19TH ASIAN CHEMICAL CONGRESS

19ACC

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Chemists can meet global challenges, including climate change, food for everybody, the race for sustainable energy, water quality, dwindling raw materials, and health problems because these are all chemical issues. Through global cooperation and friendship, chemists solve problems, working together across borders despite fundamentally different political systems and cultural diversity.

Ehud Keinan
Professor Keinan of the Technion is President of the Israel Chemical Society, Editor-in-Chief of AsiaChem and the Israel Journal of Chemistry, Council Member of the Wolf Foundation, and past Board Member of EuChemS. He was Dean of Chemistry at the Technion, Head of the Institute of Catalysis, and Adjunct Professor at The Scripps Research Institute in California. His research program includes biocatalysis, organic synthesis, molecular computing, supramolecular chemistry, and drug discovery. He received the New England Award, the Herschel-Rich Award, the Henri Taub Prize, the Schulich Prize, the Asia-Pacific Triple E Award, AAAS Fellowship, the ACS Fellowship, and the EuChemS Award of Service. Since January 2024 he is IUPAC President.

The Federation of Asian Chemical Societies (FACS) operates at a unique crossroad with new opportunities and significant responsibilities, catalyzing the collaboration and cooperation among multiple communities of chemists of various cultures across the Asia-Pacific expanse with 32 national chemical societies. The enormous cultural and ethnic heterogeneity, spanning seven different cultures (Buddhist, Chinese, Hindu, Islamic, Japanese, Orthodox, and Western), has created significant challenges throughout long Asian history. However, it also offers exciting opportunities in our times.

The FACS has held its flagship biennial international conference, the Asian Chemical Congress (ACC), to provide a communication channel and collaboration among the professional chemists in the region. The 1st ACC took place in 1981 in Singapore, the 2nd in 1987 in Seoul, South Korea, the 3rd in 1989 in Brisbane, Australia, the 4th on 1991 in Beijing, China, the 5th on 1993 in Kuala Lumpur, Malaysia, the 6th on 1995 in Manila, Philippines, the 7th on 1997 in Hiroshima, Japan, the 8th on 1999 in Taipei, Taiwan, the 9th on 2001 in Brisbane, Australia, the 10th on 2003 in Hanoi, Vietnam, the 11th on 2005 in Seoul, South Korea, the 12th on 2007 in Kuala Lumpur, Malaysia, the 13th on 2009 in Shanghai, China, the 14th on 2011 in Bangkok, Thailand, the 15th on 2013 in Resorts World Sentosa, Singapore, the 16th on 2015 in Dhaka, Bangladesh, the 17th on 2017 in Melbourne, Australia, and the 18th on December 8-12, 2019 in Taipei, Taiwan. (Keinan, E. Isr. J. Chem. 2020, 60, 907-934. https://doi.org/10.1002/ijch.202000075.)

Organizing Committees

Prof. Mustafa Culha (Sabanci University Nanotechnology Research and Application Center and Augusta University) served as Chair of the Organizing Committee, and Onder Metin (Department of Chemistry, College of Sciences, Koç University) served as Secretary General.

The National Organizing Committee included Bahattin Yalçın, Yaşar Can Ayra, Sezgin Bakırdere, Vural Bütün, Alev Doğan (Çetin), Mahmut Durmuş, Safiye Erdem, Mustafa Ersöz, Filiz Kabapınar, M. Vezir Kahraman, Sermet Koyuncu, Ece Kök Yetimoğlu, Hasan Küçükbay, Bulent Mertoğlu, Canan Nakiboğlu, Mücahit Özdemir, İsmail Özdemir, İbrahim İsmet Öztürk, Turan Öztürk, Mustafa Sözbilir, Aydın Tavman, Suna Timur, Ayhan Yılmaz, and Mine Yurtsever.

The International Organizing Committee included members of the FACS Executive Committee, including Reuben Jih-Ru Hwu, Dave Winkler, Mustafa Culha, Ling-Kang Liu, Onder Metin, Edward Juan Joon Ching, Ehud Keinan, Mitsuo Sawamoto, Mi Hee Lim, Suping Zheng, Dien Pandiman, and Wahab Khan.

Theme Committees

Inorganic Chemistry: İsmail Özdemir (Co-Chair, Inonu University), Fabienne Dumoulin (Co-Chair, Acibadem University), Ümit İşçi (Gebze Teknik University), Ahmet Kılıç (Harran University), Mehmet Tümer (Kahramanmaraş Sütçü İmam Üniv.), Akın Baysal (Dicle University), Nevin Gürbüz (İnönü University), Sevil Çetinkaya (Kırıkkale University).

Organic Chemistry: Turan Öztürk (Co-Chair, Istanbul Technical University), Yunus Emre Türkmen (Co-Chair, Bilkent University), Amitav Sanyal (Bogazici University), Sündüs Erbaş Çakmak (Konya Food and Agriculture University), Fatih Algı (Aksaray University), Haydar Kılıç (Atatürk University).

Analytical Chemistry: Reşat Apak (Istanbul University), Sezgin Bakırdere (Yildiz Technical University).

Physical Chemistry: Mustafa Ersöz (Co-Chair, Selcuk University), Gülfeza Kardaş (Co-Chair, Cukurova University), Bekir Salih (Hacettepe University), Halil İbrahim Ünal (Gazi University).

Polymer Chemistry: Vural Bütün (Osmangazi University), Ali Çırpan (Middle East Technical University).

Biochemistry: Mustafa Kemal Sezgintürk (Canakkale Onsekiz Mart University), Suna Timur (Ege University).

Computational Chemistry: Mine Yurtsever (Co-Chair, Istanbul Technical University), Murat Kılıç (Co-Chair, École Polytechnique Fédérale de Lausanne), Oluş Özbek (Gebze Technical University), Aylin Sungur (Istanbul Technical University), Nurcan Tüzün (Istanbul Technical University).

Materials Science and Functional Materials: Selmiye Alkan Gürsel (Co-Chair, Sabanci University), Sermet Koyuncu (Co-Chair, Canakkale Onsekiz Mart University), Mustafa Serdar Önses (Erciyes University), Umut Aydemir (Koc University).

Chemistry Education: Filiz Kabapınar (Co-Chair, Marmara University), Mustafa Sözbilir (Co-Chair, Ataturk University), Canan Nakiboğlu (Balıkesir University), Gültekin Çakmakçı (Hacettepe University).

Catalysis for Sustainable Chemistry and Energy: Önder Metin (Co-Chair, Koc University), Alper Uzun (Co-Chair, Koc University), Deniz Üner (Middle East Technical University), Emrah Özensoy (Bilkent University), Süleyman Gülcemal (Ege University).

Environmental Chemistry: İsmail Koyuncu (Istanbul Technical University).

Chemistry in Nanobiotechlogy and Nanomedicine: Mustafa Culha (SUNUM/ Augusta University).

International Scientific Committee

Prof. Sergey O. Bachurin (Russian Academy of Sciences, Russia), Ms. Lori Brown (American Chemical Society, United States), Dr. Patrick Charchar (RMIT University, Australia), Prof. Koichi Fukase (Osaka University, Japan), Prof. Kuo-Wei Huang (King Abdullah University of Science and Technology, Saudi Arabia), Prof. Andy Hor (The University of Hong Kong, China), Prof. Takumi Konno (Osaka University, Japan), Prof. Brindaban Chandra Ranu (Indian Association for the Cultivation of Science, India), Prof. Ilhyong Ryu (National Chiao Tung University, Taiwan), Prof. Ben Zhong Tang (The Hong Kong University of Science & Technology, China), Dr. Sarah Thomas (Royal Society of Chemistry, United Kingdom), Prof. Susan Shwu-Chen Tsay (National Tsing Hua University, Taiwan), Dr. Suping Zheng (Chinese Chemical Society, China), Prof. Ling-Kang Liu (Academia Sinica, Taiwan), Prof. Md. Wahab Khan (FACS, Representative, South & West Asia), Prof. Steven Ming-Hua Hsu (National Changhua University of Education, Taiwan), Dr. Wen-Chieh Huang (National Tsing Hua University, Taiwan).

Sponsors

The Scientific and Technological Research Council of Türkiye (TÜBITAK) has provided financial support in the context of the BIDEB 2223C-Multi-Participant International Event Organization Support Program. The Gold Sponsor was Kimpur (one of Türkiye's Top 500 Industrial Enterprises, a polyurethane system house with the largest capacity in the region). Silver Sponsors were Akkim Kimya (the leading chemical material manufacturer of Türkiye), The Royal Society of Chemistry, and the American Chemical Society. Other Sponsors included Izel Kimya, SUNUM e-Store, Tetra Teknolojik Sistemler A.Ş., ChromaScience, Menderes Tekstil, INTERLAB Laboratory Products, and Referans Kimya.

The venue

The Istanbul Technical University (ITÜ) hosted the congress on its main Ayazağa campus in Maslak. All plenary lectures and central events took place on campus in the Süleyman Demirel Cultural Center (SDKM). In line with contemporary developments, ITÜ has not only restructured and rapidly renewed its physical infrastructure and research and education equipment but has also established the SDKM as a modern and adaptable venue for important congresses, conferences, seminars, and various cultural and artistic events within the university. The unique building was designed with an 'inner street-square' space, ensuring the sustainability of urban outdoor spaces within the building. The indoor spaces are connected to a three-story high street-square common space, creating a dynamic and engaging environment. The center's design emphasizes its status as a prestige and landmark building. The Conference Hall is 650 m^2 and can seat 460 people. It also has a 210 m^2 foyer and a registration desk at the entrance. All parallel sessions took place in the adjacent teaching building, which is well-equipped with convenient lecture rooms, small shops, and restaurants.

The 21st General Assembly took place on July 8th, one day before the congress, in the spacious Senate Hall on the third floor of the SDKM building. It is 270 m^2 in size, has a seating capacity of 80 people, and has a 160 m^2 foyer at the entrance.

Opening Ceremony

Approximately 400 chemists attended the Opening Ceremony that took place in the afternoon of July 9, at 15:00 at the Suleyman Demirel Congress Center.

Prof. Mustafa Culha, Congress Chair and the FACS President, greeted the audience on behalf of the organizing committee, "Dear Presidents of the Scientific and Technological Research Council of Türkiye (TUBITAK), the Turkish Academy of Science (TUBA), the Istanbul Technical University (ITU), and the IUPAC, distinguished speakers, colleagues, Students, and Guests, I am honored to welcome you to the 19th Asian Chemical Congress, one of the largest chemistry conferences around the world.

First, I would like to give you a brief introduction to the Federation of Asian Chemical Societies (FACS). The FACS is a federation of 32 chemical societies in countries and territories in the Asia Pacific whose membership consists of individual qualified chemists. Individual chemists in the Asia Pacific may become members of the Federation. The Federation's general objective is to promote the advancement and appreciation of

Opening Ceremony

chemistry and the interests of professional chemists in the Asia Pacific. I am honored to serve as the Federation's new president.

The Turkish Chemical Society (TCS) has organized this conference with significant contributions from Istanbul Technical University. The TCS is one of the oldest non-profit professional societies, established in 1919, and the Istanbul Technical University is also one of the oldest top-world universities in Türkiye. The TCS became a member of the FACS in 2013, and we won the bid in 2017 to bring the conference to Istanbul in 2021. However, it was delayed to today due to the COVID-19 pandemic.

I would like to bring to your attention that the conference year also coincides with two special occasions: the centennial year of the Modern Turkish Republic and the 250th anniversary of Istanbul Technical University.

As you know, Nobel Laureate Prof. Dr. Jean Pierre Sauvage will deliver the opening plenary lecture. This talk was planned as a face-to-face lecture, but due to health issues, he will deliver his talk online.

Finally, I would like to thank the contributors and supporters of the Congress. This conference could not have been successful without the contribution of the ITU rector, Prof. Dr. Ismail Koyuncu. Again, I would like to thank him for his invaluable support in hosting the conference. I would also like to thank our sponsors, including TUBITAK, for their contributions to making this conference a success. Their significant contributions would have made the conference richer. We worked diligently to bring you the best scientific and social program, and I hope you will enjoy the conference and Istanbul. Thank you."

Other speakers at the opening ceremony were **Prof. Reuben Jih-Ru Whu**, Past FACS President; **Prof. İsmail Koyuncu**, President of the Istanbul Technical University (İTÜ); **Prof. Hasan Mandal**, President of the Scientific and Technological Research Council of Türkiye (TUBITAK); **Prof. Muzaffer Şeker**, President of the Turkish Academy of Sciences (TUBA); **Prof. Mary Carroll**, ACS President-elect; and **Prof. Javier Garcia-Martinez**, IUPAC President.

The ceremony continued with the traditional FACS Awards ceremony, recognizing the 2023 FACS Awardees:

Prof. Chi-Huey Wong of the Academia Sinica and The Scripps Research Institute received the FACS Foundation Lecturer Award.

Prof. Chang Yun Son of Pohang University of Science and Technology, received the FACS Distinguished Young Chemist Award.

Prof. Richard Hartshorn of the University of Canterbury received the FACS Distinguished Contribution to Chemical Education Award.

Prof. Supawan Tantayanon of the Chulalongkorn University received the FACS Citation.

Prof. Ehud Keinan of the Technion-Israel Institute of Technology received the FACS Citation.

Prof. Zuriati Zakaria of the Universiti Kebangsaan Malaysia, became a FACS Fellow.

Prof. Marinda Li Wu, the 2013 ACS President, became a FACS Fellow.

Prof. David Winkler of La Trobe and Monash Universities, Australia, became a FACS Fellow.

The Welcome Reception took place on a boat on the first evening, July 9. The round cruise from the Kireçburnu pier on the European side of the Bosphorus to the Asian banks and back took three hours, 19:00-22:00, and the happy participants enjoyed the views, the cocktail party, the music, and the group dancing.

Social events

The Congress Gala Dinner took place on July 12 at the Sariyer Municipality Yaşar Kemal Cultural Center in Sariyer, Istanbul. The happy event included excellent food, live music entertainment, a dancing party, and surprise shows.

The rich scientific program included 9 plenary lectures, 38 keynote lectures, 45 invited lectures, 174 oral presentations, and 333 posters equally distributed among three poster sessions, all taking place in the evenings (16:30-18:00) of July 10, 11, and 12. The posters covered diverse fields, including analytical Chemistry, biochemistry, catalysis for sustainable chemistry and energy, chemistry education, chemistry in nanobiotechlogy and nanomedicine, computational chemistry, physical chemistry, materials science and functional materials, polymer chemistry, environmental chemistry, inorganic chemistry, and organic chemistry.

Plenary lectures

Nobel Laureate **Jean Pierre Sauvage** of the Institut de Science et Ingénierie Moléculaire (ISIS) University of Strasbourg, France, delivered the opening plenary lecture, "From Chemical Topology to Molecular Machines: A historical Perspective." He explained that the area referred to as "Chemical Topology" is mostly concerned with molecules whose molecular graph is non-planar, i.e. which cannot be represented in a plane without crossing points. The most important family of such compounds is that of catenanes. The simplest catenane, a [2] catenane, consists of two interlocking rings. Rotaxanes consist of rings threaded by acyclic fragments (axes). These compounds have always been associated to catenanes although, strictly speaking, their molecular graphs are planar. Knotted rings are more challenging to prepare. Several spectacular knotted topologies at the molecular level have been created since the beginning of the 90s either by his group or by other highly creative research teams. Since the mid-90s, the field of artificial molecular machines has experienced a spectacular development, in relation to molecular devices at the nanometric level or as mimics of biological motors. In biology, motor proteins are of utmost importance in a large variety of processes essential to life (ATP synthase, a rotary motor, or the myosin-actin complex of striated muscles behaving as a linear motor responsible for contraction or elongation). Many examples published by a large number of highly creative research groups are based on complex rotaxanes or catenanes acting as switchable systems or molecular machines. Particularly significant examples include a "pirouetting catenane", "molecular shuttles" (Stoddart and others) as well as multi-rotaxanes reminiscent of muscles. More recent examples are those of multi-rotaxanes able to behave as compressors and switchable receptors or as molecular pumps. The molecules are set in motion using electrochemical, photonic or chemical signals. Particularly impressive light-driven rotary motors have been created by the team of Ben Feringa. Finally, he mentioned potential applications as well as possible future developments of this active area of research.

Javier Garcia Martinez of the University of Alicante, Spain, delivered the IUPAC President Talk on "Catalysing a Sustainable Future through Chemistry." He explained that to create a sustainable future, we need to make the circular economy a key goal of chemistry, not just an aspiration. We cannot continue to extract, emit, and dispose at current levels without risking our climate, environment, and health. To achieve this, we need to completely transform our approach to chemistry, starting with how we think about molecules and design processes prioritizing reusability. This transformation is necessary to ensure a sustainable future that balances economic growth with

environmental responsibility. In particular, superior, more selective catalysts are critical in this endeavor. His research group has recently developed a new family of materials at the order-disorder boundary, which allows for the effective transformation of bulky molecules under solvent-free conditions. This is a breakthrough, as these processes traditionally require strong acids and highly corrosive bases. These include the sustainable production of fuels and pharmaceuticals, the degradation of polymers, and the synthesis of fine chemicals. He also described how IUPAC volunteers coordinate, promote, and accelerate a new way of relating to the planet. These include a series of international projects and global activities as part of the International Year of Basic Sciences for Sustainable Development, the organization of a series of workshops, seminars, and conferences on Green Chemistry, and the development of educational materials based on systems thinking for effective teaching to promote a more sustainable future.

Makoto Fujita of The University of Tokyo, Japan, lectured on "Coordination Self-Assembly: From Origins to the Latest Advances." He explained that molecular self-assembly based on coordination chemistry has made an explosive development in recent years. Over the last >30 years, his group has been showing that the simple combination of transition-metal's geometry (typically, a 90 degree coordination angle of Pd(II) center) with organic bridging ligands gives rise to the quantitative self-assembly of nano-sized, discrete organic frameworks. Representative examples include square molecules (1990), linked-ring molecules (1994), cages (1995), capsules (1999), and tubes (2004) that are self-assembled from simple and small components. Originated from these earlier works, current interests in his group focus on i) molecular confinement effects in coordination cages, ii) solution chemistry in crystalline porous complexes (as applied to "crystalline sponge method"), and iii) giant self-assemblies.

Steven Peter Armes of the University of Sheffield, UK spoke about "Polymerisation-Induced Self-Assembly (PISA): A Powerful Platform Technology for Bespoke Polymer Particles." He explained that polymerization-induced self-assembly (PISA) is a powerful and versatile technique for the rational synthesis of concentrated dispersions of block copolymer nano-objects of controllable size, shape, and surface chemistry. In essence, an insoluble block is grown from one end of a soluble block in a suitable solvent. Once the growing block reaches a certain critical degree of polymerization, micellar nucleation occurs, and the soluble block then acts as a steric stabilizer. Unreacted monomer diffuses into the copolymer cores, leading to a relatively high local concentration and a significant rate acceleration. Depending on the target diblock copolymer composition, the final copolymer morphology can be spheres, worms, or vesicles. The design rules for PISA are generic: such syntheses may be conducted in water, polar solvents, or non-polar solvents using reversible addition-fragmentation chain transfer (RAFT) polymerization. Over the past decade, PISA has become a useful platform technology for the rational design of bespoke polymer colloids. For example, such block copolymer nano-objects can be used as highly biocompatible worm gels for cell biology studies, as dispersants for organic agrochemical actives, as next-generation lubricant additives for ultralow viscosity automotive engine oils, or for the design of uniquely thermoresponsive amphiphilic diblock copolymers that can form spheres, worms or vesicles in aqueous solution simply by adjusting the temperature from 5 °C to 50 °C. He discussed these examples in his lecture.

Shouheng Sun of Brown University, Rhode Island, USA, spoke about "Nanoparticle Catalysis: Synthetic Tuning for Efficient Chemical Reactions." He explained that using metallic nanoparticles (NPs) to catalyze chemical reactions has gained tremendous momentum in developing new methods to achieve highly efficient energy conversion and green chemistry synthesis that are central to sustainable chemistry and energy. Recent advances in NP synthesis have made it possible to control NP size, shape, composition, structure, and catalysis. Nowadays, well-controlled NPs have been demonstrated to show property tunability and enhanced catalysis for many chemical reactions. He highlighted a few demonstrations from his lab in optimizing NP catalysis for electrochemical reduction/oxidation reactions and thermochemical tandem reactions for highly efficient energy conversion reactions and green chemistry synthesis of functional materials. The electrochemical CO_2 reduction reaction (CO2RR) catalyzed by metallic NPs is a promising approach to carbon neutrality and energy sustainability. Using monodisperse NPs and nanowires of Au and Cu as examples, his group achieved a selective electrochemical reduction of CO_2 on Au or Au-Cu with desired catalysis synergy. The ultrathin Au nanowires have the maximal edge Au-coordination sites. They are the most active catalyst for the CO_2 reduction to CO (Faradaic efficiency (FE)>90%), while Cu nanowires surrounded by Cu (100) facets are selective for the reduction of CO to C_2H_4 + C_2H_6 (FE 60%). When Au is coupled with Cu through a bipyridine linker, the Au-bipy-Cu composite shows the desired catalysis synergy between Au (for CO_2 to CO) and Cu (for CO reduction) with much-improved catalysis for the conversion of CO_2 to hydrocarbon products with the total FE reaching 90.6%. Electrochemical oxygen reduction reaction (ORR) and alcohol oxidation reaction (AOR) are two important reactions that are coupled to build direct alcohol fuel cells for renewable energy applications. Intermetallic alloy NPs have been studied as robust catalysts for both reactions. His group has shown that intermetallic core/shell L10-MPt/Pt (M = Fe, Co) NPs with ~2 atomic layers of Pt shell are catalytically more active than the pure Pt or their solid solution counterparts for ORR, showing superior mass activity and improved durability in the fuel cell operation condition. This catalysis enhancement is attributed to the Pt shell compression induced by the L10-alloy core structure. When the shell Pt is alloyed with Au, the L10-MPt/AuPt becomes more active and stable for AOR. He demonstrated a reliable way of tuning NP catalysis from electrochemical reduction to oxidation reactions via a simple control of the surface alloying effect.

Itamar Willner of the Hebrew University of Jerusalem, Israel, spoke about "DNA Nanotechnology: From Programmed Catalysis to Nanomedicine and Materials Science Applications." He explained that information encoded in the base sequence of nucleic acids provides a rich "toolbox" of structural and functional motives that paved the grounds for developing the area of DNA nanotechnology. He exemplified these concepts by addressing several recent advances in the field: (i) The sequence-specific recognition and catalytic functions of nucleic acids and their applications to develop supramolecular systems and nanoparticle-DNA hybrid systems emulating native enzymes (nucleoapzymes and aptananozymes). (ii) Nucleic-acid-functionalized nano/micro carriers (metal-organic frameworks or hydrogel microcapsules) act as gated drug carriers for controlled drug release and immunogenetic chemotherapeutic, chemodynamic and photodynamic cancer therapy. (iii) Stimuli-responsive DNA-based hydrogels provide functional materials for shape-memory morphing, self-healing, controlled drug release, and mechanical/actuating applications. (iv) Integration of biocatalysts in confined nucleic acid nanostructures provide organized nanoenvironments revealing switchable, cascaded, and adaptive chemical transformations mimicking native cell functions ("protocells").

Michael Graetzel of EPFL, Lausanne, Switzerland spoke about "Molecular Photovoltaics and the Rise of Perovskite Solar Cells." He explained that photovoltaic

Social events

cells using molecular dyes, semiconductor quantum dots, or perovskite pigments as light harvesters have emerged as credible contenders to conventional devices. Dye-sensitized solar cells (DSCs) use a three-dimensional nanostructured junction for photovoltaic electricity production and reach a power conversion efficiency (PCE) of over 15 % in full sunlight. They possess unique practical advantages, particularly highly effective electricity production from ambient light, ease of manufacturing, flexibility, transparency, bifacial light harvesting, and aesthetic appeal, which have fostered industrial production and commercial applications. DSCs served as a launch pad for perovskite solar cells (PSCs), which are presently being intensively investigated as one of the most promising future PV technologies, with the PCE of solution-processed laboratory cells having currently reached 25.7%. His present research focuses on their scale-up and ascertaining their long-term operational stability. His lecture covered the group's most recent findings in these revolutionary photovoltaic domains.

Reuben Jih-Ru Hwu of the National Tsing Hua University, Hsinchu, Taiwan spoke about "Novel Domino Reactions in Green Organic Syntheses." He explained that his group has developed new and efficient domino reactions possessing "green" features. These reactions are valuable in the synthesis of compounds of various classes. He discussed silicon-induced cyclization of benzynes and allenylsilanes for the formation of phenanthrene, aryne-induced tandem 1,2-addition/(3+2) cycloaddition to generate imidazolidines and pyrrolidines, reductive deamination by benzyne for deoxy sugar synthesis, a diastereoselective process for the syntheses of chroman-2-ones and α-amino acids, copper-catalyzed aerobic oxidative cyclization of hydrazones and alkynes in the synthesis of arylcoumarins, a cascade-type synthesis of poly-substituted pyrroles and Lamellarin, reactions of arynes with Schiff bases/alkynes, thioethers/ aldehydes, or allyl ethers to produce 1,2-dihydroquinolines, trans-epoxides, and phenolic ethers, respectively, and alkylation of arynes by Schiff bases in the presence of a chiral catalyst binaphthyl-2,2'-diyl hydrogenphosphate to afford optically active 3-pyrrolines through an unusual 1,4-intramolecular proton transfer and a Hüisgen 1,3-dipolar cycloaddition in situ. These aryne-induced domino reactions involve multiple steps, accomplished sequentially under mild conditions in a single flask. Their utilization reduces waste and lowers the amounts of reagents, solvents, and labor. Some of them possess compelling E factors and outstanding volume productivity. These green characteristics enable the newly developed reactions to become attractive options for applications in the future chemical and pharmaceutical industries.

Kazunari Domen of Shinshu University, Nagano, and University of Tokyo, Japan spoke about "Photocatalytic water splitting for solar hydrogen production." He explained that photocatalytic water splitting has attracted growing interest in producing renewable hydrogen because systems based on particulate photocatalysts have the potential to be spread over large areas through inexpensive processes. His group built a solar hydrogen production system based on 100-m^2 arrayed photocatalytic water splitting panels and an oxyhydrogen gas-separation module. They recently reported the system's performance and characteristics, including safety issues. Nevertheless, it is essential to radically improve the solar-to-hydrogen energy conversion efficiency (STH) of particulate photocatalysts and develop suitable reaction systems. He presented recent progress in photocatalytic water splitting and related technologies. His group has studied various semiconductor materials as photocatalysts for water splitting. They recently improved the apparent quantum yield of $SrTiO_3$ to more than 90% at 365 nm, equivalent to an internal quantum efficiency of almost unity, by refining the preparation of the photocatalyst and cocatalysts. This observation means particulate photocatalysts can drive the endergonic overall water-splitting reaction with nearly no recombination loss. For practical solar hydrogen production, however, developing active photocatalysts under visible light is essential. TaON, Ta_3N_5, $SrTaO_2N$, $BaTaO_2N$, and $Y_2Ti_2O_5S_2$ were recently reported to be active in overall water splitting via one-step excitation under visible light. The synthesis of well-crystallized semiconductor particles and the loading of composite cocatalysts were important for promoting the water-splitting reaction while suppressing backward reactions. Some photocatalyst sheets show STH greater than 1% in two-step excitation water splitting.

Bin Liu of the National University of Singapore (NUS) spoke about "Accelerating Biomedical Research Through Materials Innovation." He explained that recent years have witnessed the fast growth of fluorogens with aggregation-induced emission characteristics (AIEgens) in biomedical research. The weak emission of AIEgens as molecular species and their bright luminescence as nanoscopic aggregates distinguish them from conventional organic luminophores and inorganic nanoparticles, making them excellent candidates for many high-tech applications. He summarized his group's recent AIE work developing new fluorescent bioprobes for biosensing and imaging. The simple design and fluorescence turn-on feature of the molecular AIE bioprobes offers direct visualization of specific analytes and biological processes in aqueous media with higher sensitivity and better accuracy than traditional fluorescence turn-off probes. The AIE dot probes with different formulations and surface functionalities show advanced features over quantum dots and small molecule dyes in non-invasive cancer cell detection, long-term cell tracing, and vascular imaging. In addition, their recent discovery that AIEgens with high brightness and efficient reactive oxygen species generation in aggregate state further expanded their applications to image-guided cancer surgery and therapy. Recently, they combined accurate prediction of material performance via first-principal calculations and Bayesian optimization-based active learning to realize a self-improving discovery system for high-performance photosensitizers, which can significantly accelerate materials innovation for biomedical research.

Metin Sitti of the Max Planck Institute for Intelligent Systems, Institute for Biomedical Engineering, ETH, Zurich, University of Stuttgart, Germany, and Koç University, Türkiye spoke about "Light-, magnetically- and acoustically-driven active microparticles for targeted on-demand drug delivery." He explained that wireless medical microrobots have the potential to improve healthcare radically since they have the unique capability of accessing, operating, and possibly staying inside hard and currently not possible to reach small spaces inside the human body non-invasively. In this direction, his group investigated two alternative approaches to creating micron-scale medical robots. As the first approach, His group used external light, magnetic fields, and ultrasonic waves to propel microrobots remotely. He reported on carbon nitride-based light-driven microswimmers with intrinsic photocharging ability and biocompatible propulsion in biological and ionic media. Also, he proposed two types of COF microparticles as new visible- and UV-light-powered microswimmers for targeted drug and other cargo delivery inside the human eye. They develop responsive on-demand drug delivery functions for medical use. Next, they used magnetic Janus microparticles-based micro-rollers to move against the blood flow on the vessel walls using rotating external magnetic fields. They can adhere to the specific cancer cells using their antibody coating and release drugs triggered by light. Moreover, using ultrasonic waves, microswimmers with integrated microbubbles are propelled on a surface by fluidic flows induced by the bubble oscillation. As the second approach, they proposed cell-driven biohybrid microswimmers

for targeted active drug delivery applications. They steered bacteria- and alga-driven microswimmers using remote magnetic fields and local chemical, oxygen, or pH gradients in a given physiological microenvironment inside the human body. He also reported in vitro, active cargo delivery demonstrations of such microswimmers.

Keynote lectures

Ratnesh Lal (UC San Diego, Jacobs School of Engineering, USA) spoke about "Nano-biosensors for Global Health: Life in Your Hand."

Chi Huey Wong (Department of Chemistry, The Scripps Research Institute, CA, USA) spoke about "Recent Advances in Synthetic Carbohydrate Chemistry and Translational Medicine." He explained that carbohydrates are one of the four major classes of molecules that make up cells. They are involved in various recognition events in biological systems. However, their precise role in biological functions and disease progression is not well understood mainly due to the lack of tools and methods available for the study of this class of molecules. Wong presented His group's recent development of new methods for the synthesis of complex carbohydrates and glycoproteins, and the study of glycosylation in viral infection and cancer progression. Human viruses depend on host-made sugars to facilitate infection and evade host immune response. They have shown that removal of the host-made sugar coat from the viral surface glycoprotein or mRNA immunogen to generate a Low-Sugar Vaccine is an effective approach to universal vaccine design. On the other hand, cancer cells often express unique surface glycans and these glycans can be used as targets for drug discovery and vaccine design, and the antibodies identified from immunization can be developed into homogeneous antibodies with well-defined glycosylation to maximize their efficacy.

Syuji Fujii (Department of Applied Chemistry, Osaka Institute of Technology) spoke about "Liquid Marble Engineering: From Nature to Materials."

Mi Hee Lim (Bioinorganic Strategies to Study Multiple Facets in Alzheimer's Disease) lectured on "Bioinorganic Strategies to Study Multiple Facets in Alzheimer's Disease."

Michael Anthony Morris (MBER Research Centre and the School of Chemistry Trinity College Dublin, Dublin Ireland) spoke about "Materials Chemistry and Sustainability."

Hai Long Jiang (Department of Chemistry, University of Science and Technology of China, Hefei, PR China) spoke about "Microenvironment Modulation in Metal-Organic Framework-Based Catalysis."

Engin Umut Akkaya (State Key Laboratory of Fine Chemicals, Dalian University of Technology, 116024, Dalian, China) spoke about "Therapeutic Potential of Chemically Generated Singlet Oxygen."

Kazuhiko Maeda (Department of Chemistry, Tokyo Institute of Technology, Tokyo, Japan) lectured on "New Heterogeneous Photocatalysts for Water Splitting and CO_2 Conversion."

Satoshi Maeda (Institute for Chemical Reaction Design and Discovery, Hokkaido University, Sapporo, Japan) spoke about "Reactivity Prediction through Quantum Chemical Calculations."

Yadollah Yamini (Department of Chemistry, Tarbiat Modares University, Tehran, Iran) spoke about "Electrically Filed İnduced Solid Phase Microextraction Techniques."

Sibel Erduran (University of Oxford) spoke about "Chemistry Education for the Post-Pandemic Era: Towards a Holistic Account of Chemistry in Secondary Schools."

Shū Kobayashi (Department of Chemistry, School of Science, The University of Tokyo, Hongo, Japan) spoke about "Environment, Human Health, and Energy: Catalysts Play Key Roles Toward Sustainable Society." He rxplained that synthetic organic chemistry has contributed a lot to modern society. Towards future sustainable society, his group has been investigating on environment, human health, and energy issues from viewpoints of synthetic organic chemistry. In this lecture, the use of water in place of organic solvents in organic transformations, continuous-flow synthesis, and hydrogen storage and transport for a new energy in future society will be discussed. In these works, novel catalyst systems play key roles. For catalytic organic reactions in water, the bioinspired supramolecular architectures were used to compartmentalize highly charged aqua scandium ions into chiral hydrophobic scaffolds. Notwithstanding the use of basic aniline, the optimal architecture allowed for effective suppression of Sc^{3+} leaching and for reuse of solvent–catalyst couples without mortiferous deactivation in asymmetric ring-opening reactions. He discussed also other topics on flow chemistry for drug synthesis and heterogeneous catalysts for hydrogen storage and transport.

Debabrata Maiti (Department of Chemistry, IIT Bombay, Mumbai, India) spoke about "En-Light-ening C-H functionalization." He explained that Over years' transition metal-catalyzed C–H activation has propelled the field of organic synthesis for the construction of structurally complex and diverse molecules in resource-economical fashion. In this context, non-directed C–H activation has gained unprecedented attention for attaining region-specific C–H functionalizations in a step-economic mode. Unlike traditional Fujiwara-Moritani reaction, this approach relies on ligand assistance and thus uses arene as the limiting reagent. However, all existing non-directed C–H functionalizations utilize high thermal energy to induce the functional group which eventually put the regioselectivity at stake. In addition, use of super stoichiometric costly silver salts to regenerate the catalyst produces unwanted metal waste. In aid of developing a more sustainable and environmentally benign approach, his group has established a photoredox catalytic system by a merger of palladium/organo-photocatalyst (PC) which forges highly regeiospecific C–H olefination of diverse arenes and heteroarenes. Visible light nullifies the requirement of silver salts and thermal energy in executing "region-resolved" Fujiwara-Moritani reaction.

Iskender Yilgor (Chemistry Department, Koc University, Istanbul, Türkiye) spoke about "Polyurethane Chemistry: A Toolbox for Innovative Materials."

Zoltan Mester (National Research Council, Canada) spoke about "Alternative Protein Industries: Challenges and Opportunities." He explained that alternative protein sources, such as plant-based proteins, cell-cultured meats and insect-based proteins, have gained increasing attention as a more sustainable, low carbon, low water consumption and ethical alternative to traditional industrial scale animal farming. While each of these sources has unique benefits, there are also safety concerns that need to be addressed. Plant-based proteins, derived from sources such as soy, peas and wheat, have been consumed by humans for centuries and are generally considered safe. Properly cultivated these would have the smallest environmental footprint among all protein sources. However, there have been concerns about the safety of genetically modified plant-based proteins, and some individuals may have allergies or intolerances to certain plant-based proteins. Insect-based proteins, such as those derived from crickets, mealworms, and other insects, have gained attention as a potential alternative protein source. While insects have been consumed by humans in some cultures for centuries, there are still concerns

about their safety, particularly with regard to potential allergenicity and contamination with harmful pathogens. A newer alternative protein source is cell-cultured meat, which is grown in the laboratory from animal cells. While the technology is still in development, safety is a major focus of research and development. One concern is the potential for contamination with harmful pathogens during the cell culture process. To address this, companies are implementing rigorous safety measures and working closely with regulatory agencies to ensure the safety of cell-cultured meat. Overall, while each of these alternative protein sources presents unique safety concerns, they are subject to the same safety regulations as traditional foods, and companies are taking steps to ensure their safety. Continued research and development will be necessary to address safety concerns and ensure the safety of these alternative protein sources as they are more widely adopted. are more widely adopted. Mester discussed his research on chemical characterization of contaminant profiles, digestibility, bio availability and bio accessibility of nutrients and contaminants from these novel protein sources.

Robert S Marks (Department of Biotechnology Engineering, Ben Gurion University, Israel) spoke about "A phagocyte-based İmmunoassay-Cell-Bioassay Test for the Triage of Pathogenic Phyla at the Emergency Department."

Hsiu Yi Chao, John J. H. Lin, Mark Cesa, Mei-Hung Chiu, Fun Man Fung, Silvija Markic, and Rachel Mamlok-Naaman (Department of Science Teaching, Weizmann Institute of Science, Rehovot, Israel) spoke about "Investigating Gender Gap and Promoting Women Scientists in Chemistry."

Niyazi Serdar Sariciftci (Institute of Physical Chemistry, Johannes Kepler University, Linz, Austria) spoke about "Solar Energy Conversion into Chemical Fuels."

David A. Winkler (Department of Biochemistry & Chemistry, La Trobe University, Bundoora, Australia, Department of Medical Chemistry, Monash Institute of Pharmaceutical Sciences, Monash University, Parkville, Australia, and School of Pharmacy, University of Nottingham, Nottingham, UK) spoke about "Problems and Promises of Artificial Intelligence and Machine Learning for Chemical, Materials, and Medicinal Sciences." He explained that currently, we are experiencing amazing, paradigm shifting scientific developments. We understand that the size of small molecule and materials spaces is essentially, infinite, representing an inexhaustible supply of potential drugs and materials with useful properties if we can find them. This has seen a rapid increase in automation and robotics, allowing synthesis of new molecules and materials and measurement of properties orders of magnitude faster. This has created 'data lakes', massive databases of complex genetic, structural, chemical, property, and biological information. Finding 'islands of chemical utility' in a vast palette of possibilities and extracting meaning from massive databases has driven a rise in applications of AI and machine learning, and development of methods. There has been a parallel rise in applications to most aspects of modern life – medicine, finance, manufacturing, social media. Recently, we saw development of rapid, accurate quantum machine learning methods, generative methods to suggest new molecules or materials with improved properties, prediction of protein structures from sequence (AlphaFold), the beginning of general AI (ChatGPT), massive 'make on demand' chemical libraries (ZINC-22), seminal work on autonomous chemical discovery, and increasing use of other AI methods (evolutionary algorithms) to discover molecules and materials with improved properties. His presentation discussed drivers for these developments, summarize contributions my teams have made to adapting and applying machine learning over the past three decades, and provide examples of applications to biomaterials and regenerative medicine, drug design, 2D and porous materials, nanomaterials, surface science, cancer diagnostics, corrosion control, and sustainable energy sources.

Wonwoo Nam (Department of Chemistry and Nano Science, Ewha Womans University, Seoul, Korea) spoke about "Biomimetic Metal-Oxygen Intermediates in Dioxygen Activation and Formation Chemistry."

Juyoung Yoon (Department of Chemistry and Nanoscience, Ewha Womans University, Seoul, Korea) spoke about "Recent Progress on Activatable Photosensitizers and Fluorescent Probes."

Nurettin Sahiner (Department of Ophthalmology, University of South Florida, Tampa, FL, USA, and Deparment of Chemistry, Canakkale Onsekiz Mart University, Canakkale, Türkiye) spoke about "Truncated Cone Structured Networks Using Cyclodextrin Moieties at Different Dimensions, Porosity, and Morphology, and Their Applications."

Pierre Dixneuf (Institut of Chemical Sciences, CNRS-University of Rennes, Rennes, Bretagne, France) spoke about "Catalysis: A Key to Polypyridines, Fused Heterocycles and Functional Phosphines."

Michelle Coote (Institute for Nanoscale Science and Technology, College of Science and Engineering, Flinders University, South Australia) spoke about "Catalysing Reactions with Electric Fields."

Saim Özkar (Department of Chemistry, Middle East Technical University, Ankara, Türkiye) spoke about "How to Increase the Catalytic Efficacy of Palladium in Hydrolytic Dehydrogenation of Ammonia Boran."

Ehud Keinan (Schulich Faculty of Chemistry, Technion-Israel Institute of Technology, Israel) spoke about "Total Synthesis of Spherical Containers and Anion Transporters." He explained that self-assembly of twelve pentatopic tectons, which can be linked using either digonal or trigonal connectors, represents the optimal synthetic strategy to achieve spherical objects, such as the spherical viral capsids. This process requires conditions that secure uninterrupted equilibria of binding and self-correction en route to the global energy minimum. His group demonstrated this concept by synthesizing a highly soluble, deca-hetero-substituted corannulene that bears five terpyridine ligands. Spontaneous self-assembly of twelve such tectons with 30 Cd(II) cations produces a giant icosahedral capsid as a thermodynamically stable single product in high yield. This spherical capsid has an external diameter of nearly 6 nm and shell thickness of 1 nm, in agreement with molecular modeling. NMR and liquid chromatography evidences imply that chiral self-sorting complexation generates a racemic mixture of homochiral capsids. Synthetic anion carriers are essential for studying natural ion transporters and channels and for useful applications, such as treatment of channelopathies, supramolecular architecture, anion sensing and catalysis. Theory suggested that replacing oxygen atoms in bambusurils (BUs) with other heteroatoms could significantly improve their anion binding affinity: S>O>NH. They confirmed these predictions experimentally by synthesizing semithio- and semiaza-BUs and studying their binding and transport properties., Although all analogs are excellent anion binders, semithio-bambus[6]uril is the most effective transmembrane transporter capable of polarizing lipid membranes through selective anion uniport. Semiaza-BUs exhibit simultaneous accommodation of three anions, linearly positioned along the main symmetry axis. Recently, we have demonstrated stochastic sensing of chloride anions using alpha-Hemolysin pore with semiaza-BU adapters.

Tanja Junkers (Polymer Reaction Design Group, School of Chemistry, Monash University, Australia) spoke about "The Rise

of the Machines: Rethinking How We Do Polymer Synthesis."

Reşat Apak, Ayşem Arda, Sema Demirci Çekiç, Saliha Esin Çelik, Burcu Bekdeşer, Mustafa Bener, Ziya Can, and Şener Sağlam (Istanbul University-Cerrahpaşa, Faculty of Engineering, Chemistry Department, Avcılar-İstanbul, and Istanbul University, Faculty of Science, Chemistry Department, Vezneciler-İstanbul) spoke about "Principles, Applications and Limitations of Spectroscopic Sensor and Nanosensor Design."

Shyam S. Mohapatra (University of South Florida, Tampa Florida, USA) lectured on "Designer RNA Nanomedicines for Health and Disease: The State-ofthe-Art."

Ron Blonder (Weizmann Institute of Science, Israel) spoke about "Introducing Contemporary Research Topics into School Science Programs: Looking for the Benefits While Considering The Challenges." She explained that chemistry is continually being developed through research in academia, research institutions, and industry. However, school chemistry and the curricular contents are hardly affected by the development of chemistry. This gap does not provide an opportunity to expose school students to the beauty and relevance of contemporary chemistry research. Students are unaware of how chemistry contributes to addressing the global challenges; they are not exposed to the nature of modern science and to actual scientists who conduct chemistry research today, and who are more likely to be perceived as models for the students. Changing the school curriculum usually takes a long time, and many informal activities and outreach programs have been developed to communicate contemporary research to school students. However, a deeper approach that does not require curricular changes is to focus on chemistry teachers' professional development (PD) and to update and expand their knowledge by learning and experiencing contemporary chemistry. Blonder reflected on the different approaches of introducing contemporary research topics into school science programs and present current results on the impact on teachers and students outcomes in terms of their motivation to become scientists, their understanding the nature of science and the academic emotions that mediate these outcomes.

Alireza Khataee (Gebze Technical University, and University of Tabriz) spoke about "Advanced Oxidation Processes Using Layered Double Hydroxides."

Viktorya Aviyente, Melisa Su Yordanlı, Deniz Akgül, Aylin Saltuk, Tulay Atesin, and Alper Uzun (Department of Chemistry, Bogazici University, Besiktas, Department of Chemical and Biological Engineering, Koç University Istanbul, Türkiye, and Department of Chemistry, The University of Texas, USA) spoke about "Modeling the Selectivity and Reactivity of Single Site Catalysts."

Taek Dong Chung, Wonkyung Cho, Sun Heui Yoon (Department of Chemistry, Seoul National University) spoke about "Bi-directional Communication Between Neuronal Systems and Electrochemical Devices."

Mehmet Kahraman, Sebastian Wachsmann Hogiu, Ramazan Solmaz, Adile Tosun, Aysun Korkmaz, Gulsen Aksin, and Handan Yuksel (Department of Chemistry, Gaziantep University, Gaziantep, Türkiye, Department of Bioengineering, McGill University, Montreal, Canada, and Department of Chemistry, Bingöl University, Bingöl, Türkiye) spoke about "Label-free Biosensing on Plasmonic Nanostructures using Surface-enhanced Raman Scattering."

Richard Hall Wilton (Fondaizone Bruno Kessler, Italy) lectured on "Micro- and Nano- Fabrication & Quantum Technology: Towards Applications."

Turan Öztürk (Istanbul Technical University, Türkiye) spoke about "Easy Modifications of Thienothiophene and Dithienothiophene for Multiple Applications in Organic Material Chemistry; Recent Advances."

Supa Hannongbua (Department of Chemistry, Faculty of Science, Kasetsart University, Bangkok, Thailand, and Center for Advanced Studies in Nanotechnology for Chemical, Food and Agricultural Industries, Kasetsart University, Bangkok, Thailand) spoke about "Development and Optimization of Computer-Aided Molecular Design Strategies for the Design of Anti-Viral and Anti-Malarial Drugs."

The 21st General Assembly of the FACS

The 21st General Assembly occurred in the spacious Senate Hall on July 8th, one day before the congress. The participants were Prof. Mustafa Culha, Prof. Onder Metin, Prof. Reuben Jih-Ru Hwu, Prof. Dave Winkler, Prof. Edward Juan Joon Ching, Prof. Ehud Keinan, Dr. Dien Pandiman, Prof. Supa Hannongbua, Prof. Supakorn Boonyuen, Prof. Seokmin Shin, Dr. Hamdan Mohammad Alajmi, Prof. Raymond Wai-Yeung Wong, Prof. Liu Ling-Kang, two guests from Thailand, Prof. Supawan Tantayanon and Prof. Vudhichai Parasuk, and one guest from Malaysia, Prof. Zuriati Zakaria.

President Culha welcomed all participants and thanked them for attending the meeting. He said that this was the first Executive Committee (EXCO) meeting of his term and was a chance for incoming EXCO members and outgoing members to meet and share their experiences. He also mentioned his mission and vision as the FACS president for his term. He said he would like to engage more Asian countries in the FACS by communicating with societies such as Kazakhstan, Kirgizstan, Uzbekistan, Azerbaijan, Iran, etc. He also mentioned helping the countries in South Asia, such as Vietnam, Indonesia, and Cambodia, needing help, mainly financial and organizational, to take part in FACS. He also indicated that he would visit several member countries, particularly the low-income ones, to connect them to the FACS and support them.

Past President, Prof. Reuben Jih-Ru Hwu expressed his satisfaction with the contributions of the previous EXCO members and wished to see progress in modernizing FACS's governance. He thanked Prof. Liu Ling-Kang for his contributions and help as Secretary-General for four years.

After approving the Minutes of the 82nd EXCO Meeting in Kuala Lumpur, Malaysia, the Treasurer, Prof. Edward Juan Joon Ching, reported on the updated financial situation, intending to complete items related to the ACC2023 accounting upon completion of the Congress. Prof. Dave Winkler and Prof. Seokmin Shin agreed to serve as the Science Directors of FACS. Prof. Ehud Keinan decided to continue his assignment as Editor-in-Chief of AsiaChem Magazine. He mentioned that publishing the magazine costs $10,000 per issue and agreed that the Israel Chemical Society would continue sponsoring it until another sponsor was found. At the same time, the President and Secretary-General agreed to take responsibility for the FACS website and social media.

Prof. Raymond Wai-Yeung Wong was elected as the representative of East & Pacific Asia, Dr. Dien Pandiman was elected as the representative of Southeast Asia, and Dr. Hamdan Mohammad Alajmi was elected as the representative of South & West Asia.

Closing ceremony

Prof. Onder Metin (FACS Secretary-General and Congress Secretary-General) and Prof. Mustafa Culha (FACS President and Congress Chair) announced the winners of the Young Rising Star Awards and the Best Poster Awards.

Prof. Supa Hannongbua, FACS President-elect and Congress Chair of the 20th Asian Chemical Congress (20ACC) provided preliminary information on the event: "On behalf of the Organizing Committee of the 20th Asian Chemical Congress (20ACC) and The Chemical Society of Thailand (CST) under the patronage of Her Royal Highness Princess Chulabhorn Krom Phra Srisavangkavadhana, it is my great pleasure to extend a warm invitation to you to participate in 20ACC on June 23-26, 2025 at the Berkeley Hotel Pratunam in Bangkok, Thailand, all under the supportive umbrella of the FACS. The ACC has grown into a prominent international conference in chemistry for almost four decades. The upcoming 20ACC carries on the tradition of excellence with diverse global involvement across various Pure and Applied Chemistry disciplines. The 20ACC is particularly noteworthy as it focuses on the Responsible Chemical Sciences for World Sustainability theme, making it an event of even greater significance than ever before. This conference is especially suited for the chemistry and chemical sciences field, as they are ever-growing in tackling global environmental, health, and energy issues. The conference program will cover all the traditional chemistry disciplines and feature exceptional content that reflects the expertise of the global chemistry network. Gathering participants from around the region and the world, this exciting congress offers an excellent platform for engaging conversations, fruitful collaborations, and valuable networking opportunities. The congress exhibition will showcase the newest products and advancements of many companies and organizations alongside various technical presentations. In addition to the enriching congress sessions, you will have the wonderful opportunity to explore Thailand's incredible cultural and tourist attractions. From ancient temples and majestic palaces to stunning natural landscapes, including lush mountains and picturesque beaches, savory culinary delights, and exciting shopping experiences, your time in the Kingdom of Thailand will surely create cherished memories of its hospitable people and remarkable sights. We look forward to meeting you, your family, and your colleagues at 20ACC in Bangkok! We trust you will have a wonderful and enriching experience at the congress. Your participation and contribution are greatly appreciated and will surely add to the event's success."