



Minutes of the 103rd IUPAC Bureau Meetings July 9th and July 12th 2019

**Palais des Congrès de Paris, 2
Place de la Porte Maillot, 75017
Room 351
Paris, France**

Attendees: Prof. Qi-Feng Zhou (Chair), Prof. Natalia Tarasova, Prof. Christopher Brett, Prof. Richard Hartshorn, Mr. Colin Humphris, Dr. Lynn Soby (Executive Director), Prof. Russell J. Boyd, Prof. Mei-Hung Chiu, Prof. Javier Garcia Martinez, Prof. Mary Garson, Prof. Hemda Garelick, Prof. Ehud Keinan, Prof. Christopher K. Ober, Prof. Pietro Tundo, Prof. Ken Sakai, Prof. Ron Weir, Prof. Lars Ohrström, Prof. Francesco Nicotra, Prof. Greg Russell, Prof. Zoltán Mester, Dr. Rai Kookana, Prof. Rita Cornelis, Prof. Alan Hutton, Prof. Jan Apotheker, Dr. Carolyn Ribes, Dr. Carlos Tollinche, Ms. Bonnie Lawlor, Prof. Jurgen Stohner.

Guests: Prof. Doug Templeton, Dr. Fabienne Meyers, Ms. Minjie Huang, Dr. Helle Moller Johannessen; DAY2: Leah McEwen, Dr. Michelle Rogers, Prof. Jan Reedijk, Prof. Nikolay Nifantiev, Dr. Bipul Beharu Saha, Dr. Gloria Obuzor, Dr. Ghada Bassioni

Secretary: Ms. Bonnie Lawlor

1. Introductory Remarks and Welcome

IUPAC President, Professor Qi-Feng Zhou, opened the meeting at 2:05pm with a welcome and thank you to all present. He noted that that today's session was scheduled to end at 4:40pm and that the Bureau would resume discussions on Friday, July 12th beginning at 8:30am. He then requested that the Secretary General chair the Bureau meeting.

Professor Richard Hartshorn, IUPAC Secretary General, noted that during today's session it was essential that the Bureau resolve all issues related to discussions at Council so that everyone was prepared. At the Bureau's session on July 12th the Bureau will focus on issues that emerged from Council discussions and the results of the elections.

2. Finalization of the Agenda

Members of the Bureau were asked if there were any suggested additions to the agenda that was circulated prior to the meeting. It was noted that a paper from the Interdivisional Committee on Green Chemistry for Sustainable Development (ICGCSD) will be discussed in the Bureau on Friday as an item under “Any Other Business.” The paper was emailed to Bureau members on July 9, 2019. The content of the paper has implications on another IUPAC Division.

Before moving on to the next agenda item several other issues were briefly discussed. First was an update on the health of Karl-Heinz Hellwich, Past-President of Division VIII. It was reported that he is still in a coma as a result of his cerebral hemorrhage and that a slow recovery is expected. All present expressed concern for his health and best wishes for a recovery.

Second, Professor Greg Russell, President of Division IV, asked about the original agreement for NAO representation from China. Dr. Lynn Soby, IUPAC Executive Director, said that this is an ongoing challenge and most recently she had to deal with it in regards to the Periodic Table of Younger Chemists on which the flag of each chemists’ country is displayed. She looked back to documents from the 1970’s and found that in 1978 a document was signed that permitted two organizations from the same country to serve as NAO’s. Currently, for China the two NAO’s are the Chinese Chemical Society and the Chemical Society located in Tapei. Lynn Soby added that this is a very complex issue. Pietro Tundo, Chair of ICGSD, said that a phrase sometimes used for such joint representations is “...two organizations from the same countries and/or economies...”

3. Minutes of the 101st and 102nd Meetings of the Bureau

Professor Richard Hartshorn asked if there were any corrections to the minutes of 101st meeting of the IUPAC Bureau that was held in Bratislava, Slovakia, 7-8 April 2018. There being none he **MOVED**

that the minutes of 101st meeting of the IUPAC Bureau that was held in Bratislava, Slovakia, 7-8 April 2018 be approved as submitted.

The motion was seconded and unanimously approved. Similarly, the minutes of the 102nd meeting of the IUPAC Bureau that was held via teleconference on 6 April 2019 were approved without comment.

4. Minutes of the 155th Meeting of the IUPAC Executive Committee

The minutes of the 155th meeting of the IUPAC Executive Committee were provided for information. The minutes of the 156th meeting of the IUPAC Executive Committee that was held in London, UK 18-19 November 2017 and the 157th meeting of the IUPAC Executive Committee that was held in Alcala, Spain 8-9 November 2018 were presented to the Bureau and there were no comments.

5. Minutes of the 49th Meeting of the Council

The final minutes of the 49th meeting of the IUPAC Council were included in the Council Agenda book. They will be approved by Council at the meeting on July 10th. No comments and/or changes were made.

6. Action Items from Previous Meetings

The Bureau had been asked to review the action items in the Council papers and note any changes. For information, updated action items were provided and no comments were made.

7. Report of the President

IUPAC President, Professor Qi-Feng Zhou, reported briefly on the challenges and accomplishments of the Union in the current biennium. The full report is in the Council Agenda Book, a summary of which is as follows: “To further implement the Strategic Plan, IUPAC has taken the following steps: introduced new programs for different categories of members; approved a new National Subscription model; improved project management and Division/Committee operations; taken initiatives in cheminformatics and chemistry for sustainable development; and engaged more with the younger generation and strengthened collaboration with other international organizations. Apart from making continuous scientific contributions, volunteers in Divisions and Committees also actively participated in celebrations of both the IUPAC Centenary and IYPT2019 that have been organized by Union bodies and NAOs. To celebrate our 100-year history also offers a good opportunity to review the Union’s overall conditions and to think about its future.”

In closing, Professor Zhou asked if there were any questions and/or comments in preparation for the Council meeting. There being none, he thanked everyone for their attention and requested that if any comments or questions arise later to please send them to him prior to the Council meeting that opens tomorrow. He also thanked everyone present, indeed all IUPAC volunteers, for their work on behalf of the Union.

8. Report of the Secretary General

Professor Richard Hartshorn, IUPAC Secretary General, noted that his report is included in the Council Agenda Book. At Council he will report on the operations of the Secretariat and on initiatives taken to advance the work of the Union. The main topics are the following: the Secretariat staffing and workload (few people and a lot of work); conference endorsements and gender balance (we need to ensure that conference organizers make an effort to recruit expert speakers across all genders); his visits to Division and Committee meetings; strategic relationships for IUPAC; and procedural issues (election processes, operation/policy manuals, etc.). Richard asked for comments. There being none, he requested that members of the Bureau please send any later thoughts - both comments and/or questions - to him prior to the Council meeting tomorrow morning.

9. Vice President's Critical Assessment

Professor Christopher Brett, IUPAC Vice President/President-Elect, submitted his critical assessment to the Bureau earlier this year on 6 April 2019. It is also included in the Council Agenda book. His report examines IUPAC's activities within the context of the IUPAC strategic plan and mission. It addresses the future development of IUPAC and its scientific priorities for responding to challenges in the chemistry community and globally, as well as ensuring the legacy of the IUPAC Centenary and the International Year of the Periodic Table. It also discusses the planned review of the IUPAC structure to ensure that the Union can effectively respond to future scientific challenges and maintain ongoing organizational sustainability. Professor Brett asked for comments. There being none, he requested that members of the Bureau please send any later thoughts - both comments and/or questions - to him prior to the Council meeting tomorrow morning.

10. Financial Matters

Mr. Colin Humphris, IUPAC Treasurer, gave a report on the organization's financial situation. He noted that the Union is still solvent and that the current financial problems are fixable. He referred to the options paper and noted that the baseline budget projected a biennium loss of approximately \$500K, but that the strategic budget cuts that loss in half. One of the goals of the revised budget is to ensure that Projects and the key work of the Union is funded and continues. He added, however, that going forward the Union needs to change how it does its work. Governance can be done virtually via Go-to-Meetings and similar software offerings. Meetings in off-years can be handled virtually and perhaps the General Assemblies can be longer and more expansive, allowing more face-to-face interaction. Colin Humphris noted that the work of the Treasurer is to prepare the budget and act on behalf of the NAO's. He expressed concern about IUPAC's two major revenue streams - dues from NAO's and subscription fees for publications. We need to provide value to our NAO's in order to maintain their loyalty. He added that he is concerned about Plan S. This is an initiative for Open Access publishing that was launched in September 2018. The plan is supported by cOAlition S, an international consortium of research funders. Plan S requires that, from 2021 (initially it was 2020, but implementation has been delayed for one year), scientific publications that result from research funded by public grants must be published in compliant Open Access journals or platforms. We do not know if/how this initiative will impact our revenue from *Pure and Applied Chemistry (PAC)*. It was noted that the full Treasurer's report as well as the Finance Committee reports from February 2018 and February 2019 are in the Council Agenda Book. Also included in the Council Agenda Book are the following financial documents: the audited financial statements for 2017 and 2018; the proposed budgets for 2020-2021 - P&L statement; and the proposed Division and Committee Allocations for 2020-2021. Mr. Humphris asked if there were any questions and/or comments. There were none.

11. 2019 IUPAC Centenary

Professor Mary Garson provided a brief update on activities related to IUPAC's 100th anniversary. The major events are the following: the Global women's breakfast that took place earlier this year; the creation of a Periodic Table that honored younger chemists; the Periodic

Table Challenge - an online trivia contest; and the development of stories that demonstrated IUPAC's many contributions over the past one hundred years. All of these very successful activities are highlighted on the IUPAC100 website at: <https://iupac.org/100/>. Prof. Garson added that the women's breakfast was so successful that it will be repeated in 2020 on February 12th.

12. *PAC and CI with De Gruyter*

Mr. Colin Humphris reported on the status of IUPAC's publications, *Pure and Applied Chemistry (PAC)* and *Chemistry International (CI)* that are created in partnership with the publishing company, De Gruyter. He reported that *PAC* has been back on track with content since 2017 (there were some content pipeline problems during 2016 that resulted in the creation of two double issues with only ten physical products being shipped, not the twelve that were budgeted). There were twelve solid issues in 2018 and we are on target to do the same this year. The production of *PAC* is relatively smooth, in part due to the monthly teleconferences with De Gruyter. The major challenge for *PAC* is the recruitment of reviewers for the manuscripts and the assistance of Division Presidents would be much appreciated. It was noted that the *PAC* Editorial Board met earlier this week on Monday, July 8th and plans are being developed to celebrate *PAC*'s 60th anniversary in 2020.

With regard to *Chemistry International*, the content pipeline is solid thanks to the efforts of the Editor, Fabienne Meyers, and a very active Editorial Board that meets monthly. Some production problems remain, but this is strictly due to the fact that *CI* is a news journal and the De Gruyter production system was built to accommodate scholarly journals. With *CI* only being published four times a year in print format, the Board has been looking at ways to cost-effectively develop a digital platform so that there can be more frequent engagement with IUPAC members as well as the broader scientific community. This is particularly important since the contract with De Gruyter will expire at the end of 2020 and we need to decide if it is to be renewed or if IUPAC needs to take a different path. Colin Humphris also highlighted a new initiative that was launched this year in *CI* and that is the identification of the Top Ten Emerging Technologies in Chemistry that was suggested by Javier Garcia. The results of that project were published in an article in the April 2019 issue (it has been the most downloaded *CI* article so far this year) and the initiative will be repeated in 2020. Mr. Humphris asked both Ms. Bonnie Lawlor, a member of the *CI* Editorial Board, and Dr. Fabienne Meyers, *CI* Editor, if they wanted to add anything. Ms. Lawlor said that Mr. Humphris' summary covered the key points.

13. *Conferences and Symposia*

There was nothing discussed.

Before the meeting was adjourned for the day, there was a brief discussion about the proposed discontinuation of the IUPAC Committee on Chemical Research Applied to World Needs (CHEMRAWN). The Committee, founded in 1973, met this week with the IUPAC President, Secretary General, Treasurer, and Christopher Brett, Chair of the Evaluation Committee. All of them assured the Committee that CHEMRAWN's key activities will continue. Professor Brett provided the results of the Evaluation Committee's review of the Committee and there was a

brief discussion among Bureau members. This issue will be brought to Council for a vote at this meeting.

There being no further discussion, today's meeting of the IUPAC Bureau was adjourned at 4:10pm to be resumed at 8:30am on Friday, July 14th with agenda item number 14.

Professor Richard Hartshorn re-convened the Bureau on July 12, 2019 at 8:30am. He welcomed new Bureau members who were attending as observers. He encouraged them to actively participate in the discussions, but reminded them that they cannot vote at this meeting.

14. Election of Bureau Representatives to the Executive Committee

The first item of business was the election of Bureau representatives to the Executive Committee (EC). Professor Hartshorn noted that the election will close at 11:30am.

15. Matters Arising from Council and their Resolution

Item #1: Election of Bureau Members to the Executive Committee

First, it was noted that Prof. Mei-Hung Chiu's EC slot needs to be filled as does that of Prof. Javier Garcia-Martinez since he was elected as Vice President during the Council meeting. Whoever replaces Prof. Garcia-Martinez will have a four-year term. Two positions need to be filled. The elected members of the Bureau that have been nominated to fill the slots on the Executive Committee are as follows: Prof. Mei-Hung Chiu (China/Tapei), Prof. Russell Boyd (Canada), Petr Fedotov (Russia), and Bipul Behari Saha (India). Note that the successful nominees were Prof. Mei-Hung Chu and Prof. Russell Boyd.

Item #2: Task Force to Examine IUPAC's Structure

A second matter is that the Executive Committee (EC) needs to establish a Task Force to examine IUPAC's structure. This will be an EC project. There was a brief discussion regarding the composition of the Task Force. Colin Humphris said that he did contact Bureau members on this issue prior to the General Assembly. Their input was to serve as the basis for a broader survey. Ron Weir suggested that the Task Force have about five members. Jan Apotheker suggested that at least two people be from outside IUPAC and at least one person be included who knows the current structure well. Jürgen Stohner suggested that the NAO's be involved. Zoltan Mester said that the key drivers should be the stakeholders. In our case this would be the NAO's and he agreed with Jürgen that there should be an NAO representative. We should encourage the NAO's to flesh out their collective vision of IUPAC. Chris Brett suggested that the survey to the Bureau members be sent to the NAO's. Colin Humphris agreed that the NAO's must be engaged in the process. It was also suggested that there be industry input and Dr. Mester said that we should get someone from industry that uses our information. Prof. Rai Kookana suggested that there be a young person on the Task Force (under the age of 40) and Dr. Fabienne Meyers suggested that someone from the International Younger Chemists Network (IYCN) be identified. Also, it was noted that diversity be considered as the Task Force is put together.

Mary Garson said that the Task Force will need someone to help coordinate the paper work that will be involved and Richard Hartshorn noted that the Secretariat is already overburdened. Prof. Natalia Tarasova suggested that we get input from other Unions and suggested that we use the World Science Forum as a venue. It is scheduled to take place in Budapest, Hungary from November 20-23 and Colin Humphris will be attending.

Dr. Carolyn Ribes noted that the American Chemical Society (ACS) just did a review of their structure and she will see if she can get them to share their report.

ACTION: Dr. Carolyn Ribes will see if she can get the American Chemical Society (ACS) to share the results of their governance structure review.

Ron Weir said that it is essential to get the analysis right. Carolyn Ribes added that the communication both of the process and the end result is equally important. We will need a communication plan.

Some names of potential Task Force members were put forth. These were as follows: Mark Cesa (led the recent IUPAC Strategic Planning effort); Peter Mahaffy (active in chemical education); Brandon Presley (young member of Division VII); Bonnie Lawlor (outgoing Chair of CPCDS); Michael Droescher (industry, former COCI Chair); Patrick Maestro (Chief Science Officer at Solvay); Natalie LaFranzo (under 40, industry, and served on the ACS governance study team); Lori Ferrins; and Javier Garcia as incoming Vice President). Richard Hartshorn asked for additional feedback no later than July 31, 2019. The issues on which he would like feedback are: the form, size, and makeup of the Task Force; suggested participants (keeping diversity in mind); and the topics that the Task Force members should address - what do they need to know?

ACTION: All Bureau members will provide Richard Hartshorn with any additional suggestions that they may have regarding the Task Force on IUPAC Governance structure no later than July 31, 2019.

ACTION: Prof. Chris Ober will identify someone at Cornell University to design a survey for the Task Force, but will need to know the topics on which the Task Force wants feedback.

ACTION: Mr. Colin Humphris will circulate the results of his survey to all Bureau members.

Javier Garcia-Martinez commented that both the CHEMRAWN issue and funding constrained our celebrating here in Paris. He said that we need to focus on how we can be more relevant. Colin Humphris noted that this initiative must move forward quickly with the results finalized by February 2021. He also noted that the effort is *not* a focus on structure, but rather a focus on ensuring that IUPAC is relevant, sustainable, effective, and efficient.

Item #3: Recommendation for Standing Committee Chairs

It was noted that Council voted the Chairs of all Standing Committees onto the Bureau.

16. Items from the Meeting of Division Presidents

Prof. Greg Russell provided a summary of the key issues that emerged from the Division Presidents' meeting:

Feedback on Division/Standing Committee 2019 Elections

- The Nomination procedure should better address the suitability of candidates for the specific work that is needed to be done within Divisions and Standing Committees
- Are position descriptions sent to NAOs? (the answer was “yes.”)
- Is there a general set of guidelines about suitability of candidates that is sent to NAOs?
- Webpage with NAO form
- Role of Division Presidents in elections is murky and variable

Feedback on the 2019 General Assembly (GA), including IYCN Speed Networking and Considerations for the 2021 GA/World Chemistry Congress

- Tea/coffee/water inadequate
- Some rooms were too hot, some too cold
- Finding rooms at the meeting site was very difficult
- Lack of power-points
- Too much co-scheduling - frequently people had two or more simultaneous commitments
- Mixed feedback on speed networking as a way of mixing
- We need better interaction between different parts of IUPAC, between IUPAC and WCC, and between IUPAC and the Program Committee

Prof. Mary Garson said that IUPAC needs to have more input with regards to the diversity of plenary speakers at future Congresses.

Feedback on the IUPAC website, specifically Division/Committee Pages

- The website is going well!
- All would like to see email addresses made public (this is a privacy issue and individuals must opt-in to make their address public)
- Some website managers are still not trained
- Can IUPAC websites be linked with Twitter feeds?
- The IUPAC Facebook page is not up-to-date. IUPAC uses Twitter a lot with success, but this really only captures the population of one age group. Younger people use Instagram, and Facebook is still widely-used. In reality IUPAC needs to be on all three platforms if it wants to engage with all ages (social media platforms for consideration are Twitter, Facebook, Instagram, and LinkedIn)

Feedback on Division rules

- Division Rules should be living documents rather than one-offs

- Some groups did not like having sections on rules for removing people (but some did!)

This generated some discussion. It was noted that Division Rules will always need to be updated, but they must be approved by the Council. Ron Weir said that it is good to have rules for removing people because then there is something to fall back on when absolutely needed.

Feedback on Emeritus Membership

- At the meeting those present voted for the name “Emeritus Fellows” (EFs) rather than “Honorary Fellows”
- EFs should have automatic status in ICTNS (Jürgen Stohner said that ICTNS relies on emeritus members)
- Could there be one set of rules for EFs across all Divisions and Standing Committees? The group looked at Division VIII’s EF rules, which were believed to be good, but perhaps a bit too technical
- At universities, emeritus status is for the whole university rather than just a part of the university. Could we do this in IUPAC too?
- Similarly, university departments suggest an emeritus, but the status is conferred by the head of the University. Could Divisions and Standing Committees suggest EFs, but have the status conferred by letter from the Secretary General, as is done with conference endorsements?
- Stuart Chalk agreed to prepare a proposal on having Digital Fellows/Observers as a means of recruiting computer-savvy chemists into IUPAC

ACTION: *Greg Russell* will draft a template for the development of rules for Emeritus Fellows.

ACTION: *Greg Russell* will formally reach out to Richard Hartshorn about having Emeritus status applied to all of IUPAC rather than only to the Division/Standing Committee who recommends the emeritus status.

Feedback on IUPAC100 activities

- The International Younger Chemists Network (IYCN) is important for the future (of IUPAC)
- The 2019 WCC opening was unacceptably “gender imbalanced”

Feedback on the Gold Book

- Stuart Chalk presented the results of his project to update the Gold Book website. The next step is to have Divisions update the content. There was a vigorous discussion on this topic and ICTNS will lead the effort. Stuart is drafting two new proposals to facilitate the updating process.
- Concern about linking the Gold Book and the other Color Books

Feedback on Future Bureau Meetings

- There were mixed views on the desirability of face-to-face meetings in off-years
- Potential suggestions for saving money:
 - Hold General Assemblies every three years rather than every other year?
 - Do not pay in full for the Titular Members of Divisions and Standing Committees to attend General; Assemblies?
 - The IUPAC Secretariat keeps track of what other conferences Bureau members are attending, and alerts them to meet when a "critical mass" is going to be in the same place, e.g. ACS meetings, EuChemS meetings, etc.

In closing, Prof. Russell noted that the newly-elected Chair for the next meeting of Division Presidents and Standing Committee Chairs is Lars Öhrström (Div. II).

17. Report from the Membership Relations Committee

Prof. Natalia Tarasova gave a brief presentation on the meeting of the Membership Relations Committee that took place on July 9th. The group recommended that when registering for the Congress non-members have an option to become an Affiliate Member. This was done this year with some success. The key is to retain members and we need to be more relevant, especially to the younger generation. There were no comments or questions.

18. Report from the Project Committee

Prof. Doug Templeton noted that the Committee met on July 9th. He said that he had no further comments beyond what was included in his report in the Council Agenda Book. He did add, however, that interdivisional projects are given a high priority and that the final date for submission of projects in this biennium is October 31, 2019.

19. Report from the Evaluation Committee

Prof. Christopher Brett also noted that his Committee met on July 9th. He said that he had no further comments beyond what was included in his report in the Council Agenda Book.

20. Reports from Divisions and Standing Committees

All of the written reports were included in the Council Agenda Book and brief oral reports were presented during the Council meeting. There were no questions and or comments on those reports at this meeting.

21. World Chemistry Leadership Meeting (WCLM)

Prof. Chris Ober gave a brief summary of the 2019 World Chemistry Leadership Meeting (WCLM). He noted that it was a rare opportunity to bring together leaders of industry at the world chemical congress during IUPAC's 100th anniversary and the 150th anniversary of the periodic table. WCLM brings together leaders of chemistry to provide a view of the future of chemistry and the role of chemistry in society. Since a number of CEO's were planning to come to the World Chemistry Conference (WCC) in the hopes of meeting Macron, the leader of

France, the meeting organizer asked IUPAC if he could use WCLM as a forum for these industrial leaders to talk about chemistry challenges facing society. Prof. Ober added that it is worth remembering that IUPAC was founded in part because of the strong interest by the chemical industry of 100 years ago in having a common language of chemistry to facilitate trade between countries and that Solvay was one of the founding companies of IUPAC. Today, Society faces many challenges and the chemical industry will play a significant role in solving these challenges.

WCLM was opened by Prof. Christopher Ober and Prof. Frances Separovic. The panel was chaired by a professional master of ceremonies and our panelists included the CEO's: M. Brudermüller (BASF SE), A. A. Guryev (PhosAgro), I. Kadri (Solvay), and T. Le Hénaff (Arkema). The speakers were asked to discuss the chemical industry within the context of the United Nations sustainability goals. Given the importance of the applied aspect of IUPAC it was invaluable to have this dialog.

At this plenary event, these corporate leaders made the point that the chemical industry subscribes to and supports the UN's seventeen sustainable development goals (SDGs) and considers it a roadmap that provides clear structure and priorities. They noted that stable goals by governments are valuable for long term planning and action. Today the chemical industry aligns projects with the SDGs as key providers of sustainable solutions to society, e.g., growing food more efficiently, improved renewable energy, and reducing poverty. Industry believes in the value of education as does IUPAC, educating the consumer, educating users of chemical products such as farmers and educating people about the value of chemistry to providing future solutions. For example, industry trains farmers in new agriculture technology that both raises incomes and helps to feed developing countries.

Industry is addressing climate change by reducing CO₂ emissions, making lighter vehicles to reduce fuel use and providing better energy storage materials. Executives told us that decisions must be good for people, the planet, and profit.

Diversity is also an important element of the SDGs and industry is working hard on this aspect. There was extensive discussion on this topic leading up to the presentation of the IUPAC Distinguished Women in Chemistry awards for 2019. Inclusion and Diversity are extremely important. Emphasis should be on an inclusive culture (support, advocacy, ensuring everyone is part of a team). Companies with diverse leadership teams have a statistical and sustained improvement in financial performance.

In a closing talk Brudermüller (BASF) gave an impressive presentation that summarized these points and also talked about industry engaging with the public on sustainability through the alliance for ending plastic waste. It will take industry working with consumers to solve this problem. Consumers will have to support sustainable solutions and change some habits. The chemical industry finds that setting tough targets on sustainability requires innovation and in that way attracts talent. Brudermüller concluded that innovation needs diversity and openness. It is clear that the interests of industry and IUPAC are aligned. IUPAC supports the UN sustainable development goals and is working to convey to the public the importance of chemistry in providing societal solutions. There are opportunities for us to work together. It is

our hope that WCLM held during this year of the IUPAC centenary will lead to greater and long term interactions.

Prof. Ober closed his summary by thanking Jean-Pierre Vairon for organizing the Congress. He noted that he has been asked to develop a proposal for the 2021 WCLM since has extensive experience organizing the session. He was congratulated on a very successful event.

ACTION: *Prof. Chris Ober* will develop a draft proposal for the 2021 World Chemistry Leadership Meeting (WCLM).

22. PhosAgro Project

Prof. Natalia Tarasova provided some information on the current status and future of the PhosAgro Project. This Green Chemistry for Life Project was launched in 2013 by UNESCO's International Basic Sciences Program and PhosAgro, the largest producer of phosphate-based fertilizer globally, in close cooperation with IUPAC. The program was launched by the three partners as a follow-up to the 2011 International Year of Chemistry. The goal of this Grant program is to support young scientists whose research projects adhere to the twelve principles of green chemistry. Young scientists up to age 39 with a PhD degree (or equivalent) in chemistry or similar areas are eligible. Funding over the past six years has totaled USD 2.5 million to support annual research grants. An International Competition has been held each year since 2014. It was noted that six General Awards are made each year and one Special Award for work on a project related to phosphogypsum has been added since 2017. The International Jury meets at UNESCO headquarters in Paris in May each year. The Grant Program has been a prospective and successful project. During five years it has attracted six hundred applications from around the world. Thirty four awards have been made to young scientists from twenty-six different countries. The International Scientific Jury for Green Chemistry for Life is comprised of prominent chemistry scientists, teachers, and researchers. The high level of the International Jury competence ensures an unbiased and thorough examination of the submitted applications. The call for applications for the 2019 Awards closes August 31, 2019.

23. Future General Assemblies and Congresses

The 51st General Assembly and 48th Congress will take place in 2021 in Montreal, Canada. The 52nd General Assembly and 49th Congress will take place in 2023 at The Hague, The Netherlands. The 53rd General Assembly and 50th Congress will take place in 2025 in Kuala Lumpur, Malaysia.

24. Affiliate Membership Program

The Affiliate Membership Program was briefly discussed. Mr. Colin Humphris noted that the success of the program varies by country and region.

25. IUPAC-Solvay International Award for Young Chemists

Prof. Natalia Tarasova provided some information on the 2019 IUPAC-Solvay International Award for Young Chemists. The Award is intended to encourage outstanding young research scientists at the beginning of their careers and are given for the most outstanding Ph.D. theses in the general area of the chemical sciences, as described in a 1000-word essay. The award is generously sponsored by Solvay. The theses are scored as follows: Scoring, from 0 to 100 (100 being the best score), is given for the following qualities of the applications:

- (a) Excellence and relevance to current research in the chemical sciences: 0-30
- (b) Relevance and quality of the applicants' scientific background, including publications: 0-30
- (c) Scientific and applied significance of the expected results: 0-30
- (d) Relevance and quality of the home/host institute 0-10

The assessments of these qualities could be based on the following approximate scoring: excellent (100-91), very good (90-81), good (80-61), fairly good (60-51), not good enough (50-41), not acceptable (less than 40).

For the 2019 Awards there were twenty-eight applications, six from females. There were eleven applications from China plus China-Taipei (of them one was female and three of them received a PhD from Chinese (or Taipei) universities. From the USA two applicants have U.S. citizenship and eight applicants received degrees from the U.S. universities. The winners included four males and one female and they represented China, China/Taipei, and the USA.

In 2020 up to five prizes will be awarded and will be presented at the 2021 IUPAC Congress in Montreal. Each Awardee will be invited to present a poster on his/her research and to participate in a plenary award session. They are also expected to submit a review article for publication in *Pure and Applied Chemistry*.

Natalia noted that diversity is an issue and that we need more applications from women. We also need to ensure continuity of the jury members and we may need more Bureau members to serve if the number of applications increase.

26. Dates and Place of Next Bureau Meeting

The next Bureau meeting will be held in April 2020 and will be held virtually.

27. Any Other Business and Closing Remarks

The paper from the Interdivisional Committee on Green Chemistry for Sustainable Development (ICGCSD) that was circulated earlier this week was raised. Richard Hartshorn requested that members of the Bureau carefully read the document and that it will be discussed via email.

ACTION: *All members of the Bureau* are to carefully read the paper from the Interdivisional Committee on Green Chemistry for Sustainable Development (ICGCSD) that was circulated earlier this week. It will be discussed via email after the close of the Congress.

In closing, IUPAC President, Professor Qi-Feng Zhou thanked everyone for their active participation, not only in the many meetings that took place during the past week, but for also contributing to IUPAC's very successful 100th anniversary celebration. He adjourned the meeting at 10:50am.

// 103rd Minutes were approved by Bureau during the virtual meeting held 25 Apr 2020 //
