Conference Call

Spaventi (Triadelta Partners, Croatia). "How to succeed in science," which took place on Saturday, 22 April, discussed three evergreen topics in chemical science: intellectual rights in chemical research (Dr Zrinka Banić Tomišić), rising a spin-off company in scientific environment (Dr Marin Roje, Ruđer Bošković Institute, Croatia) and a perspective on manuscript writing from an editor of scientific journal (Prof Christer B. Aakeröy, Kansas State University, USA).

25HSKIKI was closed on early Saturday afternoon with announcing the best poster prize winners in even six categories and with a closing remark from Prof. Davor Kovačević, co-chair of 25HSKIKI, who thanked the organizers, participants, speakers, partners and sponsors without whom the realization of this meeting would not have been such a great success.

The next Croatian Meeting of Chemists and Chemical Engineers with international participation will be held from 9-12 April 2019 in Šibenik, Croatia.

Ana Santic <Ana.Santic@irb.hr> is Senior Research Associate at Ruđer Bošković Institute, Zagreb, Croatia. D. Kovačević and Marijana Đaković represent the Faculty of Science, University of Zagreb, Zagreb, Croatia

Crossing Divides—Science Towards Peace in the Middle East

by Stanley Langer

"Lovely to see you again." "So good that we can all meet." These are just two of the comments that greeted participants to this conference. Embraces between Israelis and Palestinians, Saudis and Omanis—who can imagine. Such was the starting point to this 8th conference in the biennial series entitled "Frontiers of Science: Research and Education in the Middle East-A Bridge to Peace" (Malta-VIII) held in Malta from 10-15 December 2017. It was especially appropriate that the meeting followed the previous month's conference of the World Science Forum held in Jordan on Science for Peace (https://worldscienceforum.org). Scientists from 15 Middle East countries and Morocco attended Malta-VIII. It was designed, in part, to forge stronger relationships and establish collaborations among scientists in the region. In this way, it is hoped that improving scientific cooperation could act as a spur to sustainable growth. It also works to promote peace and political reconciliation through science diplomacy and cross-border scientific collaboration in an increasingly volatile region of the world. Science is a global endeavour and most health and biomedical challenges are borderless. If research is to help meet those challenges, then an international, and in this case regional, approach is necessary.

Malta-VIII was attended by 90 invited individuals, with more women and graduate students than at previous conferences—this had been a deliberate attempt to engage these groups. Delegates came from Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Morocco, Oman, the Palestinian Authority, Qatar, Saudi Arabia, Syria, Turkey and the United Arab Emirates. As at past conferences, there had been enormous problems to solve in connection with obtaining visas for some participants, especially the Iranians and Syrians—in the end all arrived safely. Unfortunately, Prince Hassan of Jordan, a staunch supporter of these conferences and well known internationally as a voice for global sustainability, reconciliation, and inter-religious understanding, had to cancel at the last moment due to the situation in the Middle East at the time.

As president of the Malta Conferences Foundation, Professor Zafra Lerman opened the meeting by introducing Her Excellency Marie-Louise Coleiro Preca (President of the Republic of Malta), Frédérique Dumas (Member of the French Parliament), Andrea Carignani di Novoli (EU Head of Unit for European Neighbourhood, Africa and Gulf) and Francisco José Borge López (Vice-rector, University of Oviedo, Spain), each of whom gave short presentations. As at previous meetings, this conference was structured on a series of thematic workshops, keynote talks from Nobel Laureates, visits, and some social activity; all designed to encourage interaction, understanding, and collaborations between the scientists from the Middle East.

On this occasion, six intensive workshops were conducted during the conference:

- Chemical, Biological and Nuclear Security
- Environment: Air and Water Quality
- Sustainability of Resources: Energy and Materials
- Science and Technology Education at All Levels
- Medicinal Chemistry, Organic and Biochemistry, Biophysics and Biotechnology
- Entrepreneurship and Innovation

With the exception of the last mentioned (see later), each was co-chaired by Middle East and western contributors.

A continuing feature of the Malta conferences is the plenaries given by Nobel Laureates and their presence testifies to the importance of the meetings. On this occasion, several Nobel Laureates were unable to attend due to ill health or other reasons but Roald Hoffmann (USA) and Ada Yonath (Israel) had the audience spellbound with their contributions on "Simulation vs.



Opening session, from Left to right: Her Excellency Marie-Louise Coleiro Preca, Zafra Lerman, and Frédérique Dumas

Understanding: A Tension but not Just in Our Profession" and "Next Generation Ecology Friendly Antibiotics" respectively.

Ada Yonath pointed out the World Bank's estimate that almost 4 % of global economy could be lost by 2050 due to antibiotic resistance with no new drugs available. Her talk dealt with the implications of such a scenario and with the development of pathogen-specific antibiotics. Roald Hoffmann's talk could not have been more different: his was a philosophical erudition, dealing with the psychology of simulation and how to remain human in the world of information technology and artificial intelligence, ethics and the law, and words for the mind with quotes from Robert Mullikan, Isaac Newton and others.

There were also two additional plenary talks: Omar Farha (USA) spoke on "Combating Toxic Chemicals with Nanotechnology" in which metal-organic frameworks could be used and a consideration of the technology available vs. the will to use them. Mohamed El-Naggar (USA) discussed "Electric Microbes: What Can our Planet's Oldest Inhabitants Teach us About Electron Transfer, Energy and Sustainability?" It seems they can teach quite a lot and he explained the use of microbial electrochemical technology for wastewater treatment and the science of electron cryotomography.

The organization of the conference allowed considerable time for informal discussions among the participants. Most morning and afternoon sessions began either with one of the Nobel Laureate presentations or one of the plenaries, followed by discussion and then one or more workshops. These were scheduled so that each attendee had an opportunity, so far as was practicable, to participate in each session. As at previous conferences, each workshop developed a set of statements and recommendations for future actions that

were presented in a plenary session on the final day.

The workshop on Environment: Air and Water Quality was especially well attended and speakers presented issues of climate change and the consequence of water scarcity on availability and quality. Particular discussions centered on water insecurity in the region, transboundary water resources, the removal of micro-pollutants from soil and aqueous matter, the conservation of water resources and ecosystems, the reuse of wastewater, and desalination technologies.

The water situation in Gaza has long been a problem and it is becoming apparent that, because of a lack of suitable drinking water and energy, the humanitarian situation is on the edge of becoming a catastrophe if not already so. The problem in Gaza is not confined and the bad environmental issues that may arise will affect neighbouring countries like Israel and Egypt. The lack of sewage treatment causes deposition in the sea and the pollution caused affects not only Gazans but also those living at the shore in other countries. A resolution concerning water quality in Gaza was approved overwhelmingly (See Chem Int April 2018, p. 32). It called on "the international community to establish a task force that will be able to overcome the political difficulties and will enable professional treatment of the water and environment." As a result of the relationships developed at the conference, Israelis, Palestinians, Jordanians and Syrians were able to work together towards a common goal.

The Entrepreneurship and Innovation workshop was a great success. It was run by Olli Vuola, an entrepreneur who has been involved in a number of spin-off and corporate venture companies and by Hans Shakur, a young Arab-Israeli entrepreneur. Attendees were split into teams of six to eight. Several themes were explored over a period of two hours, after which it was clear that individuals quickly became teams after

Conference Call

being forced into groups. Each team was obliged to make short presentations on start-up companies that they thought could be established as a result of their deliberations. Company names such as Trash to Cash, Green Power, Healthy Food and Behaviour in Schools, Hot Wired Waste, Go Green, and Every Drop Counts were promoted. This last idea dealt with water conservation and education.

The goal of the workshop on Sustainability of Resources: Energy and Materials was to concentrate on presenting current research activities in the field and to enhance the establishment of collaborations that could lead to the development of renewable energy sources. It featured several oral presentations and extensive discussions on relevant topics. As a result, a number of ideas were considered appropriate for continuing collaboration.

The objectives of the workshop on Science and Technology Education at all Levels were how best to increase students' interest in studying science and what approaches to teaching science are most effective for student learning. As a result, a number of initiatives were identified: continue to develop collaborations relating to inquiry-type experiments; urge science educators to assess the efficacy of their methods and to develop collaborations with educators in other Middle East countries; and to extend the concept of science education without borders to younger students.

The immediate outcome of the workshop on Medicinal Chemistry and Natural Products was that new discussions would inevitably lead to fresh collaborations. Several areas were identified, including the need for the presentation of a global view to raise awareness amongst the public regarding both the benefits and potential risks and hazards of medicinal plants.

Conferees presented some 26 oral papers during the workshop sessions, as well as almost 40 contributions to well-attended and highly stimulating poster sessions. These provided participants with an overview of work in the region related to scientific and management strategies. Private discussions will undoubtedly lead to collaborations that would be extremely difficult, if not impossible, to establish under normal circumstances. It was evident that all those present made valuable contributions to promoting the chemical sciences for peace, diversity and human rights by building friendship, trust, tolerance and cooperation in a very turbulent part of the world.

The importance of the social side of these conferences cannot be underestimated as they provide informal occasions at which existing collaborations can

be discussed and new ones instigated—a walking tour of Medina and dinners at local restaurants helped in this process.

As for previous conferences, it is well worth recording that the organization of Malta-VIII required several obstacles and logistical challenges to be overcome. These included, for example, the perennial and worsening problems associated with the obtaining of visas and only the strong relationships forged in earlier meetings enabled most of these problems to be solved. Without these relationships, an already difficult conference organization would have been even more burdensome.

The many positive comments from participants at the end of the meeting more than justified the efforts made to ensure that the conference took place. For example, speaking of Israeli-Palestinian collaborations, an overheard comment was "you know when we will have succeeded? When we can talk about all the things we have already done." Participants were united in the belief that science can be the path to peace and the camaraderie, cooperative spirit, and feelings of pride were truly uplifting. Finally, all were unanimous in calling for a ninth conference in the series and Malta-IX will be held towards the end of 2019. Whilst the British are preoccupied with Brexit and the Americans wonder about their President, scientists in what some believe is the most potential flashpoint in the world, continue to work together in harmony and against all the odds.

Around 700 scientists have participated in the eight conferences that have been held since the first in 2003; they are recognised as an example of science diplomacy in action. They constitute a means by which civil engagement and cooperation can help tackle key issues in the region, and how deepening divides fragmenting our economies and societies can be overcome by finding common purpose in order to bridge such division.

At the World Science Forum referred to earlier, the launch of an Arab Science Forum drawing together science and research communities was lauded. This Forum is designed to focus scientific capacity to address regional challenges—exactly what the Malta conferences have been doing for the past 15 years!

The Malta Conferences Foundation was established in 2011 in Washington DC as a non-profit foundation, thus giving it charitable status.

Stanley Langer <stanley1910@yahoo.co.uk> was formerly responsible for international affairs at the Royal Society of Chemistry and is currently a consultant with expertise in science for development. He has been actively involved in the Malta conferences since their inception.