International Affiliation Interview Questions 2019

National Research Council of Canada

Annual General Meetings (AGM) & International Union Activities

1) When and where was your last AGM?

    - 21-28 August 2018, Hyderabad, India

2) When and where will your next AGM be?

    - 22-30 August 2020, Prague, Czech Republic. The meeting was postponed to 2021 due to the COVID-19 Pandemic.

3) In what form does the meeting take place (in person, teleconference, videoconference…)?

    - In person

4) Approximately how many Canadians attend the AGM?

    - It varies depending on the location. About 25 Canadians attended the AGM in India in 2017, hundreds of Canadians attend AGM's organized in North America. The 2014 AGM was held in Montreal, Canada.

5) What were some of the highlights of your Canadian National Committee's (CNC) engagement at the international organization's AGM meeting?

    - Jim Britten (McMaster University) and Pawel Grochulski (Canadian Light Source, Inc) were members of the International Program Committee and Patrick Mercier (NRC) was a member of the program committee for the 2017 IUCr Crystallographic Computing School held in Bangalore (August 2017).

    - Three Canadian delegates participated in the 2017 IUCr Congress. They are Louise Dawe (chair), Pawel Grochulski (delegate), Tomislav Friščić (delegate), and Patrick Mercier (alternate delegate). The chair of the delegation coordinated with all participating Canadians before and during the Congress and prepared the final report about the General Assembly deliberations. Canadians were invited to present 2 keynotes, 9 oral presentations, and 12 poster presentations. Additionally, 4 microsymposia were co-chaired by Canadians. Overall, there were 25 Canadian registered participants at the meeting.

    - Various Canadians were nominated and most were eventually successfully voted to fill vacancies on IUCr commissions and the Executive Committee of the IUCr. Hanna Dabkowska (McMaster University), was elected Vice-President of the Union. Canadians were elected/renewed to serve as members on 8 commissions with two acting as Chairs. Hanna Dabkowska was again chosen as the IUCr representative on the ICSU Committee on Space Research (COSPAR).

- Three Canadians are co-editors of the IUCr Journals: Albert Berghuis (McGill University, Acta D and IUCrData) and Alan Lough (University of Toronto, Acta E and IUCrData), Gil Privé (University of Toronto, Acta F and IUCr Data).
- The Canadian delegates voted in favor of the Statement on Gender Balance and Creation of WH & WL Bragg Prize, and the recommendation that the unit contribution remains unchanged.

Events

6) Were there other national or international meetings/events that took place this past year (ex. Meetings, research programs, work-program, commission, panels)?
    - What was the nature of these events (ex. administrative, technical, public engagement, community engagement)?
        - The 2018 ACA meeting was held July 20-24 in Toronto. The American Crystallographic Association is the North American Regional Affiliate of the International Union of Crystallography (IUCr). The Canadian Division of the ACA is a branch of the ACA which serves to represent the interests of Canadian crystallographers within the ACA. The CNCC is heavily involved in these activities. Each year, there is a face-to-face meeting of the Canadian Division held during the annual ACA meetings, where all Canadian participants are invited to attend. Topics discussed usually include communications from the CNCC, Crystallography events planned in Canada.
        - 9th Canadian Chemical Crystallography Workshop (CCCW18), 22nd – 26th May 2018, Edmonton, AB.
            - Participants: X Researchers, X students
        - The 8th Canadian Light Source, MX Data Collection School, June 4-8, 2018
            - Participants: 7 Researchers, 20 students
        - The 11th Canadian Powder Diffraction Workshop, 25 – 29 July 2018, Hamilton, ON
            - Participants: X Researchers, X students
        - 27th Annual Buffalo-Hamilton-Toronto (BHT) crystallography symposium, Nov 2nd, 2018.
            - Participants: X Researchers, X students
    - For each activity, approximately how many Canadian researchers and students attended union related conferences?
    - For each activity, approximately how many Canadian researchers and students presented at union related conferences?
7) Has Canada bid to host union related conferences or activities in Canada?

- If so, what kinds of activities?
    - AGM
- Were these bids successful?
    - Yes, Canada hosted the event in 2014.
- What is the added value to the Canadian research community to have these events locally hosted?
    - More Canadian researchers are able to attend
    - Increased reputation on the International Organization facilitates the election of Canadians to influential positions on the Executive Committee and commissions.
    - Surplus revenues from the events are placed in the Larry Calvert Travel Fund which offers travel awards to deserving students and post-doctoral trainees, to enable their attendance at courses, scientific meetings, and the IUCr Congresses.

8) Is there anything else the CNC facilitates, on behalf their international union engagement that we have not already touched on?

Accomplishments

9) Is there an updated website with all the available accomplishments made (peer-reviewed publications, technical reports, literature reviews/scans, etc.,) or key events hosted (workshops, public engagement, community engagement etc.,) by this CNC? If not, please briefly describe your CNC accomplishments for this year.
    - http://xtallography.ca

10) What is the composition of the research landscape that your CNC engages with (ex: government, academic, industrial etc.)?
    - Academic, industrial, government

11) Are there other contributions that are made by your CNC that we may have overlooked, but need to be considered?
    - The CNCC provides travel awards from the Larry Calvert Travel Fund to assist students, post-docs and non-scientific staff participate in workshops and conferences.

12) Are there any specific accomplishments/successes made by your CNC that we should consider highlighting?

Financial/Structural

13) Does the partner organization hold a separate budget for the support/running of the CNC?
    - If so, what is the value of that budget?
        - No

- What types of activities does it support (ex. travel, workshops, public engagement activities, programming, etc.)?
    - N/A
- Are there any CNC priorities directed at community building/capacity building (ex. women in STEM, promotion of young and early career researchers, etc.)? What types of activities do you run in support of these priorities?
    - The CNC sponsors/organizes a workshops and training programs for sudents/postdocs

14) How does the CNC define itself as a legal entity (ex. incorporated, non-profit)?
    - Non-profit

15) What is the structure of your CNC? (ex. Traditional structure would have a President, VP, Treasurer etc.)
    - Traditional structure, with representative members from different provinces and different sub-fields of Crystallography

16) Does your CNC host/convene annual meetings (in person, Teleconference, etc.)?
    - If so, when was the last meeting?
        - Teleconference, last meeting was June 1, 2020.

Additional Questions

17) How does the Canadian research community benefit from our engagement (via the CNC) with this international union?
    - Crystallography and associated diffraction, spectroscopy and microscopy methods are used in basic research and industrial applications in each of the Federal Government's four priority areas – 1) environmental science and technologies 2) natural resources and energy, 3) information and communications technologies and 4) health and life sciences technologies. These methods include a wide variety of fundamental methodologies that are used to identify the structures, chemistries, and properties of natural and synthetic materials of all types. Diffraction is used in the development of stronger and lighter construction materials, energy-efficient refrigeration devices, display devices, catalysts, pharmaceuticals, and drug delivery media. It is also used in failure analyses, quality control, and characterization of mechanical devices, medical implants, pharmaceuticals, and electronics. Diffraction is also used in the workplace and environmental safety and in forensics. Structural analysis, as uniquely provided by crystallographic techniques, is central to almost all areas of applied and fundamental chemistry and materials science. Crystallography is used in earth sciences, and geology to

- understand the structures and chemistries of natural materials including minerals, meteorites, glasses, sediments and soils, to address basic questions about the formation and history of the Earth. Similar methods are used industrially in the development and monitoring of mining processes. These applications bridge the environmental sciences and the natural resources priority areas. The petroleum industry is a major player in the Canadian natural resources arena, where powder diffraction methods are used to monitor the progress of drilling and extraction operations and to provide information regarding the surface chemistries of the materials from which the petroleum products are extracted. Monitoring the sulfur content of coals and heavy oils are readily accomplished using diffraction methods.

- Crystallographic techniques are employed in the development of more sustainable green energy technologies and associated sources and storage devices, including fuel cells, batteries, and solar cells. The development of new semiconductor, superconductor and nano-materials and devices is greatly facilitated by the structural and chemical information readily provided by crystallography. These materials are critical to the development of the communications equipment and integrated circuits that power the information age. Macromolecular and small molecule crystallography contribute heavily to uncovering and understanding the molecular basis of disease. Determination of the structures of biological macromolecules which control essential biological processes greatly accelerates the design of novel pharmaceuticals, drug delivery media, and the engineering of new proteins with novel activities.

- The Canadian science and technology network in crystallography and associated methods are dispersed among biochemistry, geology, chemistry, physics, biology, and engineering departments of most universities, government, and industrial labs throughout Canada. The Canadian faculty, post-doctoral researchers, and students involved in crystallographic and diffraction applications number in the thousands. In the past decade, the Canadian government has invested over $300 million to build the Canadian Light Source and its 14 operational beamlines in Saskatoon in support of Canadian research and technology development requiring crystallography associated techniques. Beamline applications range from macromolecular structure determination to medical imaging and nano-device fabrication. There are currently more than 60 labs specialized in biological crystallography, towards understanding the molecular basis of diseases and drug design. In addition, there are over 30 research groups using small molecule crystallography, and many more, using powder diffraction techniques, carrying out research in organic, inorganic, organometallic, and solid-state supramolecular chemistry. The Electron-Micro Beam and X-ray Diffraction facility at UBC serves about 100 companies involved in the mining and energy industries. The Canadian Center for Electron Microscopy at McMaster University provides an international resource for high-quality electron diffraction. The academic research activities of the various labs using crystallographic approaches are supported by a variety of sources including CIHR, NSERC, and private foundations. These labs are providing a new generation of highly trained researchers.

- The IUCr International affiliation is therefore highly relevant to the Canadian context.

18) Does the international union you're engaging with have specific programs aimed at supporting, encouraging participation from young researchers/students, women &/or minority groups?

- Yes.
- IUCR-UNESCO OpenLabs: Sponsors, Teaching crystallography in developing countries
- Resources for Young Scientists
- Outreach to LAAMP,
- Outreach and Education Fund: Increase awareness, build capacity in crystallography and forge collaborations with governed, scientific and educational institutions

International Affiliation Table Responses

National Research Council Canada

1) Please provide an up to date list of CNC secretariat members and the following information:

Title (Dr., Mr., Ms., Prof)	*Name*	*CNC Position Title*	*Affiliated Institution*	*Email Address*	*Term (if applicable)*	*Estimated in-kind hours contributed this past year*	*Participated in International Union/Affiliation AGM (Yes/No)*	*Participated in CNC Annual Meeting (Yes/No)*
Dr	Patrick Mercier	Chair	NRC	Patrick.Mercier@nrc-cnrc.gc.ca	2015-2019	~75 hours	N	N
Prof	Tomislav Friščić	Vice-Chair	McGill University	tomislav.friscic@mcgill.ca	2015-2019	~30 hours	N	N
Dr	Michel Fodje	Secretary	Canadian Light Source	Michel.fodje@lightsource.ca	2015-2021	~100 hours	N	N
Dr	Brian Patrick	Treasurer	University of British Columbia	bpatrick@chem.ubc.ca	2015-2020	~20 hours	N	N
Dr	Louise Dawe	Outreach Coordinator	Wilfrid Laurier University	ldawe@wlu.ca	2015-2019	~30 hours	N	N
Prof	Andreas Decken	Member	University of New Brunswick	adecken@unb.ca		~12 hours	N	N
Prof	Lynne Howell	Member	Hospital for Sick Children	howell@sickkids.ca		~30 hours	N	N
Dr	Nick Vukotic	Member	University of Windsor	nvukotic@uwindsor.ca		~12 hours	N	N
Mr	Matthew Brown	Young Scientist Representative	Simon Fraser University	Matthew_Brown_2@sfu.ca		~6 hours	N	N

2) Please provide any additional comments on CNC membership (ex. Mailing list, affiliates etc.):
   a. Three previous members left the committee at the end of 2018 (Dr Jim Britten (McMaster University), Dr Joe Shrag (BRI-NRC) and Prof Marie Fraser (University of Calgary). Two new members joined the committee at the beginning of 2019 (Dr Nick Vukotic, and Mr Matthew Brown).
3) Please provide the details of any Canadian union members sitting on the Executive Body of your international affiliation/union in the last year:

Name of Canadian Researcher	*Executive Role on International Affiliation*	*Title/Position of their primary place of work*	*Term of their Executive Role on International Affiliation*
Dr Hanna.A. Dabkowska	Vice-President	Research Scientist, McMaster University	2017-2020

4) Please provide the details of any Canadian union members participating in non-executive committees, research programs, work-program, commission, panel position or other sub-structures/groups managed through the international affiliation:

Name of Canadian Researcher	*Position on the Body International Affiliation*	*Committee/Research/ Program/Other*	*Term on the Body International Affiliation*
Patrick Mercier	Member	Commission on Crystallographic Computing	2012-2020
Patrick Mercier	Chair	Commission on Inorganic and Mineral Structures	2017-2020
Pawel Grochulski	Chair	Commission in Synchrotron and XFEL Radiation	2017-2020
Pawel Grochulski	Member	Commission on Biological Macromolecules	2017-2020
Chérif Matta	Member	Commission on Quantum Crystallography	2017-2020
Howard Young	Member	Commission on Electron Crystallography	2017-2020
Roderick Wasylishen	Member	Commission on NMR Crystallography and Related Methods	2017-2020
David Bryce	Member	Commission on NMR Crystallography and Related Methods	2017-2020
Jim Britten	Consultant	Commission on Crystallographic Teaching	2017-2020
Michel Fodje	Consultant	Commission on Crystallographic Computing	2017-2020
Louise Dawe	Member	IUCr Sub-Committee on the Union Calendar	2017-2020

5) Please provide the details of any Canadian union members participating in the International Science Council (ISC) related work including on committees, research programs, work-program, policy or position documents, commissions or other sub-structures managed through ISC secretariat:

Name of Canadian Researcher	*Contribution*	*ISC Participation*	*Term of ISC work*
Hanna A. Dabkowska	IUCr Representative	ICSU Committee on Space Research (COSPAR)	2005-2020