Report from G_2C_2 Meeting in Cape Town

By Sasha Borisova

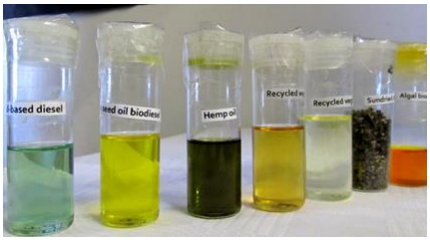
Cape Town Waterfront offered the perfect view for networking

A lot can change in 10 months in our fast-paced world. Last year, the idea of the Global Green Chemistry Centres (G_2C_2) network was born, at the International Workshop on Green Initiatives in Energy, Environment and Health held in Delhi, India ion 2-3 December 2013 (Report available in GCN Newsletter for January 2014, p. 7-8, see NEWSLETTER Jan 2014)

The first meeting in Delhi greeted members of 9 green chemistry centres from across the globe - United Kingdom, Canada, India, United States, Korea, Brazil and Mexico. This year, the number of participating institutions has almost doubled, and it would be impossible to assign a number to the increase of interest we have seen in the potential of the G_2C_2 network.

The second workshop of the G_2C_2 network was held in Cape Town, South Africa, on 25-27 August 2014, just days after the 5th International IUPAC Green Chemistry conference took place in Durban, where chemists from all over the world shared their green chemistry knowledge.
The IUPAC conference received tremendous support from the Organization for the Prohibition of Chemical Weapons (OPCW), an international NGO and winner of the 2013 Peace Nobel Peace Prize. The initial reaction to this from many of the delegates I had a chance to mingle with was surprise and puzzlement - is there a connection between OPCW and green chemistry? Behold! According to OPCW, safer, non-toxic chemicals and chemical processes can ensure that the manufacturing of chemical weapons is easier to spot through routine audits under the Chemical Weapons Convention.
Overall, the spread of research interests presented at the IUPAC conference, and the heated discussions resulting from the multidisciplinary and multicultural hotchpotch, lead me to the conclusion that green chemistry needs global collaboration to address global challenges, to a greater extent than any other branch of chemistry.
To address these needs for collaboration and networking, this year's G_2C_2 meeting included four networking sessions: **food waste**, **industrial engagement**, **education** and **public outreach**. Attendees got to express their opinions, concerns and hopes about each topic, and share their experience.
The **food waste** discussion, led by Dr Avtar Matharu (University of York, UK) highlighted the need to bridge the communication gap between producers of waste, academia, and businesses, in order to successfully tap into otherwise wasted resources.
The **education** session, led by Prof Vania Zuin (Federal University of Sao Carlos, Brazil) sparked a heated debate, with opinions from recent students and green chemistry educators. The conclusion was clear: don't treat green chemistry as a special subject - rewrite core textbooks with the ideas of sustainability embedded into the curriculum.

Pupils with award-winning school projects looking at waste biomass and biodiesel were given an opportunity to take part in the meeting



Jennifer MacKellar (ACS Green Chemistry Institute®) led the **public outreach** discussion, which resulted in a consensus that the general public needs to understand the concepts of green chemistry

Report from G2C2 Meeting in Cape Town continued

and resource efficiency better, but there was a disparity on where to start: from the youngest or the eldest, primary schools or universities, workshops or shopping centres, open days, science weeks or Years of Chemistry? Children were acknowledged to be the best way to get parents involved, using activities designed for the whole family. Social media was acknowledged as a great vehicle for outreach, as long as the time, place and style are appropriate - if executed incorrectly, it could result in wasted time and effort.

Dr Anwar Jardine (University of Cape Town, the host) and Prof James Clark

Prof James Clark, when leading the **industrial collaboration** networking session, started with two questions - how do you engage with industry, and how is it funded? Some of the more established centres in developed economies have access to governmental and regional grants to work with local businesses, and others get approached by the industry looking to diversify their markets.
European Bioenergy Research Institute (EBRI) at Aston University, represented by Prof Karen Wilson, organizes workshops for industry on topics such as bioenergy and biorefineries. They also team up with the business school for techno-economic assessments and business projections. The ACS Green Chemistry Institute®, represented by Dr David Constable and Jennifer MacKellar, had a series of Roundtable initiatives (Pharmaceutical, Formulators, and Chemical Manufacturers) where major companies offered a competitive grant for academic institutions to solve a series of challenges.
On the other hand, amongst the barriers to collaboration with the industry, the issue of intellectual property was highlighted - who should own the IP resulting from collaboration with industry? Also, the need for more pilot-scale demonstration labs was stressed, with a successful example in the Biorenewables Development Centre in York, UK.

What became clear from the discussion is that, as expected, centres in developed countries have greater support for collaboration with industry. It is, therefore, one of the greatest hopes of the G_2C_2 network that green chemistry initiatives in developing regions could tap into the wealth of expertise and experience that G_2C_2 has to offer when engaging with industrial partners.
On the whole, the networking sessions were an invaluable addition to the meeting, showing the dramatic differences in the status, strategy and approach to green chemistry in different countries.
Overall, the two day event was packed with talks about research ranging from catalysis (a lot of interest in that area!), the use of biomass for energy generation and as an energy feedstock, smart bio-based materials for energy storage, chemical capture and catalytic support. Life-cycle and techno-economic considerations were shown to have gained importance in green chemistry research.

Our senses were spoiled with cupcakes bearing logos of meeting sponsors

The tea breaks and informal dinner offered a great opportunity to talk about the structure and the activities of the new G_2C_2 network. Work is already being done on putting together an online communication platform to erase geographical barriers to collaboration (http://www.greenchemistrynetwork.org/g2c2/). The aim of the platform is to share information and resources on education and public outreach, networking and funding opportunities, as well as research news across the network. With the network growing rapidly and communication between the members moving online, one can't help but anticipate exciting times ahead for the G_2C_2 initiative.