

Saudi Arabian International Chemical Sciences

# ORGANON

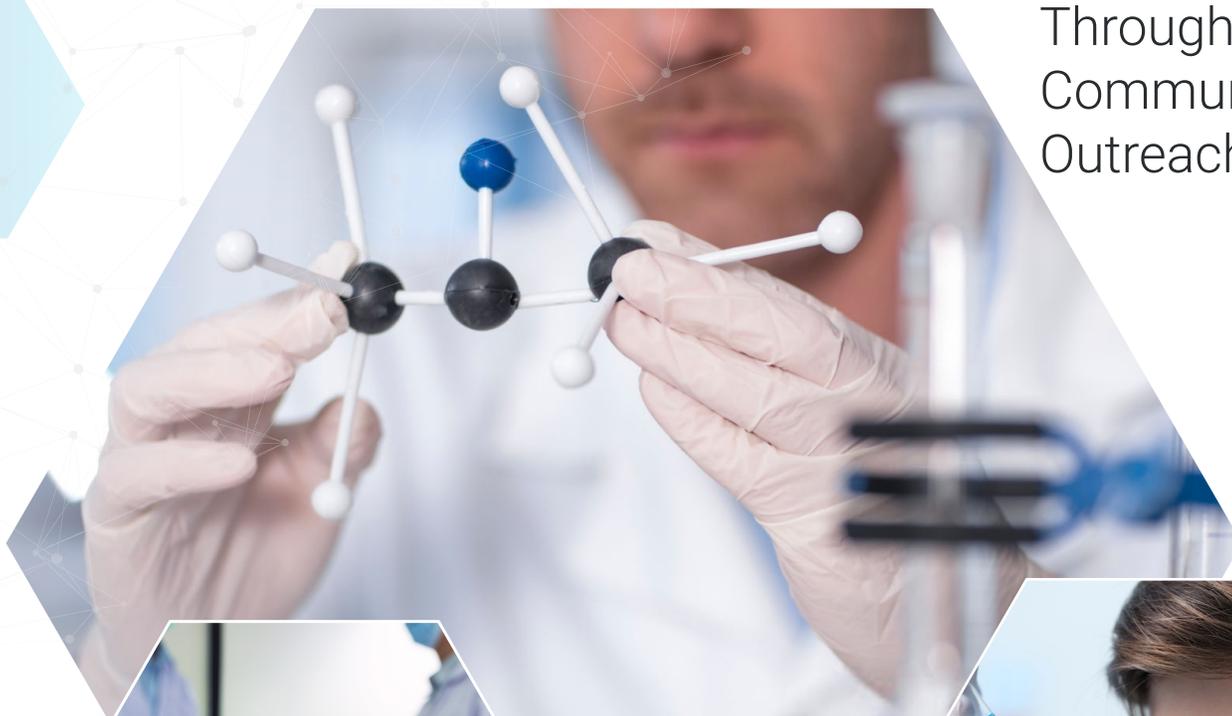
Chapter of the American Chemical Society

2022

Issue 2

## Focusing on Vision 2030

Through  
Community  
Outreach



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## Chairman message



Talal M. Al-Ghamdi  
2022 SAICSC Chairman

Volunteers are the success partners of SAICSC, without them we won't be able to execute our activities. By the end of each year, SAICSC recognizes those individuals who work behind the scenes and contribute directly and indirectly to the success of any event during the year. Sending invitations, handling social media accounts, setting at registration desk, facilitating Q/A during meetings, and much more are all examples of volunteering opportunities with SAICSC.

For the past months, we have organized four technical dinners meetings, two chemathons, two workshops, and one day event for the International Women's Day. More than 500 students, professionals, faculty members, vendors, and sales representatives have actively participated in these different activities. Much more are coming in the following months including social trips, empowering women in chemistry program, national chemistry week, technical dinners meetings, and workshops.

During the First Gulf Chemistry Association International Conference and Exhibition (GCA 2022), five technical courses will be offered for two days in different disciplines related to the theme of the conference. These courses will be offered by highly qualified professionals and attendees will be certified at the end of the workshops.

You may get more information about fees and registration by accessing the following link: <https://gca2022.org/pre-conference-courses>. The conference will be held from 15 to 17 November 2022 at the Gulf Convention Center, Gulf Hotel in Manama, Kingdom of Bahrain under the patronage of HE Shaikh Mohammed bin Khalifa Al-Khalifa, minister of oil of the Kingdom of Bahrain.

Moreover, registration of delegates is now open and special discount of 30% will be applicable for SAICSC members so I encourage all to take advantage of this offer and renew your membership and register for conference by accessing the following link: <https://gca2022.org/conference-registration>.

At the end, I would like to remind you all that this periodical is accepting articles to be published each quarter. These articles will be eligible for the best article award of 2022 competition. The three winners will be recognized during the annual gathering at the end of the year.

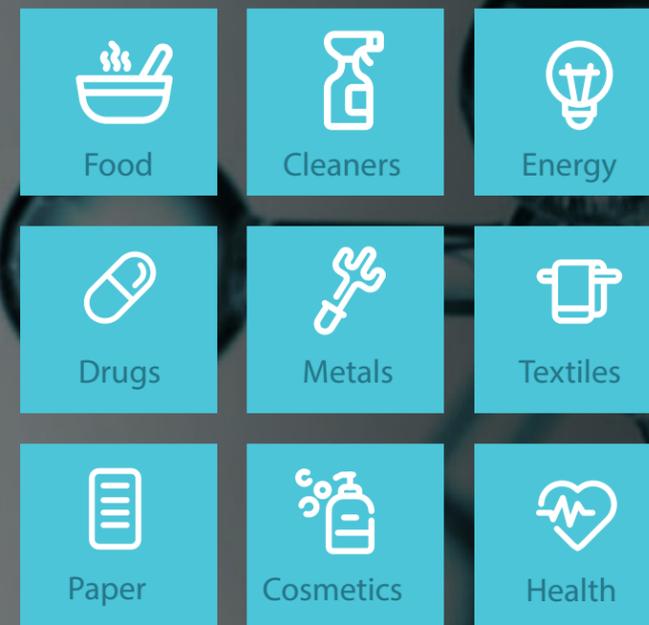
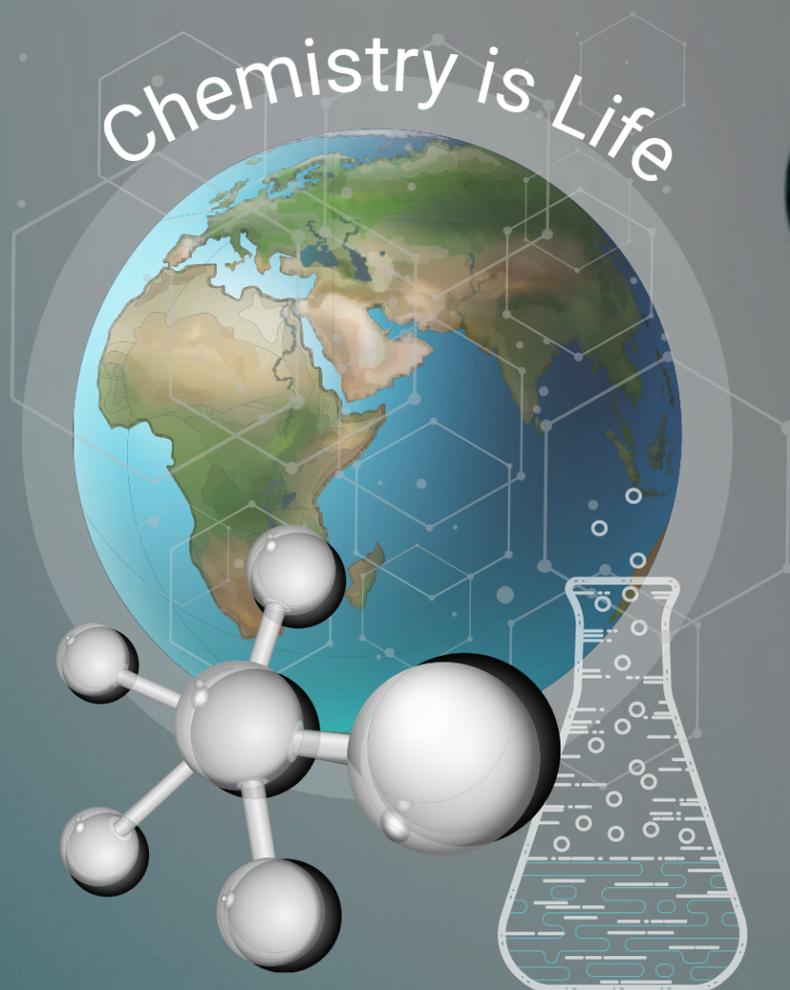
# Chemistry in our Daily Life

By: Maysa Alahmadi

Life is full of miseries that go beyond the understanding of humanity on many occasions. However, an exciting thing about life is that chemistry has a huge role. The typical daily living of human beings revolves around chemistry. This ranges from the air consumed by humans to the food eaten to detergents used in household chores and the human body functionality.

Some of the instances of chemistry being part of our lives are subsequently discussed. To begin with, is the human body composition. The body's functioning is propelled by electrolytes, which are technically chemicals. They include chloride, magnesium, and hydrogen, to mention a few. For this reason, drugs used in treating various human illnesses are composed of chemicals suitable for the human body's functionality (Vashist et al., 2014). Moreover, humans are driven by multiple emotions. Unknown to many, these emotions are caused by chemical components called neurotransmitters in the human brain. Additionally, the ingredients we use to prepare our daily meals are chemistry work. As soon as an onion is cut into pieces, there is an involuntary flow of tears from our eyes. This is because of the presence of sulfur compounds in the onion cells. When cut into pieces, the sulfur becomes more volatile. Upon contact with the moisture within the eyes, sulfonic acid forms, which produces a burning feeling (Moore, 2012).

Hygiene is an essential part of our everyday life. This is usually made possible by the use of detergents such as soaps. It is made of hydrophilic and hydrophobic chemical components (Moore, 2012). Hydrophilic ones allow interaction with water while the hydrophobic components interact with greasy surfaces making cleaning possible. In the initial stages of human existence, soap was made of ashes and fat chemical compounds. This indicates the presence of chemistry in our daily lives for as long as human existence.

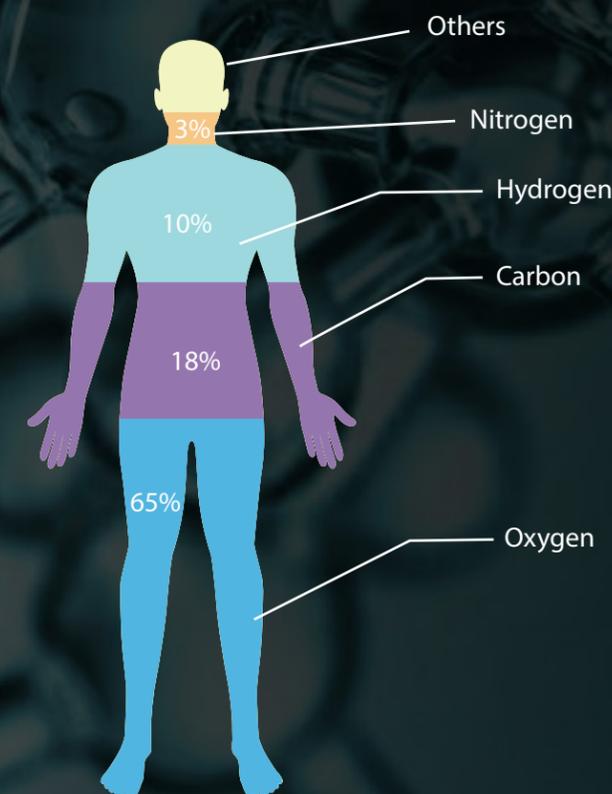


Chemistry is the central science. It touches all aspects of our lives

Thus, without a doubt, human beings' daily livelihood revolves around chemistry. This makes the possibility of life without chemistry close to zero. We must be aware of the chemistry involved for knowledge and understanding of life since it shapes life for the better. We should always have chemistry in mind to enhance living but not ignore its hazards since these chemicals can also be dangerous.

Moreover, human beings have adopted certain lifestyle tendencies, not knowing the role of chemistry. An example is cigarette smoking. Tobacco contains chemicals including nicotine, tar, and acetaldehyde (Bekki et al., 2017). They play various roles important to human beings in coping with multiple life situations, including stress. These chemicals are also responsible for addiction to smoking.

Element	Symbol	Percentage in body
Oxygen	O	65.0
Carbon	C	18.0
Hydrogen	H	9.5
Nitrogen	N	3.2
Calcium	Ca	1.5
Phosphorus	P	1.0
Potassium	K	0.4
Sulfur	S	0.3
Sodium	Na	0.2
Chlorine	Cl	0.2
Magnesium	Mg	0.1
Trace elements include boron, chromium, cobalt, copper, fluorine, iodine, iron, manganese, molybdenum, selenium, silicon, tin, vanadium, and zinc.		>1.0



# BET Analyzer

As the world is moving for greener environment and reduce emissions, it is important to reduce greenhouse gases in any efficient way. One of the used methods is the gas capturing by porous materials which can adsorb the gasses on their surface under certain condition then this condition is changed to release the captured gasses back when desired. One of the most important properties in these materials is surface area which can give indication to the amount of gas captured or adsorption capacity of the material. Knowing the surface area of porous materials can be useful for assessing them as potential gas capture resources.

The common way for measuring surface area is through BET method which applies Brunauer, Emmett, and Teller theory on nitrogen adsorption isotherms. Which is a theory to explain the gas molecule adsorption on solid surfaces. The theory assumes that the binding could be in indefinite layers and Langmuir theory can be applied on each layer. Also, it assumes that the gas molecule can only react with the adjacent layer and the enthalpy of adsorption of first layer is constant and larger than other layers. Finally, the enthalpy of adsorption of second and higher layers is equivalent of liquefaction enthalpy.



Figure 2 Picture of BET analyzer

Source:  
Walton, K. and Snurr, R., 2007. Applicability of the BET Method for Determining Surface Areas of Microporous Metal-Organic Frameworks. *Journal of the American Chemical Society*, 129(27), pp.8552-8556.

Raja, P. M. and Barron, A. R. *Physical Methods in Chemistry and Nano Science*. OpenStax CNX. Jan 20, 2019 <http://cnx.org/contents/ba27839d-5042-4a40-afcf-c0e6e39fb454@25.2>.

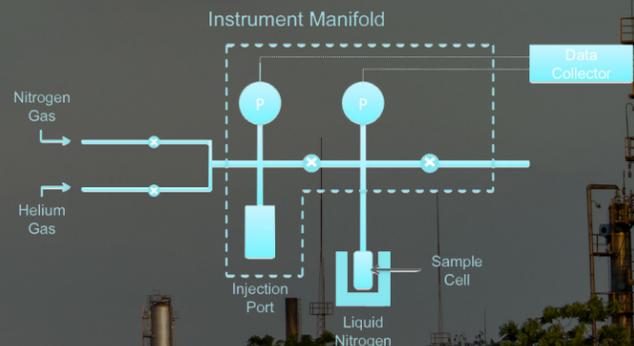


By: Abdulilah Albaiz

BET analyzer is an equipment that can measure the surface area using BET method by injecting a known amount of N<sub>2</sub> in the sample tube at a temperature of 77K. The injection process continues while precisely measuring the pressure until the saturation pressure is reached. A thin layer will be formed on the surface of the material and this layer represents the amount of gas adsorbed and can be found by Eq (1). As the Nitrogen molecule cross sectional area is well known, then the amount of nitrogen gas adsorbed can be related to the material surface area.

$$\frac{1}{X[(P_0/P) - 1]} = \frac{1}{X_m C} + \frac{C-1}{X_m C} \left( \frac{P}{P_0} \right)$$

Where (X) is the number of gas molecules adsorbed at a given relative pressure (P/P<sub>0</sub>). C is BET constant related to the heat of adsorption of the first layer which can be found through plotting BET transform plot on relative pressures associated with mono layer formation, usually between 0.05 and 0.3, and X<sub>m</sub> is the number of molecules/atoms of a gas needed to form a monolayer.



# Applications of Chemistry in Oil Well Cementing



By: Abdulaziz Alsowailam

Cementing is one of the most critical drilling and completion operational steps for oil and gas wells. The technology used consists of different scientific applications and engineering disciplines. Utilizing different additive chemistry, cement systems are designed and pumped that help to protect and seal a wellbore.

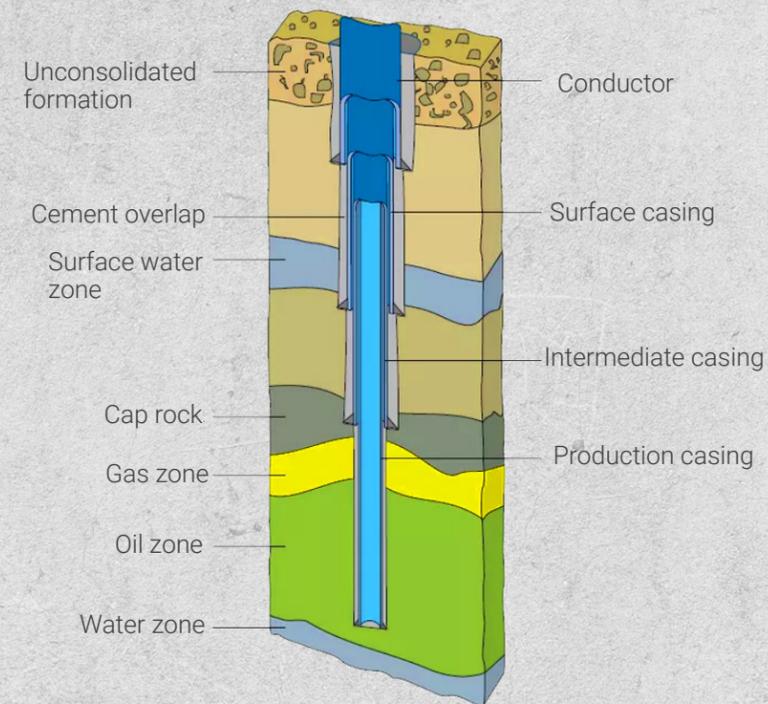


Figure 1. Schematic-of-Wellbore.

Chemical additives play an important role in cementing operations. For example, one of the most commonly used retarders for well cements is the sodium and calcium salts of lignosulfonic acids (Fig.2). Its average molecular weight ranges from about 20 to 30 kg/mol.

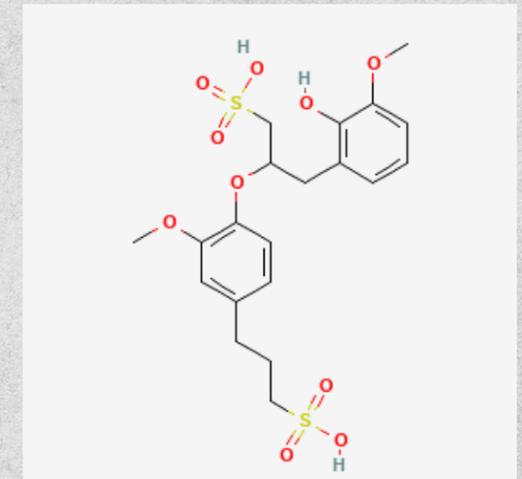


Figure-2. Lignosulfonic acid C<sub>20</sub>H<sub>26</sub>O<sub>10</sub>S<sub>2</sub>

Sourcing the figures:

Figure-1: Chen, J. C. (2020, November 19). Wellbore. Investopedia. <https://www.investopedia.com/terms/w/wellbore.asp>.

Figure-2: National Center for Biotechnology Information (2022). PubChem Compound Summary for CID 24712, Lignosulfonic acid. Retrieved June 2, 2022 from <https://pubchem.ncbi.nlm.nih.gov/compound/Lignosulfonic-acid>.

Common cementing additives are: Accelerators, Retarders, Dispersants, Weighting agents, Extenders, Fluid-loss Control, Lost-circulation control agents, Specialty additives.

Accelerators	Retarders	Dispersants	Expansion	Fluid Loss	Loss Circulation
Shorten initial set time and accelerate compressive strength	Slows cement hydration to allow for safe cement placement.	Lower mixing viscosity and decrease the rate of turbulent flow.	Improve the bonding of cement to pipe and formation. Takes shrinkage out of cement.	Lowers fluid loss rate of cement slurry during and after placement.	Prevent loss of whole fluid before and during a cement job.
<ul style="list-style-type: none"> <li>• Calcium chloride.</li> <li>• Sodium chloride.</li> <li>• Sodium silicate.</li> </ul>	<ul style="list-style-type: none"> <li>• Lignosulfonate.</li> <li>• Cellulose derivatives.</li> <li>• Hydroxycarboxylic acids.</li> </ul>	<ul style="list-style-type: none"> <li>• Organic acids (citric acid).</li> <li>• Synthetic sulfonated polymers.</li> <li>• Hydroxylated sugars (gluconates).</li> </ul>	<ul style="list-style-type: none"> <li>• Calcium oxide.</li> <li>• Aluminate-sulfate additives.</li> <li>• In-situ gas generating additives.</li> </ul>	<ul style="list-style-type: none"> <li>• Latex.</li> <li>• Bentonite.</li> <li>• Synthetic polymer.</li> </ul>	<ul style="list-style-type: none"> <li>• Fibrous: Tuf.</li> <li>• Laminated: Mica.</li> <li>• Expanding: Foam cement.</li> </ul>



By: Mohammed Aljezan

## Plastic Chemistry

In 1907, the Belgian-born American chemist Leo Baekeland was investigating the possible combinations between phenol and formaldehyde under different conditions to produce a plastic. As a result Polyoxybenzylmethylenglycolanhydride or Bakelite polymer was discovered as the first commercially viable plastic made from synthetic components (i.e. phenol and formaldehyde).

The process starts by reacting phenol with formaldehyde to produce a 2,4,6-trihydroxymethylphenol then heated to lose a molecule of water, lastly a new phenol molecule is introduced to the structure followed by formaldehyde then the process is repeated by cross-linking producing Bakelite (Fig.1). The general formula for Bakelite is  $(C_6H_6O-CH_2OH)_n$  where n indicated the side chains length. This discovery was a milestone in plastics industry because this was the first plastic formed from synthetic materials and had important properties such as fast molding, heat-resistant, insoluble in several solvents and low electrical conductivity.

By 1910, Baekeland established the General Baekeland company to produce Bakelite at an industrial scale. After 28 years of discovering Bakelite, during the world war II, other polymers were crated such as Polyethylene, Polystyrene, expanded polystyrene and Nylon. All those discoveries made a huge growth in the plastic and polymer market and plastic became an individual consumer good on a daily basis in bottles, pipes, tubing, cooking and tableware. Today plastics are renowned for their sustainability, strength and design flexibility, finding unique and innovative applications in sectors ranging from healthcare & medicine, consumer technology, automotive, packaging, aerospace, building & construction and everything in between.

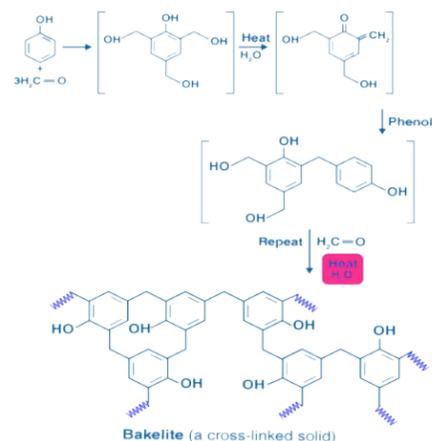


Figure 1 shows the mechanism to produce Bakelite.



## Famous Chemist

Second in a continuous series  
(2-4)

### Emil Fischer

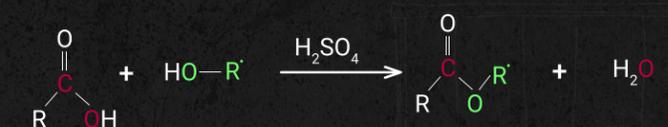


By: Hamzah Balhadad



Hermann Emil Fischer, born in October 9 in 1852 and died in July 15 in 1919, is a German chemist and he was awarded the Nobel prize in 1902 for his investigations of sugar and purine groups. He was the eighth child of Laurenz Fischer, a local and successful business man and entrepreneur. Emil spent two years at school at Wetzlar and two more at Bonne. Then, he passed the final examination with great distinction in 1869. His father wished his son to be in the family business, but finally, and after unsuccessful trial of Emil in business, Emil was sent to continue his studying in 1871 in the University of Bonn to study chemistry.

In 1872, he transferred with his cousin Otto Fischer to the University of Strasbourg. Fischer earned his doctorate under Adolph von Baeyer in 1874, and Baeyer chose him to be a private assistant in his research laboratory and retained him as assistant when he moved to the University of Munich in 1875. At Strasbourg and Munich, Fischer earned a great reputation as an organic chemist. Fischer have many achievements in chemistry and some of them was completed with other scientists.



Fischer esterification of carboxylic acid by heating it with alcohol using strong acid as a catalyst.

Fischer developed the Fischer projection, a method of representing the three-dimensional structures of molecules in a two-dimensional representation, which is often used to depict the isomers of sugars. In 1875, Hermann discovered phenyl hydrazine, and established the structure of rosaniline with Otto Fischer. The esterification of the carboxylic acid by heating with alcohol using strong acid as a catalyst was described firstly by Emil Fischer and Arthur Speier. Fischer determined the structure of caffeine, uric acid, xanthine and other natural compounds and showed these compounds are all derivatives of purine.

In 1884, Fischer began studying the known isomeric sugar, such as glucose, galactose, fructose, and sorbose to establish the chemical structures and configuration of these sugars. This studying lead Fischer to differentiate the known isomers and synthesize some of the predicted isomers. Fischer also studied the enzyme and protein structures. He proposed that the amino acid in protein were linked together by amide bonds, which is now known as peptide bond by Fischer. In 1907, Fischer synthesize a poly peptide with 18 amino acids and showed that this polypeptide could be broken by enzymes same as natural protein.

# Dynamic Labs Environment Requires Visionary Leaders



Dr. Sowelim Al-Shamrie

In the volatile 21st century, the business environment is very dynamic, which requires lab management be more innovative and creative to meet the customers' needs. Historically, the refining and petrochemicals industry is less sophisticated in meeting environmental regulations, and refining processes are not operating at high capacity. While the current refining and petrochemicals industry is more sophisticated, and environmental regulations are more stringent, optimizing refining processes to meet the highest demands of different fuel grades is a continuous process.

These demands require operations and lab management personnel to conduct business differently from the old days and use change management to create a vision that utilizes various abilities, techniques, and disciplines through which complexity and specialization translate into actions and results to be alert and focused so they can take all necessary actions to ensure both the reliability of refining processes and the high accuracy of lab analytical data.

Therefore, to meet customer requirements, the lab management has to implement new strategies, including but not limited to (a) revisiting their hiring process and focusing on versatile candidates who having a combination of technical and soft skills; (b) developing human resources using specialized and customized programs to meet chemists' and technicians' needs; and (c) fostering all employees' participation in the lab, including encouraging them to recommend ways to improve the business without fearing retribution. Employee engagement should be the leader's top priority when addressing many organizational issues, including job upgrading for chemists, and technicians that can help them identify a clear path for progression.

Effective leaders create a vision that utilizes employees' abilities, techniques, and disciplines through which complexity and specialization translate into actions and results in overcoming challenges. The dynamic environment of the lab requires visionary leaders who are capable of running lab operations with minimum equipment downtime and increased workforce quality, while applying best practices to address customers' needs, continually developing human resources, motivating lab personnel, and acquiring state of the art technologies.

Developing a quality control system that addressing workforce competency, connecting business goals, customer needs, and vision strategy is a must not an optional. Using these strategies and implementing the total quality management system approach such as ISO17025, I can provide solutions for the pollution.

## Best Practices for Gas Chromatography Workshop

SAICSC-ACS organized a workshop on May 22nd, 2022 entitled Best Practices for Gas Chromatography (GC) presented by Mr. Hussain Al-Bagawi and was attended by more than 30 chemists from several industrial and academic sectors. The objective of the workshop was to familiarize the participants' with theory and operational practice of GC.

The workshop is conducted free-of-charge as part of the Society's outreach program and educational efforts to the chemistry community. SAICSC-ACS would like to thank Gulf Bio Analytic (GBA) for providing a GC in the training session to cover the practical part of the workshop. Certificate of attendance were distributed to the participants who expressed satisfaction and appreciation.

The workshop covered:

1. The theory of GC
2. Hints on best practices
3. Practical training on preventive maintenance
4. Method setup and calibration



## ACS Summit and Research Conference Attendance Highlight



Dr. Sowelim G. Al-Shamrie attended the ACS Leadership Summit in Doha on May 8, 2022 representing the SAICSC-ACS board of directors during which I had the opportunity to meet the ACS International Chapters representatives and conducted a meeting with Dr. Angela, ACS President and discussed topics of interest. We had an ideal opportunity to reflect on the challenges that lie ahead and shed the light on effective and innovative strategies to overcome them including but not limited to: exploring the potential support of research and innovation in the field of chemistry submitted by international chapters and certification of the professional chemists. He also had the chance of attending the ACS Research conference conducted in Doha from May 9-11.

The Conference participants have shown their great support to conduct this conference in the KSA in the year 2025 due to the scientific and technical capabilities of the Kingdom and realizing the Kingdom's Vision 2030.

# Technical Dinner Meeting

March 23, 2022



## Metal Nanoparticles for CO<sub>2</sub> Uptake

**Dr. Nezar H Khdary**

Research professor of material science  
Institute of material sciences, KACST

### Abstract

The steady increase in carbon dioxide emissions over the past decades is a global problem; due to the impact that occurs and leads to higher temperatures, which in turn leads to many environmental problems, including desertification and floods. In this presentation, we will discuss the use of metallic nanoparticles and their oxides in the field of carbon dioxide uptake, as studies show that there are different capabilities of each element in the carbon dioxide uptake process related to many factors that affect the process. The recycling of carbon dioxide, a basic material in many different industries, is an important point in the circular economy of carbon, and therefore the importance of carbon dioxide absorption lies in two main points: reducing emissions and recycling to produce materials of economic value.



# Technical Dinner Meeting

May 25, 2022



## Lithium: The key ingredient powering Today's Technology

### Dr. Hassan Mohamed Baioumy

Geoscience Consultant  
Arabian Geophysical and Surveying Company (ARGAS)

### Biography

Dr. Hassan holds B.Sc. and M.Sc. in Geology from Egypt and Ph.D. in Mineralogy and Mineral Deposits from Tokyo University, Japan, 2001. He has 00 years of experience in research, teaching, and consultation for mineral deposits and natural resources. He worked for 8 years working in PETRONAS, Malaysia. Dr. Hassan has published more than 100 papers in the international journals and two books in geology and geochemistry. He also supervised many M.Sc. and Ph.D. students.

### Abstract

Lithium (Li) is a soft, silvery-white alkali metal that shows anomalous behavior due to its small size. The polarizing power of lithium ion is highest of all alkali metal ions. It has enormous industrial uses in batteries, ceramics, glass, electronics, lubricating greases, metallurgy, and silicon nano-welding, pyrotechnics, air purification, optics and organic and polymer chemistry. A gap occurs between the production and demand of Li that should be filled by new resources due to the significant increase in the consumption of Li as Li-ion batteries for electric vehicles. Newly mined lithium to supply the estimated demand will come largely from pegmatite and related magmatic deposits, evaporative brines, and special type of clay minerals. KSA has potential primary resources of Li where these resources (pegmatites, brines, and geothermal brines) widely occur.



# Technical Dinner Meeting

June 22, 2022



## Dr. Saleh Alaqel

Assistant Professor of the Medicinal Chemistry Department  
Vice Dean of the College of Pharmacy for Clinical Affairs and Training at "Northern Borders University

## Biography

Dr. Saleh holds Ph.D. degree in Medicinal Chemistry in from the University of Toledo and Stanford University (2019). Currently, he is Assistant Professor of the Medicinal Chemistry Department at Northern Border University. Dr. Saleh has published many technical papers. He is the founder and president of Lina, a Saudi nonprofit organization in U.S that leads positive social changes to members and society via volunteering programs.

## Synthesis and Development of a Novel Cofilin Inhibitor for the Treatment of Hemorrhagic Brain Injury

### Abstract

Intracerebral hemorrhage (ICH) is a devastating form of stroke with high mortality and morbidity. To date, no medical or surgical intervention has been proven successful. In the current study, we embarked on designing and synthesizing a first-in-class small molecule inhibitor of cofilin to effectively target multiple pathways to prevent secondary complications after ICH, mainly neuroinflammation. The potential binding and inhibiting concept of synthesized cofilin inhibitor, SZ-3 was tested on isolated actin by measuring the F-actin length after adding cofilin. SZ-3 was able to decrease cofilin severing activity. SZ-3 treatment of LPS activated Human microglial (HMC3) cultures microglia was found to attenuate microglial cell activation, suppress migration and proliferation. Human microglial (HMC3) cultures subjected to thrombin, as in vitro model for hemorrhage and treated with SZ-3 after 3h showed significant decrease in nitric oxide (NO), and tumor necrosis factor (TNF- $\alpha$ ) production in LPS-stimulated microglia. Also, the treatment with SZ-3 significantly increased phosphocofilin and decreased protein expression of protease-activated receptor-1 (PAR1) in thrombin-activated microglia. In addition, SZ-3 treated microglia showed a significant increase in cell viability by significantly decreasing nuclear factor-kappa B (NF- $\kappa$ B), caspase-3 and high-temperature requirement (HtrA2). Finally, SZ-3 treatment enhanced locomotor and neurobehavioral outcomes in an in vivo model of ICH. Together, our results support the idea of targeting cofilin to counter neuroinflammation during secondary injury following ICH.





Workshop

## An Introduction to ISO 45001:2018 Occupational Health and Safety Management System

Professional development program 2022, under the aegis of SAICSC-ACS, organized a very successful workshop on Tuesday, March 29, 2022 at Le Meridien hotel, Al-Khobar, titled, "An Introduction to ISO 45001:2018 Occupational Health & Safety Management System". The workshop provided ISO45001: 2018-Requirements such Context of the Organization, Leadership and Workers Participation, Planning, Support, Operations, Monitoring and Improvements. Many important topics were covered and discussed in detailed, however, more emphasis was given to System Readiness such as Organizational Diagnostics, Planning, Development and Implementations, and Checking and Corrective Actions. The participants included from Dammam University (IAUKFUPM), Saudi Aramco, and other organizations.

### Presenter biography

Mr. Huzefa Dahodwalla, Sr. Principal Consultant, Al-Masader Al-Dualiyah for Environment and Quality Systems Co., shared his expertise and experience. Mr. Huzefa currently working in Saudi Arabia with over 20 years of professional experience in quality, environmental, health and safety auditing, training and consulting covering management systems standards such as ISO 14001, ISO 9001, OHSAS 18001, ISO 45001, RC 14001, ISO 17025, ISO 23001. He is registered auditor with third-party certification agencies and conducts third-party audits on their behalf.





# CHEMATHON

(For Undergraduates)

## Submission Deadline

# 04 AUGUST 2022

All the selected teams will be notified by 4<sup>th</sup> September 2022



Find out more

[www.chemathon.gca2022.org](http://www.chemathon.gca2022.org)



King Fahad University of  
Petroleum & Minerals  
Chemistry Department

### Round 1

02-04 October  
KFUPM

# \$800

for the best 10 teams

### Round 2

17 November 2022  
Gulf Hotel, Bahrain

# \$5000

for 3 winner teams

## Sponsored By



Saudi Arabian International  
Chemical Sciences  
Chapter of American Chemical Society  
[WWW.saicsc-ac.com](http://WWW.saicsc-ac.com)



Gulf Chemistry Association  
International Conference & Exhibition  
[www.gca2022.org](http://www.gca2022.org)

## SAICSC-ACS Membership Invitation



We are pleased to invite you to join the membership of Saudi Arabian International Chemical Sciences Chapter of American Chemical Society (SAICSC-ACS). Please be informed that the SAICSC-ACS Chapter welcomes members from across the globe. By joining the membership of the SAICSC-ACS, you are entitled for many benefits as detailed below. Join the chapter community now by completing the online Membership Form in the society webpage ([www.saicsc-ac.com](http://www.saicsc-ac.com)) or scan the QR Code below and enjoy the benefits of membership.

Should you desire additional information or if we can be of further help to you in making your enrollment plans, please contact Abdullah M. Al-Ghamdi, Membership Director at [membership@saicsc-ac.com](mailto:membership@saicsc-ac.com) or Noman Khalid, Society's Secretary at [noman@saicsc-ac.com](mailto:noman@saicsc-ac.com).

There are several benefits that can be gained by joining the SAICSC-ACS including the following:

- The Society has members from different industrial and academic organizations i.e. Saudi Aramco, KFUPM, SABIC, PMU, KAUST, IAFU, UoB, and other Dammam and Jubail based companies with a variety of disciplines.
- Members will have the opportunity for social networking and attending scientific lectures during the monthly technical dinner meetings.
- Members can attend scientific courses and workshops organized by the Society on a regular basis.
- Participation in community events held by the Society, such as Chemistry Week, International Women's Day for Science, and other useful and interesting activities for adults and children.
- Members will participate in the Society subsidiary program for the social trips including out-of-Kingdom and in-Kingdom. The Society subsidizes 25% of the 4 and 5-star hotels rooms' charges for out-of-Kingdom trips.
- Members of the Society get special discount on the registration fee of the CHEMINDIX and GCA Conferences.
- Members can nominate themselves for the Society Board of Directors during the Society election.
- Members will have the chance to be a winner for special gifts during the monthly technical dinner meetings and the annual gathering prize draw.



Membership Form



Under the Patronage of

H.E. Dr. Mohamed bin Mubarak Bin Daina

Special Envoy for Climate Affairs and Chief Executive,  
Supreme Council for Environment, Bahrain

## First Gulf Chemistry Association International Conference and Exhibition

13 - 14 November 2022  
Pre-Conference Courses

15 - 17 November 2022  
Conference and Exhibition



Executive Keynote Speaker  
**Ahmed Al Khowaiter**

Saudi Aramco  
Chief Technology Officer



### Role of Chemistry in Sustainable Energy for Oil and Petrochemical Industries



GCA\_conf  
[www.gca2022.org](http://www.gca2022.org)



# Best Speaker Awards



Professor Omar Yaghi  
Young Researchers Award

## 5,300 USD for the best three graduate student speakers



### Award Eligibility

- 01 The presenter must provide an official letter from the university and/or advisor indicating that he or she is a full-time graduate student (Master or Ph.D.) by research by the prestigious universities.
- 02 Must be below 35 years old.
- 03 Must have already published a paper in the field of his or her research with his or her advisor at the peer-reviewed SCOPUS journals, and include the reference of his/her abstracts submitted to GCA2021.
- 04 Must have filed or granted a patent, which is based on his or her Master or Ph.D. research current study.
- 05 Must have delivered concisely and precisely an original research results that fits well with the topics of GC2021, able to answer the questions from the subject of matters during the allocated 5 minutes Q&A.

Apply now at [GCA2022.org/award/](http://GCA2022.org/award/)

# Society Upcoming Events

## Best Articles to Organon-ACS-SAICSC



The competition is open to everyone for the best scientific article through 2022

### The prizes are

1<sup>st</sup> prize ■ 1000 SAR

2<sup>nd</sup> prize ■ 750 SAR

3<sup>rd</sup> prize ■ 500 SAR



Saleh M. Al-Ammari  
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2022 Issue 2