

Diversity in Science at the Global Women's Breakfast Network

by Mary J. Garson, Laura L. McConnell, and Lynn M. Soby

In a year marked by unprecedented challenges, IUPAC hosted the largest ever Global Women's Breakfast (GWB2021) on 9 February 2021, bringing together more than 20,000 people around the world to celebrate the achievements of women scientists, to strengthen and expand professional networks, to inspire the next generations, and to challenge the status quo with respect to equality for women scientists in the workplace.

Building upon the success of earlier GWB events, men and women from more than 300 events in 70 countries joined together around a theme of *Empowering Diversity in Science*. A large majority of breakfast events were held virtually due to the COVID-19 pandemic, but organizers took advantage of virtual platforms like Facebook Live and Zoom to collaborate with other groups, to expand their audience, and to exhibit flexibility in event scheduling to meet the needs of their communities.

GWB2021 was launched in New Zealand, with University of Waikato in Waikato and the Manawatu Branch of the New Zealand Institute of Chemistry (NZIC) in Palmerston North sharing the honour of first breakfast. As each breakfast event began, the map pins turned from white hearts to red, moving as a wave from east to west. The final breakfast occurred about 33 hours later with an evening event hosted by the Alaska Chapter of the American Chemical Society.

The most easterly and most southerly events were also in New Zealand in Palmerston and Dunedin (NZIC Otago), respectively. The northernmost breakfast was held in Tromsø (Norway) hosted by the Nordic Consortium for CO₂ Conversion, and the westernmost breakfast was hosted by Bayer Crop Science on the Hawaiian island of O'ahu.

The IUPAC GWB website (iupac.org/gwb) served as a networking hub for event organizers to connect with each other and for attendees to discover events happening in their region. GWB promotional materials were provided to organizers to make marketing their events easier. A welcome video was created and shared via the website along with a PowerPoint slide deck about IUPAC. The welcome video included short clips created by organizers around the world (<https://youtu.be/StbLclpTyUM>). IUPAC used social media platforms: Twitter, Facebook, LinkedIn, Instagram with the hashtag #GWB2021 to promote the event. A Flickr group (<https://www.flickr.com/groups/iupacgwb2021>) was set up as an archive for photos and videos from the 2021 event. Breakfast organizers and attendees were invited to upload their photos and videos from both before and during the event.

Participation in GWB has increased over the last three years from 203 events in 2019, 244 in 2020, and 324 this year. The countries of Algeria, Benin, Cambodia, Cyprus, Ecuador, Finland, Iraq, Israel, Kazakhstan, Kenya, Jamaica, Norway, Sri Lanka, Zambia, and Zimbabwe joined for the first time. Countries with the greatest number of events were Australia (15), Canada (14), India (61), Mexico (40),

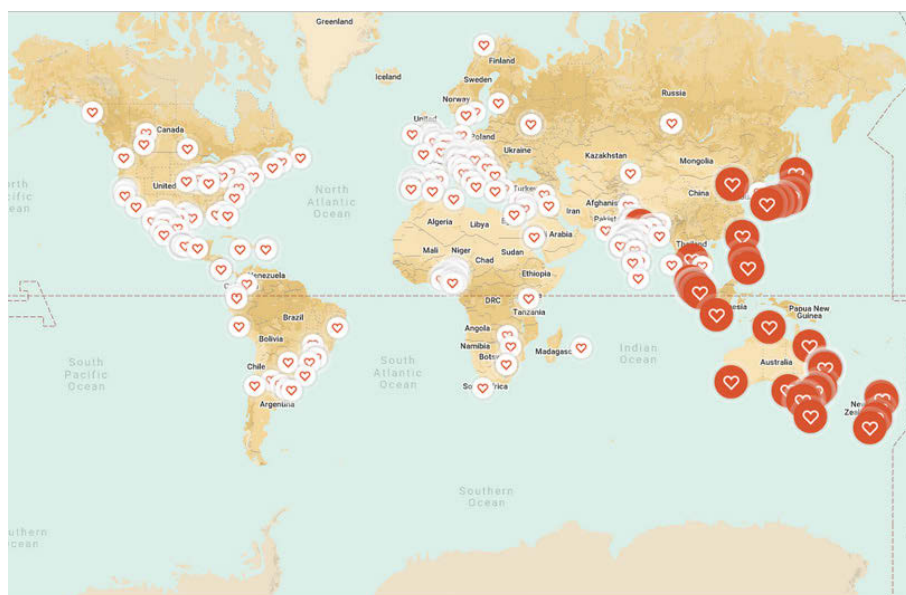


Figure 1- The GWB2021 Global Breakfast Map as events began in Asia.

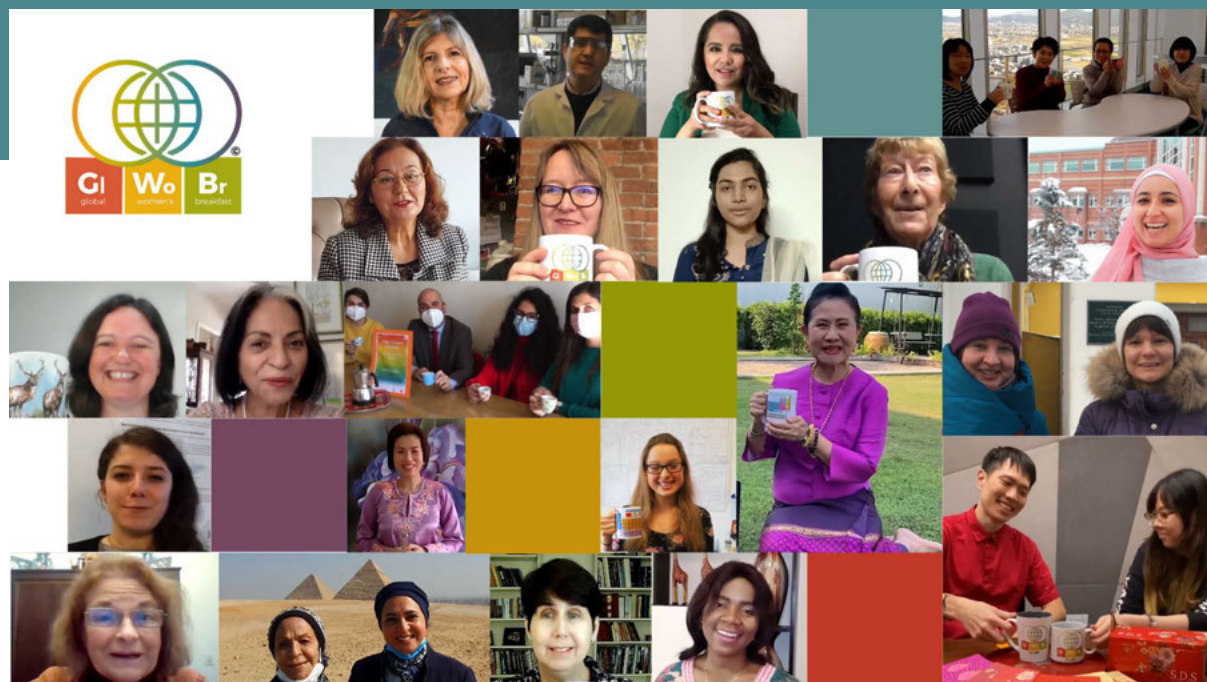


Figure 2- Collage of photos from the GWB2021 welcome video

Nigeria (21), United Kingdom (10) and United States (30). Notable was the increased number of events in Mexico and India over previous years.

Universities made up approximate 70% of host organizations, Chemical Societies hosted 15% of events, Industry hosted 12% of events. Bayer Crop Science organized 17 events in 7 countries, and Dow Chemical organized 15 events in 12 countries. Government research institutes and high schools organized a number of events.

GWB2021 benefited from the creation of an IUPAC project #2020-010-2-020 entitled "Creation of IUPAC Global Women's Breakfast Series and a Global Network in Support of Eliminating the Gender Gap in the Chemical Sciences" with a large multi-national task group of country champions to help publicize GWB, to recruit new organizers, and to provide feedback and suggested improvements. A small number of organizers acknowledged that they had not known much about IUPAC prior to becoming involved in the GWB task group, and through their participation, the aims and objectives of IUPAC, and its global role, were shared to a new audience.

What has been the impact of GWB?

Importantly, 62% of respondents indicated that hosting an event resulted in increased attention to diversity issues in their organization (Table 1). Many reported new connections with groups internal or external to their organization. Indeed, the virtual format adopted for the 2021 event favoured an increased emphasis on remote in-country or regional interactions. Respondents also commented favourably on the event providing leadership development opportunities within their organization. The opportunity to raise

awareness of gender gap issues in an informal setting was welcomed and was highlighted as an important topic of conversation for future events.

What activities were organized at GWB events?

Each GWB event was independently organized to meet the needs of the local organization. Some were quite simple gatherings of five or ten scientists over a cup of coffee. Others were more formal events with hundreds of attendees including scientific presentations or panels of distinguished scientists. Some events included attendees from a single organization. Others collaborated with breakfast events in their region or in other countries. Some took the opportunity to connect with companies in their regions or invited high school students to attend. Many GWB events have made a special effort to welcome male participants, both as attendees and as speakers, and it is a welcome objective fully in line with the values of IUPAC, and the UN SDG, to increase the diversity of attendees at future GWB events.

Organizers used fun activities like Periodic Table Bingo and chemistry-themed trivia, some awarded prizes and certificates. The group in Instituto Superior de Engenharia do Porto had fun making a wonderful short video that captures the humor of using Zoom for social events (<https://www.youtube.com/watch?v=rHUPN2ejxec>).

Each event across the world was unique, but a cross-section of events from different regions are highlighted as examples.

Benin: The first ever GWB event in Benin was held at the government's flagship Sèmè City hub which aims to create a world-class knowledge and innovation center in Africa. Ten attendees from academic

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institutions and the drug company Pharmaquick shared a self-introduction session and then brainstormed on "Empowering diversity in science." Participants provided key words or sentences that were converted into a Word Cloud (Figure 3).

Japan: The Gender Equality Committee of the Chemical Society of Japan and the Society of Chemical Engineers, Japan arranged a set of six online lunchtime meetings at major cities throughout the country. The various groups used breakout rooms to brainstorm how to expand the research network across genders.

A separate event at Kyoto University brought together academics, professional staff, and students from several nations, including Canada, Egypt, Iran, Mongolia, India, China, Italy, France, Thailand, and the USA, and from bio-related fields including biopolymers, bioimaging, chemical biology, and biosensors. Participants were encouraged to discuss work-life balance in a breakout session. The legacy of this event was the promotion of new bonds between young and more established women in chemistry.

Mexico: In Mexico, 40 virtual events of the Global Women's Breakfast were registered, of which 21 were held in the state of Chihuahua where 689 people participated (352 university level and 337 of secondary and high school level). Event organizers reached out to participants in remote areas of Mexico. Invited panelists shared, "What woman inspired you in science?" And, "What do you propose to promote diversity in science? How can we inspire women, men, boys, and girls, to increase their interest in science?"

India: There were attendance numbers in the hundreds at many of the 61 events held in India. Outreach to the Chemistry Teachers of India at their Annual Meeting was highly effective at generating interest prior to GWB. For example, at a virtual webinar jointly arranged with the Shri Vaishnav Vidyapeeth Vishwavidyalaya Indore, over 100 participants from

all over India watched presentations on the role of gender diversity in innovation and scientific discovery. Eminent space scientist and alumna Seetha Soma Sundaram gave a presentation to 250 attendees at Hindu College in Delhi, followed by a poster competition. Many breakfast events welcomed significant interactions with overseas participants. An audience of 300 participants at Maghav Science PG College heard presentations delivered by speakers based in Australia and the Philippines. Small group meetings were equally successful. Over 40 students from Primus Public School (which first participated in 2019) held a joint session of talks and a quiz with MS Ramaiah University. A student in Hyderabad organized singing games and a periodic table quiz for 14 participants, while a group of 7 at the Sage Institute, Indore, held a discussion over their breakfast.

Nigeria: In 2021, a total of 21 breakfasts were held at locations throughout Nigeria. For example, at an event hosted by the Chemical Society of Nigeria (CSN) at Atiba University, Oyo, there were over 80 women and men participants including academics and students. Presentations by both men and women speakers covered mentor-mentee relationships, achieving work-life balance, and gender equality in the workplace. A group of ~20 at the University of Nsukka listened to a presentation on COVID-19. Other breakfasts arranged by CSN chapters included presentations on women, career development and healthy lifestyles, and included presentations by women chemists working in industry. A number of venues made plans to continue local women chemist's networks.

Philippines: The University of San Agustin, Iloilo City in the Western Visayas region, has joined in three Global Breakfasts meetings, using the events as an opportunity to build overseas connections. The 2021 breakfast was co-hosted by the regional chapter of the Philippine Association of Chemistry Teachers (PACT)

"How has the IUPAC Global Women's Breakfast event influenced women scientists in your organization?"

Answer Choices	Positive Responses
Increased attention to diversity issues	62%
New connections between groups	56%
New connections outside my organization	48%
Leadership development opportunities for women	44%
Open discussions on need for more diversity	55%
New groups formed in support of diversity in science	27%

Organizer survey response to the above question.

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with 48 participants. There were talks from diverse fields of science, including “Pandemic Response from the Bottom-Up”, and “Aquaculture for You and Me” (highlighting gender equality in the field of fisheries and aquaculture). A final presentation on “Transdisciplinary Research from the Perspective of a Young Chemist” was given by a representative from Universiti Teknologi MARA (Malaysia).

United Kingdom: The UK nationally coordinated 10 events in 2021. A virtual breakfast event was arranged by the Royal Society of Chemistry involving international as well as UK-based registrants. After a welcome from Acting CEO Helen Pain and from Mary Garson in Australia, participants undertook “Meet and Greet” networking in breakout rooms. This was followed by short presentations from Dr. Marina Resmini (University of London) and Dr. Laura Knowles (Dow Chemicals) describing gender parity initiatives. Samantha Peralta (WomChemSheffield) then hosted a short quiz on women in chemistry, and the event was summarized by Dr. Ale Palermo from RSC.

What next for the Global women's Breakfast Series?

The next GWB will be held on **16 February 2022**, with Empowering Diversity in Science continuing as the overall theme. We invite organizers to begin planning now for next year's event. It is never too early to begin reaching out and networking with other universities and industry organizations in your country or region or even on the other side of the globe.

The GWB project team is seeking to increase interaction with umbrella organizations such as the Federation of Asian Chemical Societies and the Federation of African Chemical Societies with the aim of extending the network further in developing country networks, and to grow regional cooperation on diversity issues.

We look forward to strengthening the bonds that have been formed within the GWB network, and we look forward to progress on closing the gender gap in science.

Acknowledgements

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Figure 3. Word Cloud results from brainstorming “How to Empower Diversity in Science”; image provided by Dr. Essé Agossou (Benin).

task group organizers. Staff members at Thee Digital handled our many requests for updates and additions to the interactive website.

The task group organizers for 2021 were Ghada Bassioni (Egypt), Karla Susana Bernal (Mexico), Vanderlan Bolzani (Brazil), Cristina Delerue-Matos (Portugal), Fun Man Fung (Singapore), Hooi Ling Lee (Malaysia), Fatima Mustafa (USA), Mei-Hung Chiu (China-Taipei), Lori Ferrins (USA), Hemda Garelick (UK), Sandra Gonzalez Gallardo (Wiley VCH, Germany), Carla E. Giacomelli (Argentina), Rachel Hevey (Switzerland), Cynthia Ibeto (Nigeria), Francesca Kerton (Canada), Mary Kirchhoff (American Chemical Society, USA), Ekaterina Lokteva (Russia), Sadhna Mathura (South Africa), Alessandra Mosca (Dow Chemicals, Italy), Bailey Mourant (USA), Lars R. Öhrström (Sweden), Bipul Behari Saha (India), Fani Sakellariadou (Greece), Hina Siddiqui (Pakistan), Mallika Pathak (India), and Supawan Tantayanon (Thailand). 🌐

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