# NEWSLETTER

# Society of Crystallographers in Australia and New Zealand

# SCANZ President's Report



2023 is a big year for SCANZ, with IUCr's 26<sup>th</sup> Congress in Melbourne in August. Please engage with the conference, take part in outreach activities and related events throughout the year, and encourage your colleagues, friends and students whether local or international to attend (abstracts 21 Feb, earlybird registration 31 Mar).

If we need any motivation to ensure that IUCr 2023 is a success, we only need to look back at the previous Australasian IUCr, Perth 1987. The modest profit made by the organisers of that meeting gave birth to the SCANZ "1987 fund" which underwrites much of the society's activities 36 years later. Let's ensure 2023 has a great legacy too.

The CRYSTAL34 meeting held in Bendigo in December was a fantastic reminder of the strength and diversity of our community and that face-to-face conferences are a lot more fun than online ones! Many



As usual the Business Meeting held at CRYSTAL34 involved changes to the Council. Megan Maher stepped into the Immediate Past President role. Megan's tenure as President covered the most difficult parts of the Covid19 pandemic and I can't thank her enough, on behalf of the society, for being such a safe pair of hands through that period. David Aragao's term as Past President ended, and while we miss his formal contributions



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(which extended over many years and most of the committee roles!) we are happy to know we have a trusted friend of the society based in the UK. Helen Maynard-Casely also stepped down as a councillor. While Helen's enthusiastic input to the Council will be sorely missed, we can see first-hand how much energy she is putting into outreach activities for IUCr – Thanks Helen!

The new members of Council are James Hester (ANSTO, NSW) and Emily Parker (Wellington, NZ). Both have long been strong contributors to the community and are no doubt familiar to many of you. Emily's membership of the Council represents a further commitment to the NZ part of the SCANZ name, joining our NZCC Rep Kurt Krause in representing the New Zealand Crystallography community. Kia ora!

As of December, the SCANZ Council is as follows:

President - Charlie Bond Vice-President - Chris Sumby Secretary - David Turner Treasurer - Jack Clegg Immediate Past President - Megan Maher Council Member - Lauren Macreadie Council Member - Emily Parker Council Member - James Hester ANCC Rep - Michael Parker NZCC Rep - Kurt Krause Newsletter Editor - Michelle Miller

I would like to finish with some other things to look out for in in 2023.

- Jenny Martin (IUCr Exec) mentioned at Bendigo that as part of its 75<sup>th</sup> anniversary, IUCr will be consulting its members to refresh the vision and values of the Union (more at <a href="https://www.iucr.org/news/newsletter/etc/articles?issue=155353&result\_138339\_result\_page=7">https://www.iucr.org/news/newsletter/etc/articles?issue=155353&result\_138339\_result\_page=7</a>). Please provide your opinions when given the chance.
- A number of new beamlines are being completed and coming online at the Australian Synchrotron over the next couple of years (BIOSAXS, MX3, ADS are probably the most relevant, <a href="https://www.ansto.gov.au/facilities/australian-synchrotron/project-bright/bright-beamlines">https://www.ansto.gov.au/facilities/australian-synchrotron/project-bright/bright-beamlines</a>). Now is a great time to find out what these beamlines are capable of and how they might transform your science.
- SCANZ will soon be opening the first round of Maureen Mackay Travel Awards: biannual awards of \$1500 to support those with carer responsibilities to attend national or international meetings that encompass scientific fields represented by SCANZ.

Happy 2023!

Charlie Bond - SCANZ President

## **OUTGOING PRESIDENT'S REPORT**

Sadly, this is my final President's report for SCANZ. It has been an enormous honour and privilege to serve this Society and to contribute to continuing its proud legacy. I thank the Council for all the hard work and immense support that has been afforded me over the last two years. Having started my postdoctoral career working with (and being taught crystallography by) Charlie Bond, I am delighted such a dear friend and colleague will be taking over the reins.

It has been a busy period since the last newsletter, with the implementation of new initiatives, the organisation of the IUCr 2023 Congress and the Crystal 34 meeting. In addition, this year we



welcomed Kurt Krause to our Council meetings in his capacity as the convenor of the NZ National Committee for Crystallography. This mirrors Michael Parker's participation as Chair of the Australian Academy of Science National Committee for Crystallography. We thank Kurt for his contributions and hope we can continue to build our engagement with our New Zealand colleagues.

This year saw the first Crystal Lite conference, which was held in May at the Bio21 Institute, University of Melbourne and showcased the research of ECAs within our community. The meeting was an overwhelming success! Thank-you to Helen Maynard-Casely, Michelle Miller and their organising committee for all the hard work. I really hope this will continue as a regular feature of the SCANZ calendar.

Alison Edward's motion at the last (2021) Business meeting, prompted a Special Business Meeting, held at the Bio21 Institute in October 2022, to alter the rules of the Society to allow 'virtual' participation of the membership in future meetings. Thank-you to all the SCANZ members who took the time to attend. I was inspired by the presence of so many members at this (10 min) meeting – we really are very fortunate to be part of such a collegial society.

As mentioned in previous reports, the 1987 Fund is now under management through Oreana Private Wealth (formerly Grant Thornton), allowing for a more predictable annual income and the opportunity to budget for new initiatives. Mark Spackman has stepped down as trustee after many years of devoted service – thank-you Mark on behalf of the entire community. Megan Maher, Charlie Bond and Stephen Moggach are now trustees of the fund.

During my tenure as President, Council have converted the Mathieson Medal to an annual award and introduced new eligibility criteria (within 15 years post-PhD) and explicit mechanisms by which career disruptions can be detailed. For both the Mathieson and Bragg Medals, we have introduced an application, rather than a nomination process. All these changes are aimed at increasing the diversity of applicants (and recipients) for these awards. I congratulate Prof. Stephanie Gras and Prof. Richard Welberry on the awards of the 2022 Mathieson and Bragg medals, respectively. Both delivered wonderful presentations at the Crystal 34 meeting.

Early in 2023, the first round of the SCANZ Maureen Mackay Travel Awards (\$1500 per award) will open for applications. These will be biannual and awarded to support those with carer responsibilities to attend national or international meetings that encompass scientific fields represented by SCANZ. More detail will be released along with the application form in the coming months.

The organisation for the IUCr 2023 congress is forging ahead at pace. The abstract deadline has recently been extended to 21<sup>st</sup> February 2023. There will be financial support available for students in the form of Maslen scholarships, with details to come soon. We look forward to a busy lead up to the meeting and welcoming the international crystallographic community to Australia.

The Crystal 34 meeting was held at La Trobe University in December 2022. As is typical of these unpredictable times, there were several last-minute program changes and switches to online talks but overall, the consensus was it was wonderful to have our Society to meet in person again. The conference included fantastic presentations from Elsbeth Garman as the 1987 Fund speaker and keynote speakers Valeska Ting (University of Bristol and ANU), Aina Cohen (SLAC), Steven Rutherford (Genentech) and Brendan Abrahams (University of Melbourne). Thank-you to all who attended and presented. Statistics on attendees, presenters etc are detailed below. A heart-felt thank-you to the members of the Crystal 34 Organising/Program Committee: Sheena McGowan, Carol Hua, Dave Turner, Rhys Grinter, Richard Birkinshaw and Stephanie Boer, who worked tirelessly to make it a successful meeting.

The 2022 Business meeting was held in conjunction with Crystal 34, where several people completed their formal contributions to SCANZ. Thank-you very much to Jason Price for his service to the Education Committee and Brendan Kennedy for his contributions to the Nominations Committee. Helen Maynard-Casely completed her tenure on the SCANZ Council and we thank her for her amazing contributions – particularly to outreach and ECA engagement. Finally, sincere thanks to David Aragão for his time as Treasurer, Vice-President, President and Past President.

#### Megan Maher



## **CONGRATULATIONS TO OUR AWARD RECIPIENTS!**

Congratulations to all those who were presented with awards at Crystal 34!

#### **Poster Prizes:**

CCDC Advancing Structural Science Poster Prize Jade Nadine Ang, Monash University (not pictured) Acta Crystallographica F Poster Prize Lani Davies, ANU (left) Crystal 34 Student Poster Prizes: Minuri Ratnayake, Monash University (centre) Daniel Fox, Monash University (right)





#### Rising Star Awards

(from left to right) Qingbo Xia, University of Sydney Andrea Nguyen, LaTrobe University Eleanor Kearns, University of Sydney Katrina Black, WEHI Chathura Suraweera, Monash University Curtis Ho, University of Tasmania

#### **Our Medal Awardees for 2022**

The Sandy Mathieson Medal is now awarded annually for distinguished contributions to science involving X-ray, neutron or electron diffraction and/ or imaging by a researcher within 15 years of the award of their PhD. We had the great pleasure at Crystal 34 of hearing from both the 2021 award recipient, Colin Jackson, as well as the 2022 award recipient, Stephanie Gras. Congratulations to both Colin and Stephanie!





The Lawrence Bragg Medal is awarded for distinguished contributions to science involving X-ray, neutron or electron diffraction and/or imaging. Richard Welberry was presented with the medal at Crystal 34 for his contributions to diffuse X-ray scattering methods. His work combines diffuse X-ray scattering methods with computer simulation to deduce the arrangement of atoms and molecules in disordered crystals. While conventional crystal structure determination reveals only averaged arrangements, diffuse scattering gives information on how neighbouring atoms or molecules interact with each other.

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John Cowley

CSIRO Chem. Phys.

First Aust. structure analysis paper.

resolution electron

diffraction and

theory of electron

scattering.

Prize (with Alec Moodie)

## **RYSTALLOGRAPHIC REFLECTIONS**

I was delighted to be given the opportunity at the recent Crystal 34 meeting in Bendigo, to present an update on progress with the preparation of the manuscript for a book entitled "Crystallographic Reflections: a history of the Society of Crystallographers in Australian and New Zealand".

Rather than reproduce the rather disjointed narrative that was my only option in the short time available in Bendigo, I include the summary of observations below, extracted from the Epilogue in the manuscript's second draft, and intercalated with a few of the images that were shown at the talk.

Rod Hill, January 31, 2023

SCANZ

The Society of Crystallographers in Australia and New Zealand has now entered its 7<sup>th</sup> decade. From its humble and informal beginnings as a small group of 'Bush Crystallographers', meeting for the first time under the same roof at Sydney University in 1961, it formalised the association as the Society of Crystallographers in Australia at its 10<sup>th</sup> meeting in 1976. In acknowledgement of the major and long-term engagement of colleagues from 'across the ditch', the name was changed to the Society of Crystallographers in Australia and New Zealand at its 21<sup>st</sup> meeting in 2000.

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**Max Taylor** Flinders U First SCA Treasurer (1976-1982) and President 1998-2000

**Hans Freeman** U Sydney First protein crystallography group in Aust. (metal complexes of amino acids and peptides). Co-author of 'Big Science, Small Country' Inaugural SCA President 1976-78

## Some of the early pioneers



1961 - possibly during the Crystal 1 meeting: John E. W. L. Smith, Janet and Max Taylor, Hans Freeman, Anne and Gordon Robinson, John Cowley.

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## **SCANZ**

Dave Wadsley CSIRO Ind. Chem. Shear and Block structures. A nomination was being prepared for a Nobel Prize when he died at a conference in Canberra in 1969

Sandy Mathieson CSIRO Chem. Phys. Significant contributions to the development of instrumental techniques, the distribution of intensity in Bragg reflections, and the elimination of extinction



Barrie Dawson CSIRO Chem. Phys. His generalized structure-factor formalism had a fundamental impact upon the accuracy of X-ray electron distribution determination

Around 1966: Dave Wadsley, Sandy Mathieson, Janis Friedrichsens, Barry Dawson

Throughout its existence, the Society, both as a collective and through its individual members, has played a very significant role in the crystallography landscape both in Australia and overseas. It was a foundation partner in the political lobby group for science and technology, the Federation of Scientific and Technological Societies (FASTS), and has remained so ever since; it was a major actor in the push for funding for Australian access to major synchrotron and neutron facilities overseas (the so-called 'suitcase science' / 'Small Country Big Science' initiative); its members were prime movers in the establishment of the Australian National Beamline Facility (ANBF) at Tsukuba, Japan; it played a major role in the push for the establishment of the Australian Synchrotron and the new research reactor (OPAL) and drove many of the technical committees advising on the type and design of beamlines that were built at those facilities; and it was a strong proponent and (along with the Crystallographic Society of Japan) a prime mover in the establishment of the Asian Crystallographic Association (AsCA), one of only four Regional Associates of the International Union of Crystallography (IUCr).

Through the Society's ex officio representative (and other independent members) on the National Committee for Crystallography of the Australian Academy of Science, the Society is (in practical terms) the primary link for Australia's engagement with the IUCr. Society members have acted as President and Vice President of the IUCr, served on its Executive Committee, and occupied seats on all 22 Commissions of the IUCr at one time or another, often as Chair. It has been the organiser of two of the 26 IUCr Congresses and General Assemblies held since 1948, the 14<sup>th</sup> in Perth in 1987 and the 26<sup>th</sup> in Melbourne in 2023. It has maintained a strong supportive presence (both financial and participatory) in meetings of AsCA since its foundation in 1987.

Since 1961 its series of regular national meetings (34 and counting) and, since 1980, its Newsletters (79 and counting) have provided critical and effective platforms for the exchange and dissemination of scientific, political, and personal information, past, present, and future, and they continue to represent an important connection medium for professional and student crystallographers in Australia and New Zealand. They

have served to celebrate and encourage the achievements of members and to engender a sense of a crystallographic community across both nations.



Left: Biswanith Mukajee, Syd Hall and Ted Maslen travelling across the Nullarbor from Perth to Crystal 5 at Monash University. Right: No travelling required for Crystal 33!





Our IUCr 2023 Congress and General Assembly is less than 200 days away! Since the first Congress in 1948, it has only been held in Australasia once. That congress took place in Perth in August 1987 and is considered by many as one of the most memorable crystallography conferences they have attended. A surplus from the meeting allowed the establishment of the "1987" scholarships, now known as the Maslen

Call to Action	Date
Call for Abstracts Close	21 Feb 2023
Notifications of Abstract Acceptance	Late March 2023
Early Bird Registration Deadline	31 March 2023
IUCr 2023 Congress	23-29 Aug 2023

scholarships, which many SCANZ early career researchers have benefited from over the decades. Hence, it is rare that triennial IUCr congresses are held in our region and yet they have such an impact and will be remembered for a lifetime. Our meeting is not to be missed!

The IUCr 2023 local organising committee consists of Michael Parker (Chair, University of Melbourne and St. Vincent's Institute), David Aragao (Diamond Synchrotron), Stuart Batten (Monash University), Melissa Call (WEHI), Daniel Eriksson (ANSTO), Brendan Kennedy (University of Sydney), Helen Maynard-Casely (ANSTO), Megan Maher (University of Melbourne), Tom Peat (CSIRO), Emily Parker (Victoria University of Wellington, New Zealand), Jack Clegg (University of Queensland) and Charlie Bond (University of Western Australia). We are ably supported by our professional conference organiser, ICMS Australasia, who are providing valuable support and advice to us.

We are very happy to receive suggestions on how to make our meeting the best it can be and for volunteers to help us out with our planning. Please contact the IUCr 2023 LOC through its Chair, Michael Parker (<u>mparker@svi.edu.au</u>). And finally, we will continue to provide updates via our website (<u>www.iucr2023.org</u>) and social media (@IUCr2023). And you can lodge an expression of interest via our website to keep up with the latest news via email.



The Team: Helen Maynard-Casely, Emily Furlong, Stuart Batten, Bryce Mullens, Rosemary Young.

Unless you've been under a rock.. you may have noticed that in August we (SCANZ) are hosting the IUCr2023 congress in Melbourne. This is a great excuse to broaden our horizons on who we talk to about crystallography, hence the Bragg Your Pattern project. We are aiming to engage an audience of primary school-aged kids (and their families), using the theme of patterns to introduce Crystallography. Supported by IUCr2023 and SCANZ we've started a program of events – with the aim of creating a legacy of crystallography sci-comm resources for all to use.

So how is it going? Well, in Science Week 2022 we launched our first event – a pattern competition, see the excellent winners here <u>https://braggyourpattern.com/comp-gallery-landing/</u>. We've also launched a social media hashtag #BraggYourPattern, encouraging all to post pictures of patterns in their surroundings (check out our Instagram @everydaycrystallography or Twitter @Crystal\_a\_day for more examples). Oh and we've also come up with a series of short explainer videos #CrystallographyClear – that can be viewed on the SCANZ YouTube channel <u>Crystal SCANZ – YouTube</u>

But wait... there's more to come.

We've just launched our plans for our Crystal-A-Con, a unique interactive educational experience that will be held at the exhibition at IUCr2023. We are planning seven stations of activities for all ages to get involved in – from building a GIANT diamond structure, to becoming a material detective. Students will get a 'Crystal Passport' so they can seek stamps from each of the stations. A fun filled and educational experience guaranteed.

But we need to get the word out – for now we're targeting teachers to get their classes signed up for a visit! There are more details here <u>https://www.braggyourpattern.com/news/12.html</u>. It would be great if you could pass this link to any teacher networks you have. We're also planning a public opening on the Saturday during congress, so stay tuned for that.

How else can you get involved?

- Post interesting patterns on social media with #BraggYourPattern it's great to use this as a continuing resource to point to the fact that patterns are all around us!
- We're looking for volunteers to run the 2023 pattern competition is that you?
- Down the line we'll be looking for volunteers to help at Crystal-A-Con

Do drop the team a line at <u>hello@braggyourpattern.com</u> if you want to get involved.





The perennial question... what do you call a group of crystallographers? This, and much, much more was discussed at SCANZ's first Early Career Researchers' meeting. Named Crystal-Lite, in a nod to the larger Crystals meetings, it was held 19<sup>th</sup>-20<sup>th</sup> May 2022 at the Bio21 Institute in Melbourne. The organising team worked to gather ECR crystallographers in person and online, in a friendly and mixed-stream forum. In launching this meeting, the SCANZ council hoped to give a new opportunity for those establishing themselves in our community to share their work – and well as providing some long-sought-after networking opportunities after the pandemic interruptions.



Crystal Lite invited speakers Dr. Carol Hua (L)

and Dr. Rhys Grinter (R)

75 participants registered, and from the submitted abstracts 18 were chosen for talks across four sessions. The sessions were mixed between the chemical, protein, and Cryo-EM communities – so all could discover how vivid and wide our crystallographic community is. Two prominent mid-career researchers were our invited speakers: Dr Carol Hua whose talk ' Supramolecular Chiral Sensors: Beautiful Crystals, NMR and Fluorescence' show that crystals can be practical as well as spectacular. Our second invited speaker Dr Rhys Grinter whose talk titled 'Living on thin air: The structural basis for atmospheric hydrogen scavenging by a soil bacterium' explained how some bacteria get by on very, very little!

There were prizes on offer too, with poster prizes awarded to Daniel Yu, Patrick Tung, Rosemary Young and Santana Royan. Talk prizes went to Chris Horne, Bronte Johnstone and Bryce Mullens. Participants also voted on their favourite talks and poster, with Weixi Gu taking the people's choice talk award and Menggi Pan the people's choice poster award.

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## Feb 2023

A big thanks goes to the sponsors, Bio21, Cytiva, IUCr2023 and SCANZ for their support of the meeting. Being able to gather and present work in this forum was a great warm-up for IUCr2023 coming up this year. Also, a shout-out goes to the amazing (and mainly early career researchers themselves) organising group for all their work in pulling things together.



The Crystal-Lite organising committee – From Left to Right, Michelle Miller, Shadi Maghool, Pramod Subedi, Helen Maynard-Casely, Chathura Suraweera, Tess Malcolm, Rosemary Young, Emily Furlong and Sarah Piper.

# **SCANZ COMMITTEES**



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