FOCUSING ON VISION 2030
THROUGH COMMUNITY OUTREACH

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Dear SAICSC-ACS Members,

First of all, I would like to take this opportunity to thank the society’s board of directors for their great efforts in carrying out the activities of the society. I would also like to extend my thanks and appreciation to our sponsors, and society members for their great support to achieve our mission of promoting chemistry and sharing scientific knowledge to the local community. We are aligning our activities to contribute in Vision 2030 success and support our local economy. Vision 2030 has provides good space to Non-governmental organization (NGOs) for playing a very important roles which includes but not limited to volunteer and community services. SAICSC-ACS positioning itself to be in for front to achieve this part of the vision 2030 milestones from its experience and past activities in the local community.

During 2016, we have contributed significantly in promoting the chemical sciences by organizing various technical dinner meetings and enhancing the outreach and community programs in collaborations with industries, local communities and academia.

In November 2016, we successfully organized The 10th International Conference and Exhibition on Chemistry in Industry (CHEMINDEX-2016) under the patronage of His Royal Highness Prince Khalifa bin Salman Al Khalifa, Prime Minister of the Kingdom of Bahrain with the conference theme of “SUSTAINABLE ENERGY INDUSTRY THROUGH INNOVATIVE CHEMISTRY. The CHEMINDEX-2016 event promote and interconnect our society with the industrial sector involvement. Mr. Al-Khowaiter, Chief Technology Officer of Saudi Aramco as the first executive chair of CHEMINDEX-2016 conference.

We received very encouraging positive feedback after CHEMINDEX-2016 conference from the attendees who commend the organizers for preparing a very strong technical program and designing a very impressive exhibition.

Next Year, another important conference 4th International Conference and Exhibition on Laboratory Technology (LABTECH 2017) is being organized by SAICSC-ACS during November 5-9, 2017 in Doha, State of Qatar, under the patronage of H. E. Dr. Mohammed Bin Saleh Al-Sada, Minister of Energy and Industry, State of Qatar. This event will provide a unique opportunity for all participants to gain valuable knowledge for improving their laboratory operation. The conference has always been known to attract numerous participants including major international and national companies, many leading laboratories equipment suppliers, Petrochemical, Utilities, and other industries.

In accordance with its efforts in fostering better understanding and improving the attention on chemistry sciences, the society has issued three newsletter (ORGANON) in 2016. Once again thank you all for your active participation in the Society’s various technical and social programs and wish you all the best.
The Saudi Arabian International Chemical Sciences Chapter of the American Chemical Society held its 2016 monthly technical dinner meeting on Monday, November 28, 2016 in Al-Khobar.

CRAIG A. SMITH delivered an excellent and inspiring lecture on “Technology Commercialization at Dhahran Techno Valley - A Vision 2030 Sustainable Model”

Craig A. Smith is the Chief Executive Officer of Dhahran Techno Valley Company overseeing all aspects of the Dhahran Techno Valley Science Park, from entrepreneurship development to joint ventures between multinational companies and Saudi government and academia. Craig led Business Development for Emerging Technologies for 23 years at the US Department of Energy’s Sandia Labs, specializing in Renewable and Sustainable Energy Research, Cyber Security and Information and Communications Technologies. Craig is advisor and mentor to universities across Asia and the Middle East, advising students in launching start-up companies and is a frequent judge for business competitions at schools and universities globally. Craig is speaker and advisor to the USPTO, World Intellectual Property Organization, Brazilian Institute of Industrial Property, Vietnam’s National Office of Intellectual Property and the IP Office of Singapore, often addressing Energy issues and Intellectual Property in Global Energy Markets. Named Licensing Executives Society International’s Distinguished Fellow for the past two years, Craig is an Advisory Board member for the Licensing Executives Society, Silicon Valley, where he served as Chairman of the Board and is a member of the Advisory Board, College of Engineering Sciences at King Fahd University of Petroleum and Minerals in Dhahran, Saudi Arabia. Craig holds a B.A. in Asian Studies from University of Puget Sound, M.B.A. in International Finance from Golden Gate University in San Francisco, studied Cleantech Economics at UC Berkeley’s Haas School of Business, Innovation and Entrepreneurship at Stanford University Graduate School and US Energy Policy at the Brookings Institution, Washington D.C.

In his speech, he highlighted the mandates of the Dhahran Techno Valley Company in developing collaborations with industry, governments and academia and in bringing energy research through its earliest stages from theory and validation to prototype testing and on to commercial product. He also explained that the company does this by leveraging the phenomenal capabilities and resources of the Science Park’s industrial partners, capabilities of Saudi industry and the expertise of KFUPM and other top Saudi universities.
The Saudi Arabian International Chemical Sciences Chapter of the American Chemical Society (SAICSC-ACS) held its December 2016 monthly technical dinner meeting with Saudi Arabian section of American Institute of Chemical Engineers (SAS-AIChE) on 22nd December 2016 at Le Meridien hotel, Al-Khobar.

At the meeting, an important lecture was delivered by MR. IMAD ALI AL-ABDUL QADER, Director of Investor Attraction, Saudi Arabian General Investment Authority (SAGIA).

Mr. Imad deliver a wonderful talk on his role to help key investors and strategic partners succeed in Saudi Arabia, in line with Vision 2030. He explain the role of SAGIA in diversifying the economy of Saudi Arabia away from the traditional oil revenue dependence. Various measures are taken by the government to achieve the success of vision 2030 and how the government restructure measures implemented to enhance economic benefits. Mr. Imad stress the importance of non-profit organization’s contribution to society and scientific community. The Vision 2030 realize the importance of non-profit organization, thus it suggests various ways to increase the number of volunteers to non-profit organization.
OPEN DAY AT KFUPM

Major selection day was organized during December 5-8, 2016, at the exhibition hall of King Fahd University of Petroleum and Minerals (KFUPM). The event was inaugurated by the HE Dr. Khalid Al-Sultan, Rector the KFUPM. Chemistry department highlighted the importance of Chemistry and requirement of chemists in local and multinational industries. Good number of prep-year students visited the Chemistry booth and showed a lot of interest and enthusiasm. The students were also informed about the role SAICSC-ACS and its student’s chapter as these were visible in the posters.
In an introductory chemical engineering course, the subject of phases (gas, liquid, and solid) and phase changes of substances is taught to students. The preconceived notion among the students is that when a solid is heated, it will eventually turn into liquid, and if further heated will evaporate. However, this is not always the case. Below certain pressures (the triple point pressures), solids – when heated - turn into vapor directly. In addition, by manipulating the temperature and pressure around critical values (the critical temperature and pressure), liquids can be turned into vapor without going through the phenomenon associated with phase change, i.e. the interface that separates the liquid at the bottom from the vapor at the top. Students find it difficult to believe that these two unusual phenomena are possible. Due to safety considerations and high expenses such experiments are avoided in undergraduate laboratories. Fortunately, during my Ph.D. program I have frequently seen these two phenomena happen. Therefore, when the students showed me with questions regarding these phenomena, I feel very comfortable answering them and describing for them how they happen. Furthermore, when I tell my students that I have seen them with my own eyes, they eliminate the possibility of these phenomena being science fiction!

In the same course I usually have a few students who find it hard to believe that when liquid water is heated to its normal boiling point (100°C), no matter how further it is heat, the water temperature remains constant until all the liquid evaporates. In such a case, I simply take the students to the lab to witness this phenomenon with their own eyes!

These experiences made me appreciate the value of tangibles and its effect on understanding. In the end, I would like to acknowledge research, especially the kind that involves experiments, for it indeed strengthens ones teaching capabilities by getting him/her exposed to scientific phenomena that many instructors teach but only few have seen.

Dr. Shaker Haji
Assistant Professor
University of Bahrain
Polyoxymethylene (POM), also known as polytrioxane or polyformaldehyde, is the most important polyacetal resin. It is an engineering thermoplastic with excellent physical and processing properties used in precision parts that require high stiffness, low friction and excellent dimensional stability. Due to its superior qualities the International consumption of polyoxymethylene is fast increasing.

Polyoxymethylene is a polymer of formaldehyde or of trioxane. Although polymeric products of formaldehyde have been known for over 100 years, and were studied in detail by Hermann Staudinger in 1925, thermally stable polymers of formaldehyde were only recently prepared. It is commonly known under Celanese product (Celcon) and DuPont’s trade name (Delrin).

Polyacetal polymer can prepare by anionic polymerization of formaldehyde. Also can be made by cationic polymerization of trioxane in presence of lewis acid as BF3:

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\text{H}_2\text{C}=\text{O} + BF_3 \rightarrow \text{H}_2\text{C}-(\text{O})\_n-(\text{O})_n-(\text{O})_n-(\text{O})_n-\text{C}=\text{H}
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The improved stability of these acetal resins allows them to be fabricated into useful applications. In 2005 the total Chaines market demand for engineering plastics of POM was 180,000 tons.

Major uses for the acetal resins are as direct replacement for metals. Their stiffness, light weight, dimensional stability, and resistance to corrosion, to wear, and to abrasion have led to their replacing brass, cast iron, and zinc in many instances. Typical applications include automobile parts, such as instrument panels, door hardware, and pump housings and mechanisms, pipe, especially for oil field system, and a wide variety of machine and instruments parts.

In Asia, polyoxymethylene is mainly used in the electronics sector (CDs, video cassettes). In contrast, in Europe and US, it is largely used in the automobile industry and the electrical appliance sector.

Currently Kingdom of Saudi Arabia building a new plant at SABIC will produce 50 thousands metric tons yearly with around 400 million dollars investment.

**Production steps of POM**

1. Formaldehyde Solution
2. Concentration
4. Ethylene glycol
5. Trioxane Unit
6. Dioxolane Unit
7. Trioxane
8. Polytrioxane Unit
9. Polyoxymethylene
SUSTAINABILITY IN THE ENERGY INDUSTRY, INNOVATION HIGHLIGHT CHEMINDIX 2016

Manama – With the support of Saudi Aramco chemistry scientists and 500 experts from around the world recently gathered for the 10th International Conference and Exhibition on Chemistry in Industry (ChemIndix 2016) in Bahrain. The goal of this year’s ChemIndix was to share knowledge about future technologies in energy and petrochemicals and discuss the role of advanced chemistry in the industry.

The event was held under the patronage of HRH Prince Khalifa bin Salman Al Khalifa, Prime Minister of the Kingdom of Bahrain.

Organized by the American Chemical Society and its Saudi chapter, the Saudi Arabian International Chemical Sciences Chapter of the American Chemical Society (SAICSC-ACS), ChemIndix 2016 was held under the theme “Sustainable Energy Industry through Innovative Chemistry.” During the three-day conference, 130 technical sessions were delivered covering topics such as: Petrochemicals and Refining; Processes; Enhanced Oil Field Recovery; Oil Field Chemicals; Fuel Engine Technologies; Analytical Technologies and Advanced Characterization; Breakthrough Materials in the Energy Industries; Advanced Trends in CCUS Technologies; Energy Efficiency and Renewables; and Environmental Issues and Solutions.

THE FUTURE: ADVANCED CHEMISTRY

The opening ceremony began with a speech by HE Shaikh Mohamed bin Khalifa Al Khalifa, Minister of Oil in the Kingdom of Bahrain. He thanked Saudi Aramco for supporting the conference and noted the importance of advanced chemistry and downstream in general, especially with the growing challenges facing the industry.

Shaikh Mohamed referred to the Marrakech Climate Change Conference (COP-22) regarding hydrocarbon emissions issues, noting that “hydrocarbons remain the best energy storage, and the world can’t continue without them.”

THE MOST IMPORTANT CHALLENGES OF OUR DAY

In his keynote address, Ahmad O. Al Khowaiter, Saudi Aramco’s chief technology officer, Saudi Aramco and ChemIndix 2016 executive chairman, described the conference as a hub that attracts experts to discuss the future technologies for petrochemicals on a regional and global scale.

Al Khowaiter said that with the world economy expected to double by 2050, the demand for energy will increase significantly as people in the developing world move to cities in search of a higher standard of living.
He further stressed that Saudi Aramco is exerting significant efforts to develop technology and innovative chemistry to ensure sustainability in the global energy industry.

“We at Saudi Aramco believe that the demand on all energy resources will continue in the long run. Therefore, we do not see nuclear, solar, or wind energy as competitors with fossil fuels energy as the source of energy in the 21st century,” said Al Khowaiter.

EXHIBITION AND A PANEL DISCUSSION

Various petrochemical industries including Saudi Aramco, Sabic and other companies participated in the conference exhibition.

Ammar A. Al Nahwi, manager of the Research and Development Center Department, moderated a panel on "Using Hydrocarbons Efficiently in the Future and Dealing with the Environmental Challenges." Bashir M. Dabbousi, acting director of Technology Strategy and Planning, moderated a discussion session under the title "Advanced Materials in Energy Sector" in which prominent scientists participated, including Nobel laureate Konstantin Novoselov.
Under the patronage of
H. E. Dr. Mohammed Bin Saleh Al-Sada
Minister of Energy and Industry, State of Qatar

THE 4TH LABORATORY TECHNOLOGY CONFERENCE & EXHIBITION

Conference:
7 - 9 November 2017

Exhibition:
7 - 9 November 2017
The Ritz-Carlton, Doha State of Qatar

Technical Courses:
5 - 6 November 2017

Conference organised and supported by:

Register online at:
WWW.LAB-TECH.INFO/CMS
INVITATION TO SUBMIT – LABTECH 2017

The 4th International Laboratory and Technology Conference and Exhibition (LabTech 2017) will be held November 7-9, 2017 in Doha, Qatar.

You are cordially invited to submit your abstract for this important international event. The technical program will address the latest in laboratory technologies and issues related to human resources development, quality assurance, health and safety, and environmental management. The deadline for submission of abstracts is April 5, 2017. Please visit http://labtech2017.com to submit your abstract and for further detail on the Technical Program.

LabTech 2017 will be attended by more than 700 research scientists, chemists, engineers, and technologists from around the globe and will present a number of world-renowned keynote speakers and panelists.

The conference is sponsored by major international and regional companies, research institutes, and professional societies including, but not limited to:

- Saudi Aramco
- Saudi Arabia Basic Industries Corporation (SABIC)
- Qatar Petroleum (QP)
- Bahrain Petroleum Company (BAPCO)
- Kuwait National Petroleum Company (KNPC)
- Qatargas
- Qatar Fertiliser Company (QAFCO)
- Qatar University
- King Fahd University of Petroleum and Minerals (KFUPM), Saudi Arabia
- Kuwait Institute for Scientific Research (KISR)
- King Abdulaziz City for Science and Technology (KACST), Saudi Arabia
- King Abdullah University of Science and Technology (KAUST), Saudi Arabia
- Nizwa University, Oman, and the
- American Chemical Society (ACS) and its Saudi Arabian International Chemical Sciences Chapter (SAICSC-ACS).

For further information please do not hesitate to contact the Technical Committee Chairman Dr. Tony Y. Rizk (tony.rizk@aramco.com) on +966.13.876.3849

We look forward to receiving your abstract.

Yours sincerely,

Tony Y. Rizk, PhD,
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