

Appendix C. Reports of Representatives of Regional and Scientific Associates and Other Bodies

C1. African Crystallographic Association (AfCA)

During 2024, AfCA was officially registered as a non-profit organization in South Africa, and obtained tax exempt status. This requires AfCA to address some responsibilities in terms of accounting, reporting and tax returns.

The Executive Committee of AfCA remains unchanged as the AfCA constitution specifies 4-year terms for officers, elected in 2021. The committee met online regularly during 2024. The close association with the ECA continues, and ECA has agreed that African countries may be members of both ECA and AfCA, or remain as observers in ECA if they are unable to pay membership fees.

The 4th Pan-African Conference on Crystallography (PCCr4) will be held in Algeria in 2025. During 2024, several members of the AfCA Executive have been actively involved in planning this conference. Dr Kenfack Tsobnang (AfCA Vice-President) is chairing the PCCr4 Program Committee, and an excellent selection of international scientists have agreed to speak at the meeting.

Activities in crystallography have continued across the continent in 2024.

The South African Crystallography Society held a two-day meeting at Rhodes University in Makhanda in January 2024. This was well-attended by academics and students from across the country.

An online workshop on the CSD was held at Masinde Muliro University of Science and Technology (MMUST) in Kenya. This was facilitated by the CCDC team.

In May 2024, a crystallography workshop was held at X-Tech lab in Benin. A fluorescence spectrophotometer has been acquired for the Xtech lab.

The University of Venda in South Africa acquired a new powder diffractometer from Rigaku. This has been installed and users have undergone training in its use.

Professor Delia Haynes, President of AfCA, was invited to present a talk on crystallography in Africa at the GRC on Crystal Engineering in the USA in June 2024.

Two students from the Midlands State University in Zimbabwe attended the Zurich School of Crystallography at the University of Zurich in Switzerland. This was a follow-up course to the Introductory School of Crystallography they attended in 2023 in Stellenbosch. Two students from South Africa attended the European Crystallography School in July 2024 in Nancy, France.

The Egyptian Materials Research Society held its 38th International Conference on materials science and its applications from 2-5 October 2024 in Hurghada, Egypt.

As in the previous three years, some African lecturers and researchers were trained in a one-month visit to the CRM2 laboratory at the University of Lorraine in Nancy, France. This was through the AFRAMED project, chaired by Professor Claude Lecomte. The training allows African researchers to remotely use the CRM2 single crystal diffractometer for research and teaching activities on crystallography. The researchers trained in 2024 were from Madagascar (Drs Veroarisinina Ratsimbazafy and Patrick Roge), Burkina Faso (Dr Brahima Sorgho) and Mauritania (Mrs Thiam Walda). Their stay ended with a visit to Synchrotron Soleil in Paris, where the trainees also learned about the equipment and measurements at this large facility.

As part of the AFRAMED program, Dr Emmanuel Wenger (France) and Dr Adam Bouraima (Gabon) gave a lecture in the Master 2 Chemistry of Materials program at the University of Science and Technology in Masuku, Gabon, on the practice of crystal selection for crystallographic measurements.

Prof Claude Lecomte (through the IUCr Africa Initiative) was involved in several training activities in 2024, including a crystallography school in Togo, lectures in Senegal during the Senegalese crystallography meeting, and a workshop in Mauritania.

Delia Haynes, AfCA President

S. Bourne, IUCr Representative

C2. American Crystallographic Association (ACA)

The American Crystallographic Association, Inc. (the ACA) is a nonprofit, scientific organization of 1,300 members. It was founded in 1949. The objective of the ACA is to promote interactions among scientists who study the structure of matter at atomic (or near atomic) resolution. For more details, please visit the regularly updated ACA web page at <http://www.americalcrystalassoc.org>.

The 2023 ACA Council consisted of Allen Oliver (President), Gerald Audette (Vice-President), Cora Lind-Kovacs (Past-President), Stephan Ginell (Treasurer), Kushol Gupta (Secretary), and Kenneth Childers as the Young Scientists Special Interest Group (YSSIG) representative to the Council (*ex officio*). Sarah Andres served as the Canadian National Committee for Crystallography (CNCC) representative and Thomas Proffen as the IUCr representative (*ex officio*). Kristin Stevens continues as the ACA Executive Director. Membership of all committees and officers of all special interest groups are listed in the Spring 2024 edition of Reflexions (<https://www.americalcrystalassoc.org/reflexions-archive>)

In 2024 the Council continued its highly successful once-a-month teleconferences started during the COVID-19 pandemic. Council also met in person during the ACA Annual Meeting in Denver in July 2024.

The 74th Annual Meeting of the American Crystallographic Association was held in Denver, Colorado from July 7 to 12, 2024. The practice to hold Scientific Interest Group (SIG) meetings by Zoom prior to the Annual Meeting continued. Attendance at these meetings have been robust and diverse, including many new members. Anna Gardberg, Samantha Powell, Stacey Smith and Sarah Bowman co-chaired this meeting. The 2024 Transaction Symposium was *Structural Science: Sharing Excitement & Appreciation*. The meeting was well attended with 607 attendees. The program included 5 workshops held the day before the meeting attracting 155 participants. Other meeting statistics are available at <https://www.americalcrystalassoc.org/past-meetings>.

The 2023 ACA Summer Course will be held at Purdue University from June 23-30, 2024. The 2025 (75th anniversary) ACA:SSS Meeting will be held in Lombard, Illinois from July 18-23. The meeting is in-person only. The ACA/AIP journal *Structural Dynamics* achieved a five-year impact factor of 2.8.

Th. Proffen, IUCr Representative

C3. Asian Crystallographic Association (AsCA)

The Asian Crystallographic Association (AsCA) continues to play a leading role in the nurturing of collective interests and activities in crystallographic and wider structural sciences in the Asia-Pacific region with successful scientific meetings being held in those years in which there is no IUCr Congress and General Assembly.

AsCA Conference 2024

The 18th AsCA conference was held in Kuala Lumpur (Malaysia) from December 1 – 6, 2024 (<https://www.asca2024.com/>). The AsCA EC worked closely with the local organizers in the lead-up to the event. The conference was a successful event, notable for being the first in-person-only event since the COVID pandemic. The conference attracted 261 registered delegates from 29 countries. Japan, Malaysia, and South Korea were most strongly represented. More than 300 scientific contributions were presented, and the conference returned a small surplus to the organisers and AsCA. An AsCA Council meeting was held during the conference, with the majority of attendees participating in person. A Zoom option was available for those who were unable to travel to Kuala Lumpur.

AsCA scientific meetings in 2025 and beyond

At the Council meeting held at Jeju (December 6, 2022), a joint proposal from Japan/Taiwan representatives to host the 19th AsCA Conference at the Taipei International Convention Center (TICC), Taipei, Taiwan, from December 1 – 5, 2025 was accepted. Representatives from the societies presented their detailed plans to the AsCA Council meeting in Kuala Lumpur. No conference is planned for 2026 due to the IUCr Congress in Calgary, Canada. Calls for Expression of Interest from 2027 onwards have gone out, and submissions will be considered at the AsCA Council meeting in December 2025.

AsCA Accounts

The 2023 report detailed issues with previous AsCA banking arrangements. Late in 2023, a new account was finally opened with the Commonwealth Bank of Australia, and international transfers have not been problematic since. Once the current leadership committee changes at the end of this year, issues related to the transfer of banking authority will likely recur, such as the need for the new committee to attend an Australian bank branch in person. Hence, IUCr is urged to consider housing the AsCA account under its jurisdiction if possible. This report is prepared based on the report by Professor Sigbert Schmid, Professor Geoff Jameson, and Professor Genji Kurisu.

A. Nakagawa, IUCr Representative

C4. European Crystallographic Association (ECA)

The European Crystallographic Association has continued to support the crystallographic community in Europe and beyond, particularly through its networking activities, conferences, schools, prizes, and grants. In 2024, a new Special Interest Group focused on crystallography and cultural heritage was proposed and subsequently approved at the Council meeting held in August in Padova. The 34th European Crystallographic Meeting (ECM34) took place in Padova, Italy, from 26–30 August 2024 (<https://www.ecm34.org/>), welcomed over 800 participants. The program included 43 microsymposia spanning from quantum crystallography over applications in material and biological sciences to teaching and crystallography in art. The plenary lectures were delivered by Kristina Djinović, who explored the molecular architecture of muscles, and Jonathan Wright, who shared insights into imaging single crystals in powder samples. Additionally, sixteen keynote lectures highlighted the latest advancements in crystallography and its broad range of applications. ECM34 was further enriched by seven satellite events, including the European Young Crystallographers Satellite Meeting and the Crystallography in School event, which focused on promoting the teaching of crystallography to science teachers in schools. Additionally, eleven poster prizes, supported by various companies, were awarded to outstanding presenters in specific research fields, instrumentation development, or at the early stages of their careers.

Five ECA prizes were awarded during ECM34: The Max Perutz Prize to Prof. Mariusz Jaskólski, Adam Mickiewicz University in Poznań; the Erwin Félix Lewy Bertaut Prize to Daniel Mazzone, Paul Scherrer Institute, Villigen; and the Alajos Kálmán Prize to Piero Macchi, Politecnico di Milano. Two newly established prizes were awarded for the first time: The Lodovico Riva di Sanseverino Prize, recognizing notable contributions to crystallography education at all levels, was awarded to Claire Murray, a freelance scientific researcher in Germany; The George M. Sheldrick Prize, recognizing outstanding scientific contributions in structural sciences by a non-tenured researcher, was awarded to Marta Morana (University of Florence).

ECA's Executive Committee has been actively involved in preparing for the 35th European Crystallographic Meeting (ECM35), scheduled to take place in Poznań/Lviv from 25–29 August 2025. Although originally planned for Lviv, ECM35 was relocated to Poznań, while the scientific program continues to be assembled by Ukrainian colleagues. ECA extends its gratitude to academics from Adam Mickiewicz University in Poznań for providing this solution in response to the challenging circumstances in Europe.

The 9th European Crystallography School, Nancy, 24–30 June 2024 (<https://ecs-9.event.univlorraine.fr/>), was focused on enhancing crystallography skills, from basic structure analysis to a deeper understanding of chemical bonds, bonding interactions, and structure-property relationships in materials.

Through its grant program, ECA supported several conferences and schools. Travel grants were awarded to prize winners and, through the Women in Crystallography fund, also to women attending crystallographic conferences or courses. Young crystallographers continued to organize the ECA Lunchtime Webinars, which covered current and emerging topics in crystallography, attracting renowned speakers and a significant audience. Additionally, the first Crystal Growth Video Contest for schoolchildren was successfully organized. The ECA Council elected a new Executive Committee, with Dr. Arie van der Lee (Université de Montpellier) becoming the new President of ECA.

A. Altomare, IUCr Representative

C5. Latin-American Crystallographic Association (LACA)

ARGENTINA

- **19th Annual Meeting of the AACr** - La Plata, November 2024 Including:

- o 15th AACr School on Basic Crystallography and X-ray Techniques
- o 12th AACr Workshop on Advanced Techniques for Energy Materials

[<https://congresos.unlp.edu.ar/aacr2024/>]

- **Election of the new National Executive Committee for the period 2024–2027**

<http://cristalografia.com.ar/index.php/autoridades>

- **11th Edition – National Crystal Growing Contest for High School Student**

March–November 2024

Includes teacher training workshops

[<http://www.cristalografia.com.ar/index.php/concurso-cristales-2024>]

- **2nd School “Prof. Aldo Félix Craievich”**

August–September 2024

CONICET – UNSAM, Buenos Aires

[<https://www.fan.org.ar/events/2da-escuela-aldo-felix-craievich-sobre-tecnicas-de-rayos-x-convenciones-y-de-luz-sincrotron/>]

- **1st Edition – “Dra. Graciela Punte” Award**

For the best PhD thesis in crystallography

[<https://www.fisica.org.ar/2024/03/05/convocatoria-al-premio-dra-graciela-punte/>]

BRAZIL

- **ISIS - UK/Brazil Collaboration for Neutrons, Workshop on Neutron Techniques**

Federal University of Ceará, Physics Department

Fortaleza, March 26–27, 2024 [<https://www.fisica.ufc.br/portal/eventos/public/evento.php?id=32>]

- **I Neutron Techniques Workshop Federal University of Paraná Curitiba**, March 21–22, 2024

[<https://fisica.ufpr.br/neutrons/>]

- **Workshop ISIS-Brazil Collaboration on Neutrons São Paulo**, March 19, 2024

[<https://portal.if.usp.br/ifusp/pt-br/evento/workshop-isis-brazil-collaboration-neutrons>]

- **Brazilian Neutron Scattering School São Paulo**, September 2–11, 2024

[https://www.isis.stfc.ac.uk/Pages/ISIS_Neutron_School_in_Brazil.aspx]

- **São Paulo School of Advanced Science on 4th Generation Synchrotron Techniques** Campinas-SP,

October 14–25, 2024

[<https://pages.cnpem.br/synclight2024/>]

- **34th LNLS Annual Users' Meeting (RAU)**

Campinas-SP, November 4 and 9, 2024

Chairs: Narcizo M. Souza-Neto (LNLS), Alejandro Pedro Ayala (UFC) [<https://pages.cnpem.br/rau/>]

Satellite Events

- 3rd SMX Workshop – MX at Sirius for Fragment Screening Chairs: Andrey F. Z. Nascimento, Maria C.

Nonato. Co-chairs: Daniela B. B. Trivella, Evandro A. de Araujo, Manfred Weiss, Uwe Mueller

- **2nd Workshop on Synchrotron Techniques Under High Pressure (PRESSYNC)** Chair: Danusa do

Carmo. Co-chairs: Eduardo M. Granado da Silva, Haroldo C. Pinto

- **2nd International Sirius Workshop on Heterogeneous and Hierarchical Materials (H2Mat)**

Chairs: Cristiane B. Rodella, Amélie C. Rochet. Co-chairs: Nádia P. da Silva, Douglas Galante

- **1st Vacuum Ultra-Violet Spectroscopy Workshop (VUVS)** Chair: Wendell S. e Silva. Co-chair: Mario E. G. Valerio

• **LACA IUCr–UNESCO Rigaku OpenLab 2024** Institute of Physics of São Carlos, University of São Paulo. São Carlos-SP, December 2–8, 2024

[<https://www.ifsc.usp.br/lamucres/assets/pages/openlab2024.php>]

Members' Activities

- **Eduardo Granado**

o Co-chair, SYNCLIGHT School, October 14–25, 2024 [<https://pages.cnpem.br/synclight2024/>]

o Chair, LNLS Users Committee (2023–2024)

o Chair, Commission on Synchrotron and XFEL Radiation, IUCr (2023–2026)

- **Javier Ellena**

o Chair, Structural Chemistry Commission, IUCr (2023–2026) o Co-editor, Acta Crystallographica E

o Member of the International Program Committee (IPC), IUCr 2026

CHILE

- Postgraduate Courses Supported by the Association

o X-Ray Diffraction (QUI849-01) – First Semester 2024. For PhD students at PUCV

o Structural Chemistry (CS07DQ013-1) – First Semester 2025. For Master's and PhD students from UChile, USACH, and PUC

o X-Ray Diffraction (QUI849-01) – First Semester 2025. For PhD students at PUCV

- **International Schools:**

Organization of the "CCP4/CCP-EM Santiago, Chile: Structural Biology at the Foot of the Andes" to be held from November 10 to 20, 2025

- **Outreach Activities**

National Crystal Growth Contest "Cristalescolar", organized by PUCV, UOH, ULS, and UFRO – 2024

URUGUAY

- **International School on Fundamental Crystallography 2024**

UNMSM, Faculty of Physical Sciences

Lima, Peru, August 12–18, 2024

Local organizer: Prof. Justiniano Quispe [<http://www.crystallography.fr/mathcryst/lima2024.php>] |

More information

[<https://www.facebook.com/ProcienciaPeru/videos/1045737740090682/?mibextid=oFDknk&rid=p7o8oUem2IUaLpBh>, <https://www.even3.com.br/isfc2024-7mathcrysts/>]

- **VI LACA School: Quantum Crystallography** Montevideo, September 20–22, 2024

[<https://www.laca2024.pedeciba.edu.uy/satellite-events>]

- **VI Meeting of the Latin American Crystallographic Association (LACA)** Montevideo, September 23–26, 2024

Organizing Committee: Natalia Álvarez, Ivana Aguiar, L. Suescun, F. Trajtenberg, A. Buschiazzi, D. Ariosa, N. Larrieux
[<https://www.laca2024.pedeciba.edu.uy/>]

- Satellite Workshops – September 27, 2024

o CCP4 in the Cloud

o CCDC Database and Tools

o ICDD PDF 5+

[<https://www.laca2024.pedeciba.edu.uy/satellite-events>]

- **11th Edition – National Crystal Growing Competition Uruguay, 2024**

M. C. Nonato, IUCr Representative

C6. Worldwide Protein Data Bank (wwPDB)

HIGHLIGHT: Research leading to the 2024 Chemistry Nobel Prize was made possible by the wwPDB archive.

The wwPDB comprises RCSB-PDB (USA), PDBe (Europe), PDBj (Japan), BMRB (NMR) and EMDB (Electron Microscopy). The five centres collaborate closely and share the load on data deposition, maintaining a single freely accessible open-access wwPDB archive. In 2024, 229,366 experimentally determined structures were available in the archive (214,053 in 2023). About 85% of these were determined by crystallographic methods. The proportion determined by electron microscopy continues to increase. In 2024 there were 5,788 EM and 9,222 X-ray crystallography depositions, a ratio of 0.39:0.61 (in 2023, there were 4,582 and 9,610 depositions respectively, a ratio 0.32:0.68).

The IUCr representative to the wwPDB Advisory Committee (wwPDB-AC) is Professor Jennifer Martin (Australia) appointed in 2021. Professor Martin was also appointed wwPDB-AC chair from 2022–2024. The 2024 wwPDB-AC meeting was held virtually over several weeks in September and October 2024. PDBj Principal Investigator Professor Genji Kurisu hosted the meeting. The AC discussed the following issues.

FUNDING. The AC acknowledged the significant continued efforts of wwPDB core members to secure ongoing funding and shared the concern about challenges to secure essential resources to operate and update this precious global resource. A major issue is that current funding for core members is constrained to support operations. Technical debt (such as refactoring One-Dep) and essential infrastructure updates remain unfunded or underfunded. Several paths were suggested by the AC for consideration.

ONE-DEP DEVELOPMENT. There are at least two significant challenges – the increased complexity of submissions, and a code base that needs significant overhaul. Addressing either issue will likely require new funding. AC members welcomed the move to engage with the structure-solving community to promote pre-curation of data. It will be important for wwPDB to work with data generators (e.g. synchrotrons), structure solvers (e.g. CCP4), and data harvesters (e.g. One-Dep team) to make this approach work. wwPDB PIs reported that lowering the burden on depositors and biocurators is an overarching goal.

PDB-CHINA (PDBc). The AC acknowledged and celebrated the outstanding efforts of wwPDB partners, particularly PDBj, in supporting and training PDBc to become an associate member. The process began during the travel restricted COVID era. The proposed transition plan for PDBc core membership is well-considered and the timeline and milestones are appropriate. If all milestones are met, PDBc could become a full partner by 2027.

wwPDB OBSOLETE ENTRIES POLICY. The AC agreed with wwPDB PIs that this policy needs updating and harmonising, and supported the approach being implemented. The incidence of fraudulent entries in the wwPDB is thought to be very small. In future there may be a large number of re-refined entries that correct errors and are submitted by nonauthors of the original entry.

wwPDB-AC MEMBERS. Several members and the chair will rotate off the committee in 2025. For the full report and all presentations, go to <https://www.wwpdb.org/about/advisory>

J. L. Martin, IUCr Representative

C7. International Centre for Diffraction Data (ICDD)

Awaiting report

J. A. Kaduk, ICDD Treasurer

C8. International Organization for Crystal Growth (IOCG)

The new President of the IOCG, Prof Elias Vlieg of Radboud University, The Netherlands, also a member of the Commission on Crystal Growth and Characterisation of Materials, took over in 2023 from the outgoing President at that time, Prof Koichi Kakimoto.

After taking over this position, Prof Vlieg launched an initiative to seek the members' opinion on the choice of a new logo to represent the IOCG. There has also been a revamp of the IOCG website and these initiatives were welcomed by the members of our Commission. Suggestions were also sought from our members for the nominations for the various IOCG prizes.

Prof Vlieg, as the Chair of the International Advisory Committee, is playing a crucial role in the organisation of the next (21st) International Conference on Crystal Growth and epitaxy (ICCGE-21) to be held in Xi'an, China in August 2025. Several members of our Commission are on the International Programme Committee as well as Chairs of several of the Sessions. The members have also been engaging with Prof Vlieg in the formation of the scientific programme for this meeting.

The next in-person meeting of the IOCG members is not expected until the ICCGE-21 Conference and we look forward to this eagerly and to contribute to its activities.

G. Balakrishnan, IUCr Representative

C9. Interdivisional Committee on Terminology, Nomenclature and Symbols of the International Union of Pure and Applied Chemistry (IUPAC ICTNS)

The Chairman of the CCN is a member of the ICTNS.

There do not seem to have been any activities of the ICTNS during 2024 that would affect the IUCr.

Requests to referee papers and reports submitted to the IUPAC arrive regularly because all submissions are sent to all members of the ICTNS. Most submissions are in specialized areas unrelated to crystallography. No reviews were written for the IUPAC during 2024.

C. P. Brock, IUCr Representative

C10. International Science Council (ISC)

The International Science Council (ISC) (<https://council.science/>) works at the global level to promote and convene scientific expertise. It advises and influences global institutions on issues of major concern to both science and society. The Membership includes 45 international associations - Unions (like IUCr) and other scientific organizations, 146 associations representing natural and social sciences and humanities such as academies and research councils and 60 Affiliated Members - including international scientific federations and societies, plus young academies and associations (<https://council.science/members/>) The actual President of ISC is Peter Gluckman (New Zealand) and the CEO is Salvatore Aricò (France).

On the 28–29th of February 2024 the ISC Extraordinary General Assembly gathered online and approved the proposed Statutes which were adopted on the 8th of March 2024 and now are published on the ISC website (<https://council.science/publications/statutes-and-rules-of-procedure/>). The electronic election of new Members of Governing Board (GB) of ISC took place on the 11–16 Dec 2024 (<https://council.science/about-us/governance/governing-board/>)

In 2024 the main ISC resolutions addressed the following issues: science - conflict and ethics; the free movement of scientists; strengthening the role of early- and mid-career researchers in science and in its governance. Launched in 2019 the Decade of Global Sustainability Science Action (DGSSA) enabled by the framework of the Global Forum of Funders continued to:

- apply a holistic and systemic approach to addressing global challenges (following the Sustainable Development Goals (SDGs) as an indivisible agenda);
- support transformative, high-impact and transdisciplinary knowledge creation;
- promote mission-driven research, in the same time supporting the contributions to fundamental research;
- support enabling activities, e.g. capacity development and knowledge brokerage.

To secure the funding for all activities that will benefit the Council, the ISC has established in 2024 a charitable foundation in the UK, <https://council.science/aboutus/charitable-trust/>

The ISC Global Knowledge Dialogue for the Latin American and Caribbean (LAC) region took place in April 2024 in Santiago, Chile. The 3rd ISC General Assembly (GA) took place on the 29 – 30 January 2025 in Muscat, Oman, preceded by Muscat Global Knowledge Dialogue <https://council.science/events/muscat-gkd/>

IUCr vice-president, Graciela Diaz Delgado attended both venues in person, I took part in GA on Zoom in my role of IUCr voting representative. Whereas the 2025 budget was approved by GA, the proposed adjustment of membership dues for inflation was not approved. Livestreams and recordings of most of the GA sessions are available on the ISC YouTube channel <https://www.youtube.com/@InternationalScienceCouncil/streams>

At the conclusion of the Third ISC General Assembly in Muscat, Oman, the China Association for Science and Technology (CAST) invited all delegates to gather for the next ISC mid-term meeting in October 2026 in Beijing. <https://council.science/news/chinas-cast-mid-term-meeting-2026/>.

The report of all ISC Activities and Achievements can be found at <https://council.science/publications/2022-2024-report/>

I want to stress that ISC Secretariat is very active, promoting diverse activities and programs, in 2024 I received more than 100 emails and invitations. Information about current programs and activities important for scientific community can always be found at the continuously updated ISC website, <https://council.science/>

H. Dabkowska, IUCr Representative

C11. ISC Committee on Data for Science and Technology (CODATA)

Awaiting report

K. F. Dziubek, IUCr Representative

Report on the UNESCO Initiative on Open Science

As background recall that UNESCO's Recommendation on Open Science was adopted by the General Conference of UNESCO at its 41st session, on 23 November 2021. The Recommendation affirmed the importance of open science as a vital tool to improve the quality and accessibility of both scientific outputs and scientific process, to bridge the science, technology, and innovation gaps between and within countries and to fulfil the human right of access to science. Details of this are here <https://www.unesco.org/en/open-science?hub=686>

UNESCO convened five ad-hoc Working Groups focusing on key impact areas, bringing together experts and open science entities, organizations, and institutions. In the past triennium 2020 to 2023 I had attended these Working Groups on behalf of IUCr, and in the current triennium 2023 to 2026 the consequent events of UNESCO and the UN. Open Science monitoring of principles adopted by different countries has become a main component of UNESCO's progress.

Linked to this UNESCO initiative, and its own events, was a three-day hybrid conference organised by the UN Library in October 2025 entitled "The 4th United Nations Open Science and Open Scholarship Conference" <https://www.un.org/en/library/OS25>. This had a focus on accelerating the UN's sustainable development goals and democratizing the record of science within which Open Science is a principal component. Unlike UNESCO, and the International Science Council, the UN is keen to engage private actors in accomplishing their SDGs notably UN's Sustainable Development Goal 9 <https://www.un.org/sustainabledevelopment/infrastructure-industrialization/>. Additionally, this UN event, and UNESCO, emphasised the 'power asymmetries between Global North and Global South' economies. This included the elitism of the Global North dominated 'high impact' publications i.e. in effect shutting out the far less well financed Global South scientists. These insights have led to analyses of IUCr Journals titles by the Head of IUCr Journals Strategy with respect to countries of authorships, also split into academic laboratories and from industry authors. Notably UNESCO has called for a flexibility of journal acceptance standards, which seems intractable to me, but highlights the importance of providing economic aid (our IUCr bursaries for example) and actively providing our expertise such as from our co-editors (e.g. allowing several rounds of submitted article revisions).

A specific conclusion from the UN/UNESCO deliberations has strongly featured a growing importance of, and seeking funds for, the prioritising diamond open access for publications. Diamond' open access refers to a scholarly publication model in which journals and platforms do not charge fees to either authors or readers e.g. see 202203-diamond-oa-action-plan.pdf (scienceeurope.org). The Global South seems to be making progress with Diamond open access journals but are thus far not used by Global North authors; see for example <https://africanbookscollective.com/why-diamond-open-access-in-the-global-south/>. The IUCr Journals article waivers, when sufficient resources are available, are an alternative means of providing Diamond open access for those authors without publishing funds. There are interesting parallels between government aid programmes to lower income countries as well as from the World Bank where a split of financial aid and providing expertise is increasingly being made. The IUCr's Visiting Professorships scheme also has a significant role to play.

Throughout the triennium I prepared reports for the Editor in Chief and Head of IUCr Journals Strategy, and the IUCr CEO where appropriate. I authored a lead article, which is in press in Acta Cryst A, entitled "Crystallography and Open Science and its Open Educational Resources", the second topic referring to a previous UNESCO initiative: <https://www.unesco.org/en/open-educational-resources/resources>. My article provides a landscape overview and where we might yet still improve IUCr's efforts as a global force for public good.

J. R. Helliwell, ad hoc IUCr Representative

Digital Representation of Measure (DRUM) Initiative of the Committee on Data (CODATA) of the International Science Council (ISC)

(The ISC is the successor organization to the ICSU. The ISC was formed in July 2018 by the merger of the International Council for Science (ICSU) and the International Social Science Council.)

In July 2020 the Chairman of the CCN was appointed to be the IUCr's Ambassador to the DRUM initiative of CODATA.

There does not appear to have been any DRUM activity in 2024.

C. P. Brock, IUCr Representative

C12. ISC Committee on Space Research (COSPAR)

COSPAR's (<https://cosparhq.cnes.fr/>) main objective is to promote international collaboration in scientific research in Space, with an emphasis on the exchange of results, information and opinions. This organization is responsible for developing world standards for the space environment and its protection.

COSPAR's highest body is the Council. The Council comprises the Committee's President, Representatives of Member National Scientific Institutions and International Scientific Unions, the Chairs of COSPAR Scientific Commissions, and the Chair of the Finance Committee. The Council meets at the Committee's biennial Scientific Assembly. Between Assemblies on a day-to-day basis COSPAR is run by the Bureau. COSPAR President for the period 2022–2026 is Pascale Ehrenfreund (Netherlands/USA) and the Vice-Presidents are Catherine Césarsky (France) and Pietro Ubertini (Italy). Members of the Bureau are: Vassilis Angelopoulos (USA), Masaki Fujimoto (Japan), Manuel Grande (UK), Petra Rettberg (Germany), Iwona Stanislawska (Poland) and Chi Wang (China).

The most recent 45th Scientific Assembly of COSPAR was held in Busan, South Korea, 13th – 21st July 2024.

<https://www.cospar2024.org/>

The 46th COSPAR Assembly will be in Florence, Italy, on the 1st – 9th of August 2026. <https://www.cospar2024.org/>

The 47th COSPAR Assembly will take place in Dubai, on the 8th – 16th July 2028.

Following the success of the Capacity Building Workshop (CBW) on Crystallography for Space Science, in April 2016 in Puebla, Mexico (<http://www.inaoep.mx>), a similar workshop/school was proposed for Addis Ababa, Ethiopia in 2022. However, due to the deteriorating security situation and the coronavirus pandemic, it is being considered to be held in another African country in 2026–2027. Yuki Kimura (IUCr) and Carlos Gabriel (COSPAR) will co-chair in the CBW organizer.

The Chair of the Scientific Commission on Material and Fluid Sciences in Space Conditions (Scientific Commission G) is M. Avila (Germany), and vice-chairs are K. Brinkert (UK), K. Li (China), J. Porter (Spain) and A. Romero-Calvo (USA). The official journal of COSPAR is *Advances in Space Research* (ASR) <https://www.journals.elsevier.com/advances-in-spaceresearch> and has an impact factor of 2.8 (in 2023). ASR includes COSPAR's information bulletin *Space Research Today*. Another COSPAR journal, *Life Sciences in Space Research* <https://www.journals.elsevier.com/life-sciences-in-spaceresearch> has an impact factor of 2.9 (in 2023) and is a quarterly peer reviewed scientific journal covering astrobiology, origins of life, habitability, life in extreme environments, effects of spaceflight on the human body, radiation risks and other aspects of life sciences relevant in space research.

In 2024 COSPAR organized Four CBWs:

- IRI 2024 Workshop, International Reference Ionosphere: Modelling the ionosphere over Africa and improvements of the International Reference Ionosphere, 2 – 13 September 2024, Kilifi, Kenya
- Coronal and Interplanetary Shocks: Analysis of SOHO, STEREO, SDO, Wind, and ground-based radio data, 19 – 30 August 2024, Samarkand State University, Uzbekistan
- I-HOW COSPAR Workshop 2024, a New Era of High-Resolution X-Ray Spectroscopy, 19 – 30 August 2024, Fudan, China
- COSPAR PCB/I-HOW CB Workshop "JWST Data Analysis and Processing Workshop (South East Asia)," 24 June – 5 July 2024, Chiang Mai, Thailand

The Panel on Capacity Building (PCB) Fellowship program is open to young scientists who participated at one of the COSPAR CBW, enabling them to build on skills gained at the workshop. It provides for visits of 2–6 weeks duration for the purpose of discussing ideas for a future workshop or carrying out joint research with one of the previously agreed lecturers/advisors of the corresponding workshop.

COSPAR co-organizes a limited number of meetings and colloquies each year that are of interest to its Associates. More information about these initiatives can be found at <https://cosparhq.cnes.fr/events/co-sponsored-meetings>.

Y. Kimura, IUCr Representative

C13. International Organization for Standards (ISO)

The Chairman of the CCN is a member of the ISO. The group sends out emails from time to time. No topic of interest to crystallographers was addressed during 2024.

C. P. Brock, IUCr Representative

