

Report of Division III (Organic and Biomolecular)
IUPAC Bureau Meeting
Busan, Korea

Mary Garson

I. Executive Summary:

The mission of the Division of Organic and Biomolecular Chemistry is to oversee activity in the field of organic and biomolecular chemistry in the broadest sense. Division III consists of a Division Committee (comprising 10 Titular members, 6 Associate Members and 10 National Representatives) and 6 Subcommittees.

Major activities comprise conference organization and projects (both evaluation and involvement); a Divisional newsletter is produced at intervals. The Division oversees the awarding of two IUPAC prizes, the guidelines for one of which (the CHEMRAWN prize for Green and/or Atmospheric Chemistry) have been reviewed during 2015.

Highlights of the 2014-2015 biennium include the hosting of nine international conferences and the funding of four new projects, as detailed below.

II. Division Activities against IUPAC Strategic Goals

1. IUPAC will provide leadership as a worldwide scientific organization that objectively addresses global issues involving the chemical sciences.

The scientific interests of Division III cover organic chemistry in both fundamental and applied dimensions. At the heart of the Division lies the topic of organic synthesis, a keystone science, covering topics as diverse as new reactions and reagents, the asymmetric synthesis of natural products, molecular catalysts, and organometallic chemistry. In the biomolecular area, key topics include chemical biology, notably glycomics, linking across to the more applied topic of biotechnology. The Division has always had strong links into physical chemistry through spectroscopy and/or organic analysis. The discipline of green chemistry first emerged within Division III, and continues to connect the Division to other Divisions of IUPAC.

The main program of activities is conducted in two forms: firstly via a series of well-established international conferences, and secondly through the IUPAC project system. This Division coordinates these scientific topics through six sub committees as well as by involvement in interdivisional activities. The six sub committees are:

Sub committee on Organic Synthesis (2014-2015 Chair: Margaret Brimble, NZ)

Sub committee on Biomolecular Chemistry (2014-2015 Chair: Michael Blackburn, UK)

Sub committee on Green Chemistry (2014-2015 Chair: Pietro Tundo, Italy)

Sub committee on Photochemistry (2014-2015 Chair: Silvia Braslavsky, Germany)

Sub committee on Structural and Mechanistic Chemistry (2014-2015 Chair: vacant)

Sub committee on Biotechnology (2014-2015 Chair: Francesco Nicotra, Italy)

Four of these sub committees meet annually, either at the most relevant scientific conference or at the biannual General Assembly. The photochemistry subcommittee also meets annually at one

of their specialist conferences. The subcommittee on structural and mechanistic chemistry has been inactive in recent years, but maintains carriage of the ICPOC series of conferences (see below).

Project work is core business for the Division; many Divisional projects are linked to global issues involving the chemical sciences. To date, the Division has approved four project proposals during the 2014-2015 biennium (*An introduction to Computational Chemistry and in-silico visualization; a Workshop for sub-Saharan Africa scientists* (2015-016-2-300); *Nomenclature of Homodectic Cyclic Peptides Produced from Ribosomal Precursors* (2015-003-2-300); *Healthy Life and Active Ageing: the Contributions of Functional Food Ingredients* (2013-054-2-300); *Chemistry beyond Chlorine* (2013-057-3-300). Six projects approved during the 2012-2013 biennium remain current (carbohydrate nomenclature (2012-039-2-800), genochemistry (2009-021-3-300), nomenclature of phosphoryl transition states (2013-039-2-300), photoluminescence quantum yields (2013-040-1-300), green chemistry curricula in Latin America/Africa, (2013-041-3-300), glossary of renewable chemistry (2013-036-2-300)), two of which are joint with other Divisions (carbohydrate nomenclature- Div. VIII; photoluminescence quantum yields – Div. I), while three other projects (abbreviations for protecting groups (2011-044-1-300), SE Asian network for organic chemistry (2011-041-1-300), Mediterranean heterocyclic chemistry network (2011-006-2-300)) were approved at the 2011 General Assembly held in Puerto Rico and so are close to a conclusion. A full list of Division projects (2012-2015) is provided at the end of this report.

2. IUPAC will facilitate the advancement of research in the chemical sciences through the tools that it provides for international standardization and scientific discussion.

International standardization: The work of the sub committee photochemistry best exemplifies the contribution of Division III to tools for international standardization. Examples of projects coordinated by members of the group include: *Measurement of Photoluminescence Quantum Yields* (2013-040-1-300; Brouwer); *Standard Photochemical Processes* (2008-037-2-300; Griesbeck). Nomenclature projects are also important: recent examples include *Nomenclature of Homodectic Cyclic Peptides Produced from Ribosomal Precursors* (2015-003-2-300); *Nomenclature of Transition State Structures and their Analogs for Phosphoryl Transfer Reactions* (2013-039-2-300); *Rules for abbreviation of protecting groups* (2011-044-1-300).

During 2015, the Division reviewed past projects within the field of NMR spectroscopy, and convened email discussions with members of the NMR community and with representatives from Division I about the standardization of NMR data in scientific manuscripts, and the level of accuracy associated with the reporting of NMR data. Members of the NMR community belonging to Division III have diverse technical interests ranging from metabolomics, natural products and synthetic structure elucidation, through to NMR methods development, and consequently express a wide range of views on these issues. During the latter part of 2015, a project submission is envisaged, ideally in concert with interested members of Division I.

Scientific discussion: During the 2014-2015 biennium, the Division oversaw arrangements for nine international conference series, many of which are meetings of long-standing within the IUPAC conference calendar. These meetings were: 20th International Conference on Organic Synthesis (ICOS, June 2014, Hungary); XXVth IUPAC Symposium on Photochemistry (July 2014, France); 22nd International Conference on Physical Organic Chemistry (ICPOC, August 2014, Canada); 5th International Conference on Green Chemistry (ICGC, August 2014, South

Africa); 16th International Symposium on Biotechnology (IBS, September 2014, Brazil); 28th International Symposium on the Chemistry of Natural Products/8th International Conference on Biodiversity (ISCNP/ICOB October 2014, China); 10th International Conference on Biomolecular Chemistry (January 2015, India); 11th International Conference on Heteroatom Chemistry (ICHAC, June 2015, France); and the 18th International Symposium on Organometallic Chemistry directed towards Organic Synthesis (OMCOS, June 2015, Spain).

Future meetings in these conference series are envisaged as follows: 21th International Conference on Organic Synthesis (ICOS21, 11-16 December 2016, Mumbai, India); XXVth IUPAC Symposium on Photochemistry (3-8 April 2016, Osaka, Japan); 23rd International Conference on Physical Organic Chemistry (ICPOC23, 1-8 July 2016, Sydney, Australia.); 6th International Conference on Green Chemistry (6ICGC, 4-9 September 2016, Venice, Italy); 17th International Symposium on Biotechnology (IBS17, 25-28 October 2016, Melbourne, Australia); 29th International Symposium on the Chemistry of Natural Products/9th International Conference on Biodiversity (ISCNP29/ICOB9, Turkey, September 2016); 11th International Conference on Biomolecular Chemistry (October 2017, Konstanz, Germany); dates and venues for the 12th International Conference on Heteroatom Chemistry and the 19th International Symposium on Organometallic Chemistry are under discussion.

3. IUPAC will assist chemistry-related industry in its contribution to sustainable development, wealth creation, and improvement in the quality of life.

The Sub committee of Green Chemistry Subcommittee has provided project activity connecting to the economical growth and activity of the chemical industry, particularly in developing countries. In other activities, Division III conferences, particularly the International Biotechnology symposia and the various Green Chemistry meetings, provide an opportunity to link industry-base chemists with those from universities and the government sector.

4. IUPAC will foster communication among individual chemists and scientific organizations, with special emphasis on the needs of chemists in developing countries.

The 5th International IUPAC Conference on Green Chemistry (5th ICGC) was held in Durban (South Africa), 17-21 August 2014. It was co-hosted by the South African Chemical Institute (SACI), the University of Kwazulu-Natal (located in Durban) and the University of Venda (located in Thohoyandou). This was the first time that the ICGC came to the African continent, and so offered a great opportunity to facilitate interactions of African scientists with colleagues from all over the world and to promote green chemistry in Africa. The main objective of the conference was that of emphasizing the importance of green chemistry for sustainable development; it was a multidisciplinary event considering all the major areas of green chemistry. There were joint sessions with other IUPAC divisions or committees for selected themes (environmental chemistry, green chemistry education, and polymers). A session on sustainability and security, conducted by the Organisation for the Prohibition of Chemical Weapons (OPCW) emphasized the links between scientific knowledge, education and policies with regard to the production and use of chemicals.

A number of Division III projects are strongly linked to chemistry in developing countries. Recent examples include the following geographic areas **Africa**: a workshop in computational chemistry for sub-Saharan chemists (2015-016-2-300, Whitehead); biomass burning in sub-Saharan Africa (2007-025-1-300, Mammino); network for heterocyclic chemistry in North

Africa (2011-006-2-300, Florio); green chemistry in higher education (2013-041-3-300, Zuin); **Central/South America** green chemistry in higher education (2013-041-3-300, Zuin); glossary on renewable chemistry (2013-036-2-300, Vaz); **East and South East Asia**: network for organic chemistry (2011-041-1-300, Isobe).

Next, considering communication, a new initiative of the Istanbul General Assembly was the holding of inter-Divisional meetings. Division III participated in meetings with Division VI, in which joint interests in green chemistry were explored, as well as with Division VIII given the joint interests in various aspects of organic nomenclature. It is hoped that these meetings can continue at the General Assembly in Busan (2015). Finally, the Division produces occasional newsletters, the last being in November 2012. An abbreviated version of this newsletter was published in *Chemistry International* (2013, Sept./Oct., pp29-32). In this way, national representatives have been kept informed of Divisional activities.

5. IUPAC will utilize its global perspective and network to contribute to the enhancement of chemistry education, the career development of young chemical scientists, and the public appreciation of chemistry.

The Division oversees the awarding of two prizes to outstanding young chemists. The Thieme-IUPAC prize in Synthetic Organic Chemistry, which is generously supported by the scientific publisher Thieme, is awarded to a chemist under the age of 40 whose research has had a major impact on the field of synthetic organic chemistry. The 2014 prize was presented at ICOS20 (Hungary) to Professor Martin Burke (USA) for the synthesis and study of small molecules with protein-like functions. The CHEMRAWN VII Prize for Atmospheric and Green Chemistry is presented biannually to a chemist under the age of 40 and from a developing country for research in green and/or atmospheric chemistry. The 2014 prize was awarded at 5ICGC (South Africa) to Dr Vania Zuin (Brazil) in recognition of her significant contributions in developing green analytical methodologies used to analyze bioactive high-value organic substances extracted from agro-industrial residues.

Division conferences are traditionally well supported by younger chemists, and several activities within these meetings target this age group. The majority of these meetings provide poster prizes to student delegates, and some host workshops designed for young researchers to meet with plenary speakers. Details of Division conferences are provided elsewhere in this report.

In relation to the public appreciation of science, the year 2015 has been chosen by UNESCO as the Year of Light (including light technological applications). The photochemical community, and members of the Sub-Committee on Photochemistry, have contributed to this UNESCO-sponsored celebration.

A project funded in 2015 (*Healthy Life and Active Ageing: the Contributions of Functional Food Ingredients*, 2013-054-2-300, Rauter) seeks to bring chemistry to the general public, demonstrating through the implementation of an interactive website, how chemistry offers unique solutions for society needs in terms of a healthy living and a better ageing.

Other projects, notably those coordinated through the Sub-Committee on Green Chemistry, seek to engage young people; for example, project 2013-036-2-300 *Glossary on Renewable Chemistry* (led by Silvio Vaz) is developing content related to biomass chemistry and green chemistry, and is aimed at students as well as at researchers. An earlier project, 2013-041-3-300 *Green*

Chemistry in Higher Education: towards a Green Chemistry Curriculum for Latin American and African Universities (led by Vania Zuin) has considered the development of general modules for up-to-date university Green curricula within Chemistry courses (Bachelor and Teacher Training), and also has an emphasis on public awareness of green chemistry principles. Finally project 2013-057-3-300 *Chemistry beyond Chlorine* led by Pietro Tundo seeks to improve the perception of chemistry.

6. IUPAC will broaden its national membership base and will seek the maximum feasible diversity in membership of IUPAC bodies in terms of geography, gender, and age.

In terms of geographical representation in the 2014-2015 biennium, the Division III committees for 2014-2015 comprised representatives from Asia (1 x TM, 2 x AM, 4 x NR), Africa (1 x NR), the Middle East (1 x AM) in addition to the traditional bases of Europe and North America. The Division has lacked representation from Latin or South America, other than a Provisional Member from Mexico, and various members of project task groups.

In diversity matters, the Division has excellent representation with two female Titular Members serving as Division President and Division Vice President, respectively, two female Associate Members and two female National Representatives. Indeed women comprise 23% of the 2014-2015 Divisional committee. The age profile within the Division still requires attention, although it should be noted that National Representative Dr Oleg Demchuk (Poland) has previously been a Young Observer at Division III meetings. Dr Demchuk has been retained on the Division committee as an Associate Member for the 2016-2017 biennium.

The recent Division ballot has resulted in election of Prof Amelia Rauter (Portugal) as Division Secretary, and of Dr Janet Scott (UK) as a Titular Member, thereby increasing the number of women Titular Members to 4 out of the 10. Membership from the Latin and South American region is considered high priority ahead of the IUPAC meetings in Brazil in 2017, therefore Associate Members have been selected from Brazil and from Puerto Rico for the next biennium. In the 2016-2017 biennium, women will represent 27% of the Division committee.

III. Additional Information:

Finance: Historically, Division III has had considerable difficulty creating worthwhile projects, or allocating its entire project budget; in contrast, the Divisional operating funds that support attendance at subcommittee meetings are under pressure every biennium. One view that is worthwhile considering is that Division III Subcommittees effectively represent broader scale “project taskforces”, and as such merit a portion of the funds that might otherwise be earmarked solely for Division III project activity. The majority of Division business is put forward to the main Divisional meeting from individual Subcommittee meetings; it is therefore essential that Subcommittee meetings are well attended.

Structure and governance: The Division has an Executive Committee comprising the current President (Prof Mary Garson), the Past President (Prof Krishna Ganesh), the President-elect (Prof Margaret Brimble) and the Secretary (Prof Axel Griesbeck; resigned December 2014). The current Executive has sought to ensure that Division practices and decisions are clear to all members, and that all Division members are informed as well as active and involved in Division business. In particular, Division members seeking officer and/or Titular member status are

reminded of the need to be involved in Divisional business, for example by suggesting new project initiatives or in project evaluation, or by acting as Chairs of Divisional sub committees.

Division minutes and reports are now archived on the Division website, and the process associated with the biannual Division election for President and new Titular members has been provided to the current Division membership.

IUPAC prizes: At its 2014 meeting, the Green Chemistry sub committee expressed some concerns about the small number of individuals applying for the CHEMRAWN prize for Green and/or Atmospheric Chemistry. The group reviewed the guidelines that govern the award of the prize, and made some recommendations to the Division and to the CHEMRAWN. The IUPAC secretariat was informed; discussions to finalize the guidelines are ongoing.

IV. Tabular Material:

The following pages provide additional details of projects and conferences as well as the membership of Division III for the 2014-2015 biennium.

Mary Garson
President of Division III (Organic and Biomolecular)
Brisbane, report 5 July 2015

**Summary of Division III (Organic and Biomolecular) Projects (most recent first)
(July 2015)**

BIENNIUM 2014-215

Project No: 2015-016-2-300

Title: *An introduction to Computational Chemistry and in-silico visualization; a Workshop for sub-Saharan Africa scientists*

Objective: The objective of the proposed Introduction to Computational Chemistry & In-silico Visualization Workshop for Sub-Saharan Africa scientists is to provide an introduction to computational chemistry, similar to the set of workshops that have already been delivered at the University of Kinshasa but which would now be provided with a larger regional remit. The Sub-Saharan Africa workshop would provide an introduction to molecular modeling in structural chemistry, medicinal chemistry and drug discovery. Application examples would be given, showing the value of these methods for research purposes but also for teaching purposes, as the visual illustration of chemical concepts has been shown to enhance their understanding by students. Existing local chemoinformatics resources such as the Kenyan Mitishamba database of about 2000 compounds would be used to demonstrate the value of such databases and how software can be used to extract valuable information from such sources. The overall aim is to help develop the ability to use software suites to build structural chemistry knowledge among the teachers who can then themselves train others, such that the knowledge transfer process can become self-perpetuating.

Chair: Lewis Whitehead

Members: Evans Changamu, Solomon Derese, Colin Groom, Juliette Pradon

Webpage: [http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1\[project_nr\]=2015-016-2-300](http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1[project_nr]=2015-016-2-300)

Start Date: 01-06-2015

End Date: 01-06-2016

Budget in USD: 4k (2 k from Div III with 2k from COCI)

Progress: update not yet available

Project No: 2015-003-2-300

Title: *Nomenclature of Homodetic Cyclic Peptides Produced from Ribosomal Precursors*

Objective: to disseminate through the scientific community guidelines for nomenclature of homodetic cyclic peptides produced from ribosomal synthesis. Specifically this includes N-to-Clinked peptides belonging to the groups cyanobactins, cyclotides, orbitides, amatoxins, phallotoxins and circular bacteriocins. By selection of a narrow focus we are hoping to develop a template that can be applied to develop nomenclature systems for other groups of peptides. Although peer-reviewed journals have published nomenclature recommendations the objective is also to consolidate literature and provide a IUPAC supported nomenclature recommendation. The project will expand and elaborate on the prior "Nomenclature of Cyclic Peptides" (<http://www.iupac.org/project/2004-024-1-800>) in the naming of the homodetic peptides.

Chair: Martin Reaney

Members: David Craik, Ulf Göransson, Gerard Moss, Ninghua Tan

Webpage: [http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1\[project_nr\]=2015-003-2-300](http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1[project_nr]=2015-003-2-300)

Start Date: 01-06-2015

End Date: 01-06-2017

Budget in USD: 10K (7.5 k from Div III and 2.5k from Div VIII)

Progress: update first meeting scheduled October 2015

Project No: 2013-054-2-300

Title: *Healthy Life and Active Ageing: the Contributions of Functional Food Ingredients*

Objective: to bring Chemistry to the general public demonstrating, through the implementation of an interactive website, how chemistry offers unique solutions for society needs in terms of a healthy living and a better ageing.

Chair: Amelia Rauter

Members: Amal-al-Aboudi, Mary Garson, Melissa Fitzgerald, Francesco Nicotra, Livia Sardaki

Webpage: not yet accessible

Start Date: 21-11-2014

End Date: 21-11-2017

Budget in USD: 7.5 k from Div III

Progress: update filming of video clips undertaken in March 2015 (Rauter, Garson, Sardaki, Nicotra) and website clips/recipes in preparation (June 2015)

Project No: 2013-057-3-300

Title: *Chemistry beyond Chlorine*

Objective: Publication of a book to improve the perception of the role of chemistry in issues of general interest

Chair: Pietro Tundo

Members: Lian-nian He, Ekaterina Lokteva, Murray McLaughlin, Claudio Jose de Araujo Mota, Bo Olssen, Qianghao Qu, Yehudah Shevah.

Webpage: [http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1\[project_nr\]=2013-057-3-300](http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1[project_nr]=2013-057-3-300)

Start Date: 1-5-2014

End Date: 01-05-2016

Budget in USD: 5.6 k (\$4.8k Div III, \$0.8k COCI)

Progress: *June 2014.* Website advises planning group will meet July 2014. No updates available as of July 2015

BIENNIUM 2012-213

Project No: 2013-036-2-300

Title: *Glossary on Renewable Chemistry*

Objective: Construction and publication of a nomenclature guide – an IUPAC Glossary – related to biomass chemistry and green chemistry. Aimed at students (under graduation and graduation), professionals, and researchers from all countries.

Chair: Silvio Vaz Jr.

Members: Monica Damaso, Birgit Kamm, James Clark, Vincenza Faraco, Vitor Ferreira, Claudio Mota, Vania Zuin, Pietro Tundo.

Webpage: [http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1\[project_nr\]=2013-036-2-300](http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1[project_nr]=2013-036-2-300)

Start Date: 30-12-2013

End Date: 30-12-2015

Budget in USD: 5k

Progress: website updated (Jan 2014) with additional details of methodology and timelines. A draft glossary was circulated to TCG members and to Division members (May 2015). A range of comments were received, and the draft glossary is currently under revision.

Project No: 2013-041-3-300

Title: *Green Chemistry in Higher Education: towards a Green Chemistry Curriculum for Latin American and African Universities*

Objective: 1) Proposing general modules for up-to-date university Green curricula in general and subareas of chemistry of Chemistry courses (Bachelor and Teacher Training), together with their responsible lecturers;

2) Development (generation and/or adaptation) of Green Chemistry contents in theoretical and experimental disciplines of the involved universities in Latin America and Africa, considering the specific context of each region;

3) Contributing to establish permanently Green Chemistry in the education of Chemistry professionals in their initial courses and facilitating the public understanding of Green Chemistry principles showing its involvement in most aspects of common life and current demands nowadays;

4) Putting together universities, industries and governmental/non-governmental sectors in order to approach relevant themes and contents in the Green Chemistry modules

Chair: Vania Gomez Zuin, Lilliana Mammino

Members: Moacir Rossi Forim, Peter Seidl, Claudia Moraes de Rezende, Claudio Jose de Arajo Mota, Fernando de Carvalho da Silva, Carlos Alberto Marques, Patrocoa Vasquez, Gustavo Romaneli, David Gonzalez, Patricia Morales Bueno, Andoni Garritz Ruiz, Neil Coville, Temechegn Engida, Geoffrey Kamau, Egid Mobofu, Pietro Tundo, James Clark

Webpage: See

Start Date: 26-09-13

End Date: 26-09-17

Budget in USD (Expenditure to July 2013): 5k

Progress: July 2015: website not up-to-date

Project No: 2013-040-1-300

Title: *Measurement of Photoluminescence Quantum Yields*

Objective: The quantum yield (QY) is one of the most important quantitative properties of a luminescent sample, and robust ways to measure it are essential in the application of luminescence techniques. In the project we will perform an inter-laboratory comparison of the two main methods for QY measurements, the classical relative method based on standards, and the absolute method using integrating spheres which recently gained popularity.

The outcomes will be: (i) insight into the reproducibility and inter-laboratory variability of QY measurements using the two methods; (ii) an extended set of standards and protocols for QY measurement.

Chair: Fred Brouwer

Members: Suzanne Fery-Fourges, Stephan Landgraf

Webpage: See [http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1\[project_nr\]=2013-040-1-300](http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1[project_nr]=2013-040-1-300)

Start Date: 26-09-13

End Date: 26-09-16

Budget in USD (Expenditure to July 2013): 4.5k

Progress: Jan 2014 – update premature.

Project No: 2013-039-2-300

Title: *Nomenclature of Transition State Structures and their Analogs for Phosphoryl Transfer Reactions*

Objective: This Project seeks to establish a rational, logical, and practical system of nomenclature to identify discrete axial and equatorial ligands in both t_{bp} and octahedral transition states and their analogues for phosphoryl transfer reactions. In many cases, these will be chirally defined only as a result of coordination to components of the enzyme active site where they are located. It will apply to TSs for “in-line” and/or for (theoretical) “adjacent” attack systems and be independent of considerations about “associative” and “dissociative” TSs. It will link to established IUPAC nomenclature systems and usage, in particular to IUPAC Red Book (2005). It will aim to be directly comprehensible to and useable by stakeholders who may not be specialized inorganic chemists

Chair: Michael Blackburn

Members: Jacqueline Cherfils, Gerry Moss, Nigel Richards, Jon Waltho, Nick Williams, Alfred Wittinghoffer

Webpage: See [http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1\[project_nr\]=2011-044-1-300](http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1[project_nr]=2011-044-1-300)

Start Date: 26-09-13

End Date: 26-09-15

Budget in USD (Expenditure to July 2013): 10k

Progress: *Jan 2015* –the task force group met in late 2014.

Project No: 2012-039-2-800

Title: *Carbohydrate Nomenclature – revision and extension of IUPAC recommendations*

Objective: The aim of this revision and extension is to bring up-to-date the existing Carbohydrate document in the light of the enormous progress made in the areas of glycoscience, biotechnology and bio-informatics in the past 20 years. Furthermore, the explosion of data stemming from glycomics and glycoproteomics, necessitates the connection with databases for presenting adequately carbohydrate structure and sequence information. There exist a number of databases, each covering different collections of data. Developing guidelines for harmonizing these data are within the goals to be achieved. Another aspect deals with the correction of some names.

Chair: J. Vliegthart

Members: Jonathen Brecher, Frank Martin, Karl-Heinz Hellwich, Derek Horton, Thomas Lutteke, Gerard Moss, Stefan Oscarson, Amelia Rauter, Sandro Sonnino, Xavier Nuno

Webpage: See [http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1\[project_nr\]=2012-039-2-800](http://www.iupac.org/nc/home/projects/project-db/project-details.html?tx_wfqbe_pi1[project_nr]=2012-039-2-800)

Start Date: 01-01-2013

End Date: not listed

Budget in USD (Expenditure to July 2013): \$5.5k from Division III

Progress: *December 2013* –website updated.

Details of projects initiated during 2008-2009 and 2010-2011 have been provided in previous Divisional reports, for example the Division III report to the 95th Bureau meeting held in Coimbra (12-13 April 2014).

IUPAC Conferences under Auspices of Division III

International Conference on Green Chemistry (ICGC) series;

ICGC4 (Foz do Iguazu, Brazil; co-chairs Arlene Gomea and Vania Gomez Zuin, August 2012; IUPAC representative Pietro Tundo

ICGC5 (Durban, South Africa) chair Lilliana Mammino (sasdestria@yahoo.com;), 17-21 August 2014; <http://www.saci.co.za/greenchem2014/>; IUPAC representative Pietro Tundo. ICGC6 will be held in Venice, Italy in September 2016 (chair Pietro Tundo).

2014 meeting: The main objective of the conference was to emphasize the importance of green chemistry for sustainable development, and to promote novel research and collaborations, by bringing together experts and interested parties from all over the world – from academia, industry and government. The conference considered all the major areas of green chemistry, including green synthesis processes, catalysis, environmentally benign solvents, energy storage, biofuels, green chemistry education, policies, and many other interesting topics. Interfaces with other sciences and other research areas were actively encouraged. Special attention was given to the roles of green chemistry in fast-growing economies and to the promotion of green chemistry in the African continent. A session on sustainability and security, conducted by the Organisation for the Prohibition of Chemical Weapons (OPCW) emphasized the links between scientific knowledge, education and policies with regard to the production and use of chemicals.

International Conference on Biodiversity and Natural Products (ICOB and ISCNP) series;

ISCNP27/ICOB7 (Brisbane 2011); IUPAC representative David Black

ISCNP28/ICOB8 (Shanghai); Yang Ye (yeye@mail.shcnc.ac.cn; yeyang@live.cn), proposed dates October 20-25 2014; website address-<http://iupac.simm.ac.cn>; IUPAC representative Mary Garson.

ISCNP29/ICOB9 has been agreed for Izmir, Turkey in September 2016. Greece has expressed an interest to host ISCNP30/ICOB30.

International Conference on Organic Synthesis (ICOS) series;

ICOS19 (Melbourne, 2012); IUPAC representative Krishna Ganesh

ICOS20 (Budapest, Hungary); chair Péter Mátyus (matyus.peter@pharma.semmelweis-univ.hu); Janos Wolfling; June 29-July 4 2014; <http://www.icos20.hu/>; IUPAC representative Mary Garson

ICOS21 (Mumbai, India) chair Krishna Kaliappan, December 2016. Florence, Italy will host ICOS22 September 2018 (chair: Alberto Brandi).

Update on ICOS20: ICOS-20 was held in ELTE Convention Centre at 29 June - 4 July 2014.

Topics included new reactions and new reagents, applications and new trends in bioorganic chemistry, natural product synthesis, organic synthesis in materials research, organic synthesis in drug discovery and process development, and catalysis in organic synthesis. Plenary lecturers were: Prof. Margaret Brimble (New Zealand) Prof. Marco Ciufolini (Canada) Prof. Minoru Isobe (Taiwan) Prof. Eusebio Juaristi (Mexico) Prof. Max Malacria (France) Prof. Johann Mulzer (Austria) Prof. Jay Siegel (China) Prof. Lutz Tietze (Germany) Prof. Mark A. Rizzacasa (Australia). Professor Martin Burke (USA) was awarded the Thieme-IUPAC Prize for Organic Synthesis, and gave the award lecture.

International Conference on Biomolecular Chemistry (ISBOC) series

ISBOC9 (Beijing, 2012); IUPAC representative Krishna Ganesh

ISBOC10 (Pune, India, January 2015; Co-chairs Ganesh (ganesh1953@gmail.com) and Yamuna Krishnan (yamuna@ncbs.res.in). IUPAC representative: Mary Garson.

Update on ISBOC11: Konstanz, Germany has been proposed as the venue.

International Biotechnology Symposium (IBS) series

IBS 14 (Rimini, Italy) September 2010

IBS15 (Daegu, Korea) 2012; IUPAC representative Francesco Nicotra

IBS16 (Fortaleza, Brazil) chair Osvaldo Carrioca (jkriok@gmail.com), September 14-19; website <http://ibs2014.org/>; IUPAC representative Francesco Nicotra

IBS17 (Melbourne) contact: Glenn Cross (Ausbiotech), 23-28 October 2016

Update on IBS16: The meeting was well supported by R&D Brazilian Scientific Agencies and Brazilian Federation of Industry-CNI, as well as by the Brazilian Association of Chemical and Pharmaceutical Industries. For the first time the IBS-Symposium held a Biobusiness Forum to promote innovation in the country, as well as, the construction of an International Research Platform to promote and engage young students, doctors and researchers into an international biotechnology network leading to collaboration with members of the European Federation of Biotechnology. For that initiative, CAPES- Brazilian Agency for Advanced Post-graduation Studies provided financial support. The participation is confirmed of a Nobel Prize in Chemistry (2004) plus four distinguished scientists as Plenary Lecturers; six experts on Bioeconomy and thirteen outstanding invited speakers for the six parallel scientific sessions.. Elsevier Publishers (Journal on Biotechnologies Advances) offered an Special Issue on Bioeconomy and Biotechnology containing selected works by indicated guest editors.

International Conference on Heteroatom Chemistry (ICHAC) series;

ICHAC10 May 2012 (Kyoto, Japan); chair Norohiro Tokitoh (tokitoh@boc.kuicr.kyoto-u.ac.jp) <http://oec.kuicr.kyoto-u.ac.jp/~ichac10/>; Name of IUPAC representative – unknown.

ICHAC11 June 2015 (Caen, France); chair Annie-Claude Gaumont; website http://www.lcmt.ensicaen.fr/96621202/0/fiche_article/&RH=LCMT_FR.

International Symposium on Organometallic Chemistry Directed Towards Organic Synthesis (OMCOS) series;

OMCOS16 (Shanghai, 2011)

OMCOS17 (Fort Collins, July 28-August 1 2013); chair Peter Kundig (peter.kundig@unige.ch); IUPAC sponsorship approval pending; IUPAC representative still to be nominated.

OMCOS18 (Barcelona, Spain) 28 June - 2 July 2015; chair: Antonio M. Echavarren, Rubén Martín, Kilian Muñoz; website <http://www.omcos2015.com/>

IUPAC Symposium on Photochemistry series;

XXIV Symposium on Photochemistry, Coimbra, Portugal (15-20 July 2012); contact Hugh Burrows

XXV Symposium on Photochemistry, Bordeaux, July 13-18, 2014; chair: Dario Bassani (d.bassani@ism.u-bordeaux1.fr); website <http://www.photoiupac2014.fr/>. Contact:

photoiupac2014@ism.u-bordeaux1.fr. IUPAC representative Silvia Braslavsky

Update on XXV Symposium on Photochemistry: The organization of the XXVth IUPAC Symposium on Photochemistry (Bordeaux, France from July 13 to 18, 2014) proceeded smoothly. The financial operations were the responsibility of the CNRS through their conference organization office of the local delegation, and the number of sponsors obtained was very satisfactory: 10 industrial exhibitors (2 more in negotiations) and 3 publishers. The local government provided substantial financial aid, which has been used to offset the relatively high organizational costs in France in order to maintain low inscription fees and lunches. Additionally, a dozen PhD grants (free inscription) were distributed. The city of Bordeaux agreed to provide free bus and tram tickets to all participants for the duration of the meeting. The IUPAC representative, Prof. Sylvia Bravlsky, provided a brief historical perspective of the meeting in commemoration of its 50th anniversary.

Update on XXVI Symposium on Photochemistry: Osaka. Japan. April 2016. Conference chair: Tetsuro

Majima. Preliminary website: <http://web.apollon.nta.co.jp/iupac2016/invitation.html>

IUPAC Conference on Physical Organic Chemistry (ICPOC) series;

ICPOC21 (Durham, UK) September 2012; RSC; IUPAC representative Krishna Ganesh

ICPOC22 (Ottawa, Canada) 10-15 August 2014; chair: Paul Meyer (pmmayer@uOttawa.ca);

<http://events.science.uottawa.ca/icpoc22/commitee.html>; IUPAC representative Heidi Muchall (Concordia)

ICPOC23 (Sydney, Australia) July 10-14 2016; contact: Jason Harper. Website:

<http://www.icpoc23.unsw.edu.au/>

MEMBERSHIP OF DIVISION III (2014-2015)

Name	Status	Proposed Term	NAO
Prof. Mary J. Garson	TM – President	2014-2015	Australia
Prof. Margaret A. Brimble	TM – Vice President	2014-2015	New Zealand
Prof. Axel Griesbeck	TM – Secretary	2012-2015	Germany
Prof. Krishna N. Ganesh	TM – Past President	2014-2015	India
Prof. G. Michael Blackburn	TM	2014-2015	United Kingdom
Prof. Alberto Brandi	TM	2014-2015	Italy
Prof. Thomas Carell	TM	2014-2015	Germany
Prof. Buxing Han	TM	2014-2015	China/Beijing
Prof. Francesco Nicotra	TM	2014-2015	Italy
Prof. Nikolay E. Nifantiev	TM	2014-2015	Russia
Prof. Amal Al-Aboudi	AM	2014-2015	Jordan
Prof. Vladimir Dimitrov	AM	2014-2015	Bulgaria
Prof. John F. Honek	AM	2014-2015	Canada
Prof. Péter Mátyus	AM	2014-2015	Hungary
Prof. Amélia P. Rauter	AM	2014-2015	Portugal
Prof. Zhen Xi	AM	2014-2015	China/Beijing
Dr. Nasim Sultana	NR	2014-2015	Bangladesh
Prof. Biing-Jiun Uang	NR	2014-2015	China/Taipei
Prof. Hrvoj Vančik	NR	2014-2015	Croatia
Prof. Miroslav Ludwig	NR	2014-2015	Czech Republic
Prof. Petri M. Pihko	NR	2014-2015	Finland
Prof. Yeun-Mun Choo	NR	2014-2015	Malaysia
Prof. Mary Olire Edema	NR	2014-2015	Nigeria
Dr. Oleg M. Demchuk	NR	2014-2015	Poland
Prof. Viktor Milata	NR	2014-2015	Slovakia
Prof. Tirayut Vilaivan	NR	2014-2015	Thailand
Prof. Berhanu M. Abegaz	PM	2014-2015	Botswana
Prof. Eusebio Juaristi	PM	2014-2015	Mexico
	10 TMs, 6 AMs, 10 NRs, 2 PMs		

AM = Associate Member
NR = National Representative

PM = Provisional Member
TM = Titular Member