



# The South Texan

VOLUME 103 NUMBER 4

DECEMBER, 2002

## MONTHLY MEETING • DECEMBER 5, 2002



**Speaker: Dr. John A. Sofranko,**  
**Executive Director, American**  
**Institute of Chemical Engineers**

**Subject: "AIChE GENESIS**  
**PROJECT"**

In early 2001, AIChE initiated a strategic planning effort to address the changing nature of the profession and how AIChE should respond. The new strategic plan, called Genesis, was led by the AIChE executive office with creative input from Calvin Cobb, Sid Sapakie, Al Wechsler, Mary Markette, Bill Gustafson and Ed Cussler. In November 2001, the AIChE Board endorsed Genesis and its Alliance Continuum Model to expand the reach of AIChE beyond the CPI. Its overarching strategy is to increase membership, relevance, and influence by expanding the chemical engineering profession in selected strategic thrusts. The result will be a financially stable and growing organization through 2007. New members will largely come from other organizations and disciplines allied to best facilitate technological developments through an interdisciplinary approach. Since November of 2001, working committees composed of Board members and other experts in the technology areas have focused on four strategic thrusts.

Two thrusts in which AIChE already has a position that can be developed into world leadership are Sustainability and Safety.

*Continued on page 3*

## JANUARY MEETING

**Second Thursday • January 9, 2003**

### How to Stay in Touch with South Texas Section

**Website:**

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

**Newsletter Access:**

- 1) Snail Mail to all registered STS members - one week before meeting +/- one week.
- 2) Website at [sts-aiche.org](http://www.sts-aiche.org) - click on Newsletter or Newsletter Archives - accessible mid-month, before meeting.
- 3) E-Mail - enroll at the Topica prompt at the bottom of the STS home page - includes URL to current Newsletter, accessible mid-month before meeting.

**Workshops and Dinner Meeting Topics, Speakers, Synopses, and Bios:**

About a week after meeting, speakers and topics appear on the website home page for the next month's meeting. Navigation keys home on detailed synopses and bios for each workshop or dinner meeting presentations.

### Workshop Announcements

Refer to pages 4 and 5 for detailed workshop topic and speaker information. Check the room assignments in the Hotel Lobby to join the group that interests you.

#### Process Engineering / Plant Operations

Topic: "ASME Section VIII Pressure Vessel Design Overview"

Speaker: Mr. Don Bredbeck, Sr. Consulting Engineer, Mustang Engineers and Constructors, Houston, Texas

#### CAST

Topic: "Safety Instrumented Systems"

Speaker: William (Bill) L. Mostia, Jr.  
Partner at exidia.com

#### Joint GIC / Environmental Issues Workshop

Topic: Houston Air Quality: The Challenge for Petrochemicals

Speaker: Alex Cuclis  
Environmental Institute of Houston  
University of Houston, Clear Lake

#### Process Safety Management

Topic: "Abnormal Situation Management"

Speaker: Mr. George Pohle, Abnormal Situation Management Consortium Representative, Shell Oil

### Meeting Location

**RADISSON HOTEL ASTRODOME**  
(Kirby at South Loop)

WORKSHOPS (NO FEES - NO RSVP) ..... 5:30-6:30 p.m.  
EXECUTIVE COMMITTEE ..... 4:30-5:30 p.m.  
SOCIAL PERIOD ..... 6:00-7:00 p.m.  
DINNER ..... 7:00-7:45 p.m.  
PRICE .. \$ 22.00 with reservation • 24.00 without reservation  
..... Students and Unemployed 1/2 price  
MEETING / SPEAKER ..... 7:30-8:30 p.m.  
AUTO - R.S.V.P. By 4:00 p.m., Tuesday, December 5, 2002  
Call (713) 295-4847  
Make reservation using the STS web site: [www.sts-aiche.org](http://www.sts-aiche.org)

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## From the Chairman

Aziz Siddiqi



It has really been a privilege for me to serve as Chairman of STS of AIChE. At the beginning of this year I had requested all members to take an active role in various activities of the section and I am really pleased to report that we had excellent support from a number of our members.

Our monthly meeting programs were organized with lots of input and consultation with several members of our advisory board and a substantial increase in the attendance is evidence of these efforts. Our Workshop Chairs made tremendous efforts to improve and enhance the quality of the monthly workshops. A survey of the workshop attendees was an excellent idea implemented this year to help plan for future workshops.

Our communication with the section members also improved this year by posting the section activities on our website and also issuing the newsletter in a timely manner and I would like to applaud the efforts of Jim Morris for both of these functions.

In June we had our usual trip and barbecue dinner on Sam Houston along Houston Ship Channel which attracted many of old and young members. We were sorry to disappoint members as the trip was sold out a month in advance. So, try to make your reservation earlier for next year's trip.

Again, I would like to express my sincere gratitude to all the members of STS for providing me the opportunity to serve as the Chairman of the South Texas Section of AIChE. I also want to thank the members of the Executive Committee: Dave Mitchell, Paul Temme, Matt Kolodney, Neal Admunson, Ernie Althaus, Kim Dixon, Tim McMinn and Richard Willson who served with me and without their active support, we would not have accomplished our goals.

It has really been a rewarding and enjoyable year for me. I would like to wish all members a very prosperous new year and a Happy Holiday Season.

Hope to see you on December 5.

Aziz A. Siddiqi

### ADDRESS CORRECTIONS

To expedite your request, all inquiries should be made through New York:  
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*The Purpose of the Section, a nonprofit scientific, educational and charitable organization, is the furtherance of the aims and purposes of the American Institute of Chemical Engineers, and the advancement of the science of chemical engineering and of related sciences through (i) the education of members and non-members in the sciences (ii) career guidance and financial assistance to students of the sciences and (iii) encouragement of research in the sciences.*

## Speaker Continued from page 1

Focal areas within Sustainability, a growing area of importance to society and chemical engineers, are life cycle management, cleaner production, pollution prevention, and flexible/agile manufacturing. The Environmental Division, CWRT - one of AIChE's Industry Technology Alliances (ITA's) - and the newly proposed Sustainability Forum would be combined to create critical mass for this thrust. Safety is an important area for chemical engineers, in which the Institute has core strength in process safety. Adding occupational safety, personal safety and security would expand the scope of this strategic thrust.

Two new strategic thrusts, Bioengineering and Molecular Engineering (Nanotechnology) are in rapidly growing markets. Three primary focus areas within the Bioengineering thrust are Bioprocesses, Metabolic Engineering, and Molecular and Cellular Biomedical Engineering. Bioprocesses segments include the traditional chemical engineering skills such as separations and the transport processes. Metabolic Engineering focuses on cellular chemical processes and includes segments on modeling, applied genetic engineering, reaction engineering, functional genomics, gene therapy, protein engineering and proteomics. The Molecular and Cellular Biomedical Engineering focus is a unique area for chemical engineers since it is based on chemistry at the molecular level. Some of the segments included are bioinformatics, biomaterials, biosensors, drug & chemical metabolism, drug delivery, nanobiotechnology and tissue engineering.

Many chemical engineers are already working in the rapidly growing area of Molecular Engineering (Nanoengineering). Their unique ability to work across a wide breadth of scale and participate in diverse parts of this field position them to be an important part of this new market. The focus areas and

participation strategy for this strategic thrust have not yet been developed, but Nanoengineering will be at least one of the focus areas. It is probable that the Materials and Engineering Division and the Computational Molecular Science and Engineering Forum would be utilized to create critical mass in this strategic thrust.

Dr. Sofranko has his undergraduate B. S. in Chemistry from the University of Delaware, and his Ph.D. in Organic and Inorganic Chemistry from the University of Rochester. He worked for ARCO Chemical Company, and its purchaser, Lyondell Chemical Company, from 1979 to 2000. Dr. Sofranko started in ARCO Product R&D, and has over 60 US patents and published papers on the development of new chemical processes with an emphasis in fuel and chemical production from natural gas. By 1990, he was responsible for all technical activities of the Specialty Chemicals Division, which developed unique products in the polyurethane and styrenics industries.

In 1991 as Director of Corporate Planning, he led the entire corporate redesign to a market-focused business plan. By 1993, as Business Director, Styrenics, he worked to develop strategic plans for globalization, with increased international presence. Dr. Sofranko was appointed Director of Strategic Growth Programs in 1997, with responsibility for all mergers and acquisitions, licensing, and technology partnerships. From 1998 to 2000, he served as Chief Technology Officer at Lyondell Chemical Company, where he was responsible for the consolidation of the technology functions of the former ARCO Chemical Company. Dr. Sofranko identified and evaluated best practices for implementation throughout all research and development activities of Lyondell Chemical Company.

## From the Editor

This has been an exciting year in many ways. And next year promises to be even more interesting. In the midst of unemployment, layoffs, and a sluggish economy, many mega-projects in the chemical and petroleum industries are ready to begin. Offshore construction projects have nearly all fabrication yards full to capacity. Gas processing, refining, and petrochemical projects are stretching some suppliers and fabricators to their capacity. What a great year for chemical engineers!

Next year we should see even more activities in the chemical and petroleum industries. But there is a caveat—the threat of war looms like a vulture over the horizon. New acts of terrorism could slow our economy and growth to a crawl. And cause the stock market to roller coaster into a steeper decline.

Let's be optimistic! Let's stick together as engineers and work smart. The Holiday Season is just around the corner so let's all enjoy "Peace on Earth, Goodwill to All Mankind." The South Texas Section and I wish you the very best of holidays and may we all enjoy a happy, prosperous New Year!

**Gary Congram**

### Engineering Shortcut – Chris Tagoe

=The contribution this month comes to us from Jackie Forsyth with Basell USA. Jackie's shortcut is for estimating saturated steam temperature

$$\text{Sat. Steam Temp, } T \text{ Deg C} = 100 * ((P, \text{ bara})^{1/2})^{1/2}$$

Where

P = Pressure in Bar absolute.

T = Temperature in degrees Celsius

Don't forget to send me your suggestions for publication. Simply email them to me at [Chris.tagoe@equistarchem.com](mailto:Chris.tagoe@equistarchem.com). You will be recognized in the column.

## Workshops Announcements – detailed information

### Process Engineering / Plant Operations

Speaker: Mr. Don Bredbeck,  
Sr. Consulting Engineer,  
Mustang Engineers and  
Constructors, Houston, Texas

Subject:  
"ASME Section VIII Pressure  
Vessel Design Overview"

The workshop will be an overview of the ASME Boiler and Pressure Vessel Code Section VIII, Rules for Construction of Pressure Vessels. Emphasis will be placed on areas of the code where mechanical and process engineers interface. The introduction will include a brief history of the ASME Code along with other design codes and standards. Main vessel design parameters including design pressure, design temperature, materials of construction, corrosion allowance, secondary design codes, and size and shape including boots, domes, and transitions, will be discussed.

Economics are an important factor when arriving at the final design parameters. Selecting the proper diameter and length for a vessel decreases the material and fabrication costs. The effect of vessel size and shape on cost will be explained. The cost impact of designing a vessel for the maximum allowable pressure of the flanges will be explored. Details that add cost without benefit will be explained.

Don Bredbeck works in the Vessel Engineering Department at Mustang Engineers and

Constructors, LP. Prior to Mustang he worked at another EPC company, also as a vessel engineer. Before entering the EPC environment, he was chief engineer at Hahn & Clay, a fabricator of heavy wall and complex vessels located in Houston. He received his BSME from The Ohio State University and an MBA from Kent State University. He has been awarded three patents related to vessel and machinery design. Don has taught the South Texas Section of ASME's Pressure Vessel Seminar for the past two years.

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### Process Safety Management

Speaker:  
Mr. George Pohle, Abnormal  
Situation Management  
Consortium Representative  
Shell Oil

Subject:  
"Abnormal Situation  
Management"

A group of companies has formed the Abnormal Situation Management Consortium (ASMC) to investigate early detection and correction of abnormal situations in the operation of a plant. ASMC defines an abnormal situation as a disturbance or series of disturbances in a process that cause plant operations to deviate from their normal operating state. The abnormal situation may be of minimal or catastrophic consequence. While we obviously wish to remain away from the worst case results, minimal abnormal situations may also affect production, but go undetected or unreported. The cumulative effect of many of these on production can be significant, but may not show up in traditional systems.

It is the job of the operations team to identify the causes of these situations and execute compensatory or corrective actions in a timely and efficient manner. The ASM consortium is interested in enabling proactive aspects that complement the reactive tasks. Both are important, such as early event detection, operator training, making procedural operations less error-prone, etc. An overview of the breadth of activities of the group will be covered under three themes:

- Consortium history/background
- The ASM "problem"
- ASM solution concepts.

George Pohle received his Bachelor's in Electrical Engineering from Texas A&M in 1982. He started his career with Rockwell International at the Johnson Space Center here in Houston. George spent ten years with NASA, of which four of those were in the Mission Control Center as a communications and instrumentation flight controller. He then moved to Texaco where he worked on expert systems development. He finally moved to Shell where he is the ASM representative. George is currently implementing some of the ASM concepts through work process management techniques and developing tools that enable these work processes.

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## Workshops Announcements – detailed information

### CAST Workshop

Speaker:  
William (Bill) L. Mostia,  
Jr., Partner at exidia.com

Subject:  
“Safety Instrumented  
Systems”

Bill Mostia Jr. will discuss what a safety instrumented system (SIS) is and how safety instrumented systems fit into the overall plant protective scheme. He will also discuss what safety instrumented functions (SIF) and how they fit into a safety instrumented system (SIS) as described in OSHA 1910.119 Process Safety Management.

Also of concern are the regulatory, legal, and standards environment that safety instrumented systems must operate within. Bill will also discuss the impact of EPA regulation 40 CFR 68 RMP on environmental protection systems and how these fit into the overall protective scheme with SISs.

Bill Mostia has 25+ years of experience in instrumentation, controls, safety, and electrical areas. He is a Partner at exida.com, a leading firm in the area of safety systems and automation reliability. He has worked for Amoco, Texas Eastman, Dow Chemical Co.

and as an independent consultant in instrument, electrical, and safety areas. He graduated from Texas A&M University with a BSEE. He is a professional engineer and a senior member of ISA, where he is active serving on a number of ISA standards committees including S84, S91, and various S12 committees. He has published over 50 articles and papers, a book on troubleshooting, and has been a contributor to several books on instrumentation.

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### Joint GIC / Environmental Issues Workshop

Speaker:  
Alex Cuclis, Environmental  
Institute of Houston,  
University of Houston  
Clear Lake

Subject:  
“Houston Air Quality: The  
Challenge for  
Petrochemicals”

Adoption of the quarter course correction has added a new dimension to the Texas Commission on Environmental Quality's (TCEQ's) strategy to attain the one-hour ozone standard in the Houston-Galveston area by control of highly reactive volatile organic compounds (VOCs). These compounds are typically unsaturated hydrocarbons such as olefins, diolefins, and aromatics. There is evidence that unsaturated hydrocarbons may play a significant role in the area's ozone problem.

The methods required to calculate VOC emissions from the area refineries, petrochemical and chemical plants may have seriously underestimated them by a factor of up to ten. Many process upsets release less than the minimum reportable amounts of highly reactive VOCs. Data developed by the Texas Air Quality Study 2000 suggest that small releases of VOCs that are not reportable may actually result in the formation of significant amounts of ozone. Based on extrapolations and modeling performed by TCEQ, new rules to be adopted on December 4 include severe highly reactive VOC emission limits from such upset sources as cooling towers and flares and fugitive sources such as leaking valves and seals.

Alex Cuclis will present a summary of the role of VOCs in the Houston-Galveston area's air quality problem. His presentation will address the balances and tradeoffs involved in developing green strategies for area chemical process plants. In answer to the question, “Does the competitive

advantage always go to those who pollute?”, Mr. Cuclis will present his ideas of how industry can proactively address the challenges posed by the new TCEQ rules and, in effect, compete for the best environmental performance.

Mr. Cuclis is an Air Quality Specialist for the Environmental Institute of Houston, at the University of Houston Clear Lake. He assists the Task Force for Ozone Reduction Strategies, represented by business, government, environmental and academia, in developing recommendations for TCEQ on the Houston-Galveston area State Implementation Plan. Prior to entering graduate school at the University of Houston Clear Lake, Mr. Cuclis held engineering positions for 13 years at the Shell Deer Park Manufacturing Complex. Mr. Cuclis holds a BS in Chemical Engineering from the University of Texas, an MS in Analytical Chemistry from the University of Illinois at Urbana, and a MA in Behavioral Sciences from the University of Houston-Clear Lake.

Please check the room assignments in the hotel lobby and feel free to drop in and join us. For additional information, check the GIC Workshop in the December STS-AICHE Newsletter.

Contact: Dennis Griffith,  
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## CALENDAR OF EVENTS

### DINNER MEETINGS

**January 9, 2003 (SECOND THURSDAY IN JANUARY)**

*The Science and Policy of Regulating Groundwater*

Speaker: **Jace A. Houston**

General Counsel, Harris-Galveston

Coastal Subsidence District

**February 6, 2003**

*Specialty Chemicals and Batch Processing*

Speaker: **Dr. Mal Johnson**

Dixie Chemical Company

Houston, Texas

### WORKSHOPS

We have no planned workshops for next year to post in newsletter

### SPECIAL EVENTS

**Spring 2003**

**ANNUAL TECHNICAL MEETING**

Location: To be announced

Contact: **Charles Waligura**, Meeting Chair

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- System hydraulics
- Environmental consulting, including NOx reduction.
- Process hazards analysis (HAZOP, etc.)

For information, please contact

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