IUPAC from A Young Chemist's Perspective

by Yvonne Choo Shuen Lann

When you hear the name of the International Union of Pure and Applied Chemistry (IUPAC), you would naturally be reminded of the chemical nomenclature you learned in chemistry class or textbooks. At that age, you may have resented the people who created such "complex" naming system to make life difficult for you as a student but as you get older, particularly when you are pursuing chemistry as a career be it in academia or industry, you learn to appreciate the standards that have been put in place to make life easier for you.

Have you ever wondered who are the people behind all the chemical nomenclature and terminology, standardisation methods for measurements, etc.? What do these people do at the IUPAC biennial General Assembly (GA) and World Chemistry Congress (WCC), such as the recent virtual IUPAC 2021? And how did I get involved in IUPAC as a young chemist?

My IKM & IUPAC Journey – 10 Years' Highlights

10 years ago, IUPAC celebrated the International Year of Chemistry (IYC) 2011 under the unifying theme of "Chemistry—Our life, Our Future". Various activities were planned with the primary goals of eliminating the negative image of chemistry and bringing about a "Renaissance of Chemical Science in the century" [1]. One of them was the International Video and Essay Competition on "A World without Polymers?" organised by the IUPAC Polymer Division. Out of curiosity and my love for chemistry, I stepped out of my comfort zone, took up the challenge to participate in the video category of the competition and won first prize [2]. With the sponsorship of the organiser, Institut Kimia Malaysia (IKM), Akademi Sains Malaysia (ASM) and the Malaysian Rubber Glove Manufacturers Association (MARGMA), I was able to travel to San Juan, Puerto Rico for the award ceremony held at IUPAC 2011. The exposure was enlightening and has opened up many opportunities for me in the years that follow.

Having graduated with my Bachelor's degree (with Honours) in Pure Chemistry from Universiti Sains Malaysia in 2014, I went abroad to pursue my PhD in Chemistry at Newcastle University focused on the design and synthesis of fluorescent organic compounds and polymers for use in energy applications. Since I enjoyed communicating chemistry to the general public (particularly about Polymers) in various IKM events during my undergraduate, I actively involved myself in science outreach events as a STEM ambassador and a member of the Royal Society of Chemistry while I was in the UK. Upon graduation, I returned to Malaysia to embark on my academic journey as a chemistry lecturer based in the School of Energy and Chemical Engineering of Xiamen University Malaysia.

In celebration of both the IUPAC centenary (IUPAC 100) and the International Year of Periodic Table (IYPT) in 2019, the IUPAC and the International Younger Chemists Network (IYCN) announced the creation of a Periodic Table of Younger Chemists to showcase a diverse group of 118 outstanding younger chemists from around the world who embodied the mission and

International Younger Chemists Network (IYCN) General Assembly, 8th August 2021

core values of IUPAC. I was very grateful to have been awarded the element Bohrium alongside two other Malaysians—Dr Magaret Sivapragasam (Ytterbium) and Dr Felicia Lim Phei Lin (Samarium) [3]. In the same year, I was given the opportunity to contribute in the preparation of IUPAC 2025 and MACRO 2026 bidding slides. IKM successfully won both bids to host IUPAC 2025 in Kuala Lumpur and MACRO 2026 in Kuching, Sarawak! The preparation for the events are underway.

In 2020, I was elected as the youngest council member in IKM history to serve its 2020/2021 term. It was a challenging experience having to take up new roles that come with greater responsibilities, yet not having as much time to adapt or contribute due to various reasons attributed to the COVID-19 pandemic. However, I still learned a lot from the process, improved on my leadership skills, enhanced my understanding of the organisation, its international affiliations (e.g. IUPAC) and its flagship events/activities. I was also actively involved in the Malaysian Young Chemists Network (MYCN) as the Media Ambassador Chairperson, which resulted in being nominated as one of the two International Younger Chemists Network (IYCN) Malaysian Delegates.

Eventually, it came full circle when I participated in IUPAC 2021 as an invited speaker, as a Malaysian Delegate in the IYCN GA, as a Young Observer (YO) in Division IV Polymer GA and as a National Representative (NR) (2022-2023) in the Committee on Chemical Research Applied to World Needs (CHEMRAWN) GA. Little did I know that 10 years after my first IUPAC encounter, I'd be given such privileges to serve both organisations (IUPAC and IKM) that got me to where I am now.

Virtual IUPAC 2021: Two Weeks Well Spent!

Thanks to the COVID-19 pandemic, IUPAC 2021 went virtual with meetings and live Q&A held in Zoom, social events/exhibitions hosted in Gather.Town, plenaries were live-streamed, oral presentations were pre-recorded and poster presentations were uploaded ahead of time on the conference platform. As the attendees were based around the world across different time zones, we all did our best to cope with the sessions, even if it meant having to sleep at 2 AM or to wake up a few hours later at 5 AM to catch the live stream/Q&A of a plenary.

51st IUPAC General Assembly

My week started with the IYCN's first online GA on August 8th, 8 PM MYT. Also in attendance were ChM Dr Shahrul Nizam Ahmad (Universiti Teknologi MARA, UiTM) – Malaysian Delegate and Assoc Prof ChM Dr Lee Hooi Ling (Universiti Sains Malaysia). Each represented country received one vote to reflect a stand in the proposed changes to the Statutes and Bylaws as well as in the voting of executive board candidates. As it was virtual, the voting was done via a secure and anonymous platform oversee by election observers. Towards the end of the GA, we were given the opportunity to networking and connect with various IYCN subcommittees in separate breakout rooms. The public outreach subcommittee, in particular, had positive team dynamics which resonated with me.

The second meeting I attended was the GA of CHEMRAWN on August 10th, 5 AM MYT chaired by Prof Francesca Kerton (Memorial University of Newfoundland, Canada). In attendance were Datuk

ChM Dr Soon Ting Kueh (Institut Kimia Malaysia, National Representative, 2020-2021) and Assoc Prof ChM Dr Juan Joon Ching (Universiti Malaya, Associate Member, 2020-2021) while I was there as a YO. During the session, discussion leaders presented updates about their meaningful projects which revolved around the following six IUPAC goals:

- Address global issues
- Advance research through scientific discussion
- Assist industry towards sustainable development, wealth creation and improvement of the quality of life
- Foster communication among chemists and organisations with special emphasis on needs in developing countries
- Enhance education and the application of chemistry globally
- Increase the diversity in IUPAC bodies

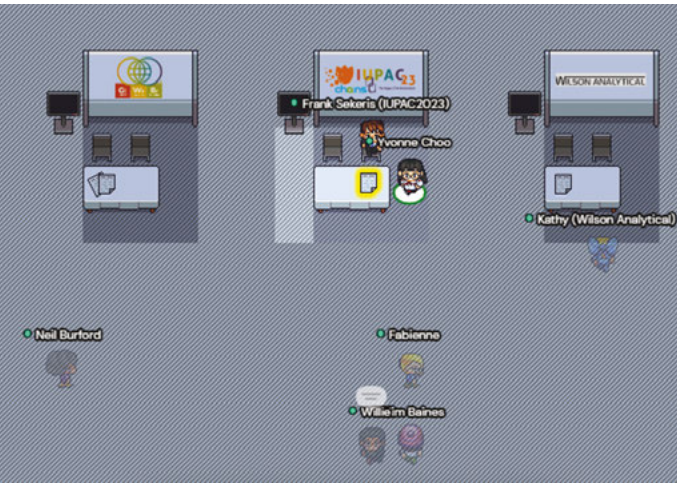
In an effort to reach out to the social-media active generation, CHEMRAWN made use of its Twitter and Facebook platforms to showcase its projects (e.g. E-Waste Conference, Prize for Green Chemistry, etc.), re-tweeting of important issues/research areas (e.g. Microplastic pollution, SDG, etc.).

On August 11th, 5 AM MYT, I attended the GA of Division IV Polymer chaired by Prof Christine Luscombe (University of Washington, USA). In attendance was Prof ChM Ts Dr Chan Chin Han (Universiti Teknologi MARA, UiTM, Titular Member, 2020-2023) while I was there as a YO. It was apparent that the Polymer Division is one of the most active divisions within IUPAC as reflected by the high number of turn up (members/observers and the impressive number of completed, ongoing and upcoming projects. In addition to the GA, fellow YOs were invited to join in subcommittee task group (project) meetings and special sessions held concurrently with the IUPAC 2021. The Subcommittee of Polymer Terminology (SPT) had thoughtfully arranged a session after their opening to brief YO about the task group meetings they had planned within the 2 weeks and encouraged us to attend those we were interested in, to better understand them. I felt very welcomed and cherished in the meetings – given the chance to brainstorm new project ideas, share perspectives and contribute despite being new to the division. At the SPT closing session, the chair of the SPT subcommittee – Prof Dr Patrick Théato (Karlsruhe Institute of Technology, Germany) announced that I will be officially invited back to attend next year's at MACRO2022 alongside several other YOs.

48th IUPAC World Chemistry Congress

I was invited by the chairs of the (Society) - Challenges and Opportunities for Equity, Diversity and Inclusion (EDI) in Chemistry—A Global Perspective Symposium to

Selected Slides from "A Young Malaysian's Perspective on The Challenges and Barriers for EDI in Chemistry" Invited Talk Showcasing Institut Kimia Malaysia (IKM)'s Equity, Diversity and Inclusion (EDI) Efforts



During the IUPAC2021 Virtual Social Session on Gather.Town on 16 August 2021, Yvonne met with Frank Sekeris who was hosting the IUPAC2023 booth. The encounter provided a first contact between the 2023 IUPAC Congress to be held in Netherlands and the following to be held in 2025 in Malaysia!

give a talk about my perspective of EDI within the Malaysian chemistry community at IUPAC 2021.

Equity, Diversity and Inclusion are three terms that may sound foreign to a lot of us in Malaysia simply because we have not been exposed to them as much as the West. According to Cambridge dictionary, equity refers to "the situation in which everyone is treated fairly and equally", diversity refers to "the fact of there being people of many different groups in society, within an organisation, etc." and inclusion refers to "the idea that everyone should be able to use the same facilities, take part in the same activities, and enjoy the same experiences, including people who have a disability or other disadvantage."

As the world progresses to prioritise EDI and acknowledges its importance in our community/workplace, we must recognise IKM's EDI efforts within its organisation – from the establishment of the Malaysian Young Chemists Network (MYCN) to the involvement of women in leadership roles in the council. Such key efforts have been showcased as part of my 15-minutes pre-recorded video. There was also a live Q&A (symposium discussion) session for speakers to interact with those in attendance. Many insightful stories/experiences were shared and possible solutions/progressive efforts were discussed.

Despite being virtual, IUPAC 2021 successfully hosted several social sessions on Gather.Town. It is a fun platform that enabled attendees to mingle in the virtual conference space as personalised avatars. I got to talk to Dr Fabienne Meyers – the Associate Director of IUPAC and Mr Frank Sekeris – the Congress Manager of IUPAC 2023 at their virtual booths. We reminisced about IYC 2011, IYPT 2019, talked about IUPAC 2023, IUPAC 2025 and anticipated the day when conferences could be in-person.

All in all, these two weeks have been extremely fruitful as I have learned a lot about IUPAC from its people and through participation in various task group (project) meetings and GAs. I have also made many new connections and got to be involved in some of the projects. If I had to briefly describe IUPAC in my own words, I would say it is a welcoming organisation that is made up of inspiring individuals from very diverse backgrounds and areas of expertise but they all had a common goal—to contribute and advance chemistry for the betterment of society!

It was meaningful to look back on my last 10 years with IKM and IUPAC through the preparation of this report. Time to look forward to the next decade contributing to chemistry education, research and the community. Thank you IKM and IUPAC for entrusting me with these responsibilities, I promise to serve to the best of my ability.

References:

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