnahan-Starling EOS" is so standard that it frequently appears in articles and publications with no reference citation. Quite an accomplishment for a young Texas boy who earned his BSChE from the University of Houston. Norman continues development of the equation of state, and has more recently (*beginning in the mid-1980's*) concentrated on extending the model to describe the fluid phase of non-spherical rigid particles, using the shape factor concept.

When I had heard that Norman was presenting this paper, I decided to use it as an excuse for a trip to London. I'm so glad I went, for I had never heard this story before. On reflection, I remember my own days in thermodynamics research with Riki Kobayashi and Tom Leland at Rice. And every big breakthrough was similar to that of Norman's – simplicity and order. For example, see Burnett Isochoric Method, Double Retrograde Condensation, Shape Factors, K values limiting behavior.

So my advice is the old one, KISS.

Patsy Chappellear

Note:

Norman Carnahan served as the 1985 STS Chair. Prior to that he served on the STS Executive Committee (Position 1), and was a 1959 STS-AIChE Science & Engineering Fair Award Winner. One of Norman's subsequent papers on the Carnahan-Starling Equation of State [N. F. Carnahan and K. E. Starling, "Intermolecular Repulsions and the Equation of State for Fluids", *AIChE Journal*, 18, 1184 (1972)] is the 60th most cited paper in *AIChE Journal* history, as of 11-1-2003.

Patsy S. Chappellear has been a member of STS and AIChE since the early 1960's and has served on various committees, was an AIChE Director, and was STS' National liaison. Patsy was in fact the first woman to be honored as a Fellow of the Institute. Technically, she is probably best known for her participation in thermodynamics research at Rice and the application of that research for cryogenic expander natural gas processing. Patsy also served on the GPSA Editorial Committee for the Engineering Data Book for over 10 years, including the SI version.

Chemical / Engineering Opportunities (C/EO)

Are you unemployed and looking for work? The STS provides a service that finds engineers work.

Since it began in 1983, Chemical/Engineering Opportunities (C/EO) has provided more than 1,000 chemical engineers and chemists to chemical manufacturing companies, analytical chemical laboratories, environmental firms and process design firms seeking such individuals to meet their technical needs.

C/EO is sponsored by South Texas Section of the American Institute of Chemical Engineers. The charter of the committee is to facilitate the re-employment of chemical engineers in the Houston area.

Chemical engineers wanting to participate in C/EO must meet the following criteria:

- * You are unemployed.
- * You are a member of **both** the National AIChE and the STS Local Section. When you visit our office, have your membership card available.
- * You must volunteer a minimum of 3 hours per week in the C/EO office, helping answer the phones, indoctrinate new Volunteers and, most importantly, help in the mailing of the Profiles.
- * Volunteers must reside in the Houston Metropolitan area. Volunteers who fail to show are delisted.
- * Provide addresses, phone numbers and contact names of 14 companies which typically employ chemical engineers or chemists. This ensures our database remains current.

For more information, please contact the C/EO Director, Jim Murphy, at jrmurphy2@aol.com. The C/EO page on the STS website is: <http://www.sts-aiche.org/ChemEngOpp.htm>.

The C/EO Office is located at:
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10200 Bellaire Blvd., Suite BNW 3
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Telephone: (281) 575-4348
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Membership David Silarski

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SOUTH TEXAS SECTION MISSION STATEMENT

As a section of AIChE, we serve chemical engineering professionals in the South Texas region through education, professional development, and networking.

Vision 2013

<<To be developed>>



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Maintain your contact information with the South Texas Section using the online community:

<https://www.memberconnections.com/olc/pub/CHM/>

To update your information, log in, then select [Member Directory](#).

Select the link to [View/Update Your Online Directory Listing](#).

Contact the New York office for PERMANENT ADDRESS CORRECTIONS:

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The South Texan Newsletter Crew

WHAT DO YOU THINK OF THE NEWSLETTER? We want to know!

Contact us at newsletter@sts-aiiche.org with comments, questions, suggestions, and ideas for next month.

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