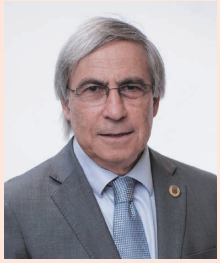
論説 Commentary

The Israel Chemical Society and the Chemical Society of Japan : Close Sisters



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"Israel and Japan are situated at opposite ends of Asia, but this is a fact which binds them together rather than separates them. The vast continent of Asia is their connecting link, and the consciousness of their Asian destiny is their common thought." David Ben-Gurion, 1952

Although the Israel Chemical Society (ICS) and the Chemical Society of Japan (CSJ) represent two significantly different communities in terms of size, culture, and national heritage, they share important characteristics. Both organizations were initially modeled after the British Chemical Society. The Chemical Society was founded in Tokyo 1878, changed its name to CSJ in 1921, and in 1948, upon a merger with the Society of Chemical Industry, became the modern CSJ[1]. The ICS was founded in 1933 as the association of chemists in the Land of Israel, and in 1948, upon establishing the State of Israel, it became the ICS as we know it today.

Those years in the third decade of the 20th century were a heroic period for science under the British Mandate of Palestine. It is hard to believe that the tiny Jewish population of those days, 80,000 in 1920 and 170,000 in 1930, established three world-renowned institutions of higher education : the Technion (1924), the Hebrew University of Jerusalem (1925), and the Weizmann Institute of Science (1934).

As ICS President for the past 14 years, and IUPAC's president-elect, I have many reasons to be proud of the chemistry community of Israel. Although this community is relatively small, with approximately 7000 chemists, 5000 chemical engineers, and 1000 chemistry teachers, its impact on international science and the economy is significant. About 40% of Israel's industrial production and 25% of exports are chemicals. Two of the 11 Presidents of the State of Israel were scientists, and both Chaim Weizmann and Efraim Katzir were chemistry professors. Six Israeli citizens won the Nobel Prize in sciences within one decade, and all six in Chemistry. It was gratifying that the Israel Post agreed to collaborate with the ICS, accepting my graphic design and issuing four colorful Israeli stamps commemorating Nobel prizes in chemistry (Figure 1).

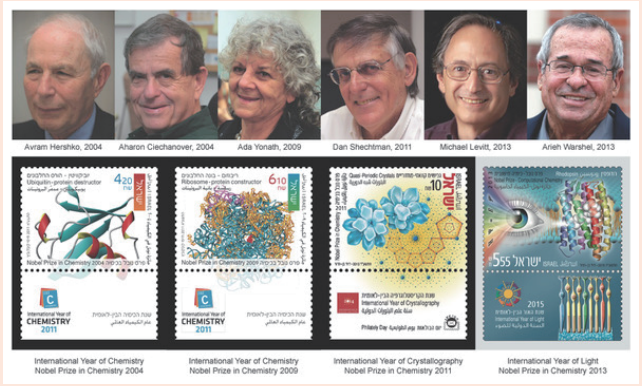

Figure 1 The six Israeli scientists who won Nobel Prizes in chemistry and the four Israeli stamps commemorating those prizes.

The warm relationship and ever-intensifying collaboration between the ICS and the CSJ have a history of more than three decades. The first significant delegation of Japanese chemists arrived in Israel to attend the 10th IUPAC Conference on Physical Organic Chemistry, organized in the Technion on August 5-10, 1990, by Prof. Yitzhak Apeloig. The outstanding group of 26 Japanese scientists from 13 universities included Tsutomu Miyashi, Hideki Sakurai, and Nobuyuki Harada of Tohoku University, Tadashi Okuyama, Masaji Oda, and Terukiyo Hanafusa of Osaka University, Shuji Tomoda, Renji Okazaki, Yoshito Takeuchi, Gaku Yamamoto, Noriko Sasagawa, and Kiyoshi Mutai of the University of Tokyo, Michinori Oki of Okayama University of Science, Takaaki Sonoda, Hiroshi Taniguchi, Seiko Miyashita, and Yuho Tsuno of Kyushu University, Kin-ya Akiba of Hiroshima University, Koichi Komatsu of Kyoto University, Wataru Ando of the University of Tsukuba, Minoru Hirota and Kazuhisa Sakakibara of Yokohama National University, Koh-Ichi Yamada of Josai University, Yasuhiko Sawaki of Nagoya University, Koichi Tanaka of Ehime University, and Michiko Iwamura of Toho University. That conference paved the way for many visits of individual Japanese scientists and delegations to Israel.

The ICS has kept a long tradition of Annual Meetings for nearly 90 years. Those colorful gatherings have always been an attractive scientific event for Israeli Science, bringing together researchers from academia, chemical education, chemical industry, and government laboratories. The six Israeli research universities organized these meetings in a six-year cycle. A unique tradition of these meetings, which has already attracted much worldwide attention and interest, has been hosting a delegation of eminent chemists from a top institution or a country to deliver plenary and keynote lectures. Accordingly, the 75th meeting, organized by Tel Aviv University on January 25-26, 2010, at the David Intercontinental Hotel in

Tel Aviv, hosted a delegation from the CSJ and the Japan Society for the Promotion of Science. The delegation included Tohru Fukuyama, Eiichi Nakamura, and Hiroaki Suga of the University of Tokyo, Shunichi Fukuzumi of Osaka University, and Daisuke Uemura of Keio University. Other distinguished speakers were Erick M. Carreira of ETH-Zürich and Scott E. Denmark of the University of Illinois. All eminent guests were awarded a lifetime Honorary Membership in the ICS. Japan's Ambassador to Israel, Mr. Haruhisa Takeuchi, attended the opening ceremony and greeted the Japanese delegation and the audience[2].

Another noteworthy event was the joint Israel-Japan Conference on "Molecular Catalysis in the Service of Society," held in the Technion on November 3-5, 2019. Prof. Zeev Gross of the Technion organized the event with the support of the Israeli Ministry of Science and Technology.

The Japanese delegation included Makoto Fujita, Eiichi Nakamura, and Kyoko Nozaki of the University of Tokyo, Yoshiaki Nakao, Atsuhiro Osuka, and Keiji Maruoka of Kyoto University, Hisashi Yamamoto of Chubu University, Manabu Abe of Hiroshima University, Hiroyuki Furuta and Hiroshi Taniguchi of Kyushu University, and Takashi Hayashi of Osaka University.

The Israeli lecturers included Itamar Willner, Ori Gidron, Sason Shaik, and Dmitri Gelman of The Hebrew University, Doron Pappo of Ben Gurion University, Doron Shabat and Micha Fridman of Tel Aviv University, Ashraf Brik, Mark Gandelman, and Galia Maayan of the Technion, Rafal Klajn and David Milstein of the Weizmann Institute, and Doron Aurbach of Bar-Ilan University. Japan's Ambassador to Israel, Mr. Koichi Aiboshi, invited all participants, including the Technion President and ICS President to a reception at his residence in Herzliya (Figure 2).

Figure 2 The Japanese delegation and hosts at Ambassador Koichi Aiboshi's (center) residence.

The Wolf Foundation is a highly prestigious Israeli institution, and I am proud to serve on its council, representing the field of Chemistry. The Wolf Foundation, established in 1976 with an initial endowment fund donated by Dr. Ricardo Wolf, celebrates and promotes exceptional achievements in the Sciences and the Arts worldwide. Wolf Prizes are awarded annually in six fields: Agriculture, Chemistry, Mathematics, Medicine, Physics, and Arts. The latter rotates between architecture, music, and visual arts. Remarkably, the Wolf Prize has become the second most significant prize after the Nobel, certainly in chemistry and physics. Many also agree about its predicting power for a Wolf laureate to win the Nobel Prize, claiming that the road to Stockholm goes through Jerusalem. So far, two Japanese scientists have received the Wolf Prize in chemistry, Ryoji Noyori (2001), who also won the Noble Prize, and Makoto Fujita (2018).

For the past four decades, the ICS has kept a tradition of organizing the ICS-Wolf Symposia. These highly attended Annual Symposia have become a significant part of the scientific landscape of the State of Israel, usually held one day before the Wolf Prize award ceremony in the Knesset. The 2018 symposium, titled "Metal-Directed Assembly and Metal-Organic Frameworks," honored the 2018 laureates in chemistry, Makoto Fujita of the University of Tokyo and Omar M. Yaghi of UC Berkeley. The guest speakers included two Fujita's colleagues from the University of Tokyo, Tomohisa Sawada and Takuzo Aida[3].

Finally, I wish to mention AsiaChem magazine, the official voice of the Federation of Asian Chemical Societies, published by the ICS. As AsiaChem's Editor-in-Chief, I am proud of the recent issue dedicated to Chemistry in Japan[4]. The issue displays cutting-edge science, history, essays, and interviews, representing the best of current Japanese chemical sciences. Japan has always been a science powerhouse, as reflected by the number of Japanese Nobel and Wolf Prizes laureates. Of the 29 Nobel Prize Laureates, 21 received the prize in the past two decades. This remarkable trend reflects the shift of the center of gravity of the global scientific and world economy from North America and Europe to Asia.

In conclusion, the multi-channel cooperation between Japan and Israel keeps intensifying on every possible level. Remarkably, over 50 Japanese companies now have subsidiaries in Israel, and the Japanese investments in the Israeli high-tech industry exceed $1.5 billion. It is not too difficult to predict that the already strong ties at the academic level will produce ever-increasing collaboration projects between individual scientists, groups, and institutions affiliated with the CSJ and the ICS.

1) M. Sawamoto, The Chemical Society of Japan : Striving for Chemical Sciences and Technology for a Sustainable Human Society, *AsiaChem* **2021**, *2*, 6. https://doi.org/10.51167/acm00017
2) E. Keinan, D. Shabat, S. Carmeli, The 75th Annual Meeting of the Israel Chemical Society, *Isr. J. Chem.* **2010**, *50*, 255. https://doi.org/10.1002/ijch.201000050
3) E. Keinan, Metal-Directed Assembly and Metal-Organic Frameworks : ICS Symposium Honoring Wolf Prize Laureates Makoto Fujita and Omar M. Yaghi, *Isr. J. Chem.* **2018**, *58*, 1171. https://doi.org/10.1002/ijch.201800136
4) https://www.facs.website/asiachem-2-1-december-2021

The commentary shown here is written by a commentator invited by the Commentary Committee of the Society, and the author is basically responsible for the contents. The Society acknowledges that this is important and worth publishing. Opinions and comments of the readers are highly appreciated.
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