



Volume 14, No. 4, April 2022

## WELCOME

As I write this, the war in Ukraine has been raging for 50 days. There is so much hardship in Ukraine and for the refugees, mostly women and children, who have left Ukraine. Thus, I am iterating the useful links from March here so that you can help those in need: [Help Humanitarian Efforts in Ukraine](#), [Donate to Children of Ukraine](#), [Nova Ukraine](#), [Razom for Ukraine](#), [World Central Kitchen](#), [Global Giving](#), [International Committee of the Red Cross](#). Some organizations, for example, United Airlines, have programs to match donations, so you might be able to double your contribution with a bit of homework.

Be safe,

Joe

## RESEARCHER IN THE SPOTLIGHT

[Professor Stephen A. Moggach](#)

The University of Western Australia



Professor Stephen A. Moggach is a research-intensive academic who currently holds an Australian Research Council Future Fellowship at the University of Western Australia (UWA). At UWA, Stephen is also the X-ray Diffraction Platform Leader, which houses two XtaLAB Synergy-S systems capable of high-pressure research, purchased in 2017 and 2020.

Stephen took on his first postdoctoral position in the chemistry department at the University of Edinburgh back in 2006 after obtaining his Ph.D. under Professor Simon Parsons also at the University of Edinburgh. He then went on to win a Royal Society of Edinburgh Personal Research Fellowship working in the School of Chemistry and Centre for Science at Extreme Conditions in Edinburgh. In 2018, Stephen moved to UWA. During this time Stephen established his love for *in situ* crystallographic techniques, but especially high-pressure research, a field he has been active in ever since and now focuses on porous materials and the effects of pressure on them.

## PRODUCT IN THE SPOTLIGHT

[CrysAlis<sup>Pro</sup> v42](#)



We are pleased to announce the recent release of CrysAlis<sup>Pro</sup> v42.

CrysAlis<sup>Pro</sup> is under continual development with user feedback a core component of the development cycle. We aim to make CrysAlis<sup>Pro</sup> not only the most advanced crystallographic software but also user-friendly. After all, what good is powerful software you can't use?

Used for both data collection and data processing, CrysAlis<sup>Pro</sup> runs all of our XtaLAB Synergy products and the XtaLAB mini II, and supports older hardware, including the Oxford Diffraction Xcalibur, Gemini and SuperNova diffractometers and a wide range of older Rigaku diffractometers built around Rigaku's FR-X and MicroMax-007 generators.

CrysAlis<sup>Pro</sup> is continually improved with the latest algorithms and approaches from the scientific community to make sure we are always providing the best data quality we can.

CrysAlis<sup>Pro</sup> v42 improves support for our automation and robotics attachments as well as improved support for single-crystal electron diffraction and the XtaLAB Synergy-ED. AutoChem has also received an update with new workflows for the Crystalline Sponge Method and better support for data from electron diffraction.

## BOOK REVIEW



[Carbon Queen: The Remarkable Life of Nanoscience Pioneer Mildred Dresselhaus](#)

By Maia Weinstock

ISBN: 978-0-262-04643-5

*Carbon Queen: The Remarkable Life of Nanoscience Pioneer Mildred Dresselhaus* is a delightful biographical portrait of a critical figure in pioneering the field of nanoscience. The book begins with a poem by Carolyne Van Der Meer called "The Queen of Carbon," written in 2016, the year before Dresselhaus passed away. Then, Weinstock transitions to a vivid description of a GE commercial from 2017 featuring Dresselhaus that imagines an alternate reality where female scientists have the same social clout and recognition as celebrities. The juxtaposition of the celebratory poem and the commercial creates a compelling way to start a book about an incredible woman whose contributions to nanoscience are not as well-known outside the field as they should be.

Dresselhaus' childhood in New York City in the 1930s and 40s was shaped by her family's financial struggles during the Great Depression and the development of her academic excellence in spite of them. Her academic career blossomed at Hunter College High School and Hunter College. From there, she pursued Fulbright Scholarship studies at Cambridge University and her Master's at Radcliffe College. Already an academic superstar, things started to get really interesting when she studied under Enrico Fermi at the University of Chicago for her Ph.D.

But Dresselhaus' longest-lasting academic legacy was at the Massachusetts Institute of Technology, where she worked for 57 years. She became a tenured faculty member after working there only a year, something that was unheard of at the time, especially for a woman. She was awarded the National Medal of Science in 1990 and was the Director of the Office of Science at the Department of Energy from 2000-2001. She was also awarded the Presidential Medal of Freedom in 2014. Those are only a few of the many honors she received in her decades-long career as a pioneer of nanoscience.

Weinstock's book is a lovely testament to Dresselhaus' vibrant life, both personal and professional, and a well-written one at that. One can only hope that it inspires more biographies of incredible women in science who deserve tremendous recognition for their achievements.

Jeanette S. Ferrara, MFA

## RIGAKU TOPIQ WEBINARS

Rigaku has developed a series of 20-30 minute webinars that cover a broad range of topics in the fields of X-ray diffraction, X-ray fluorescence and X-ray imaging. You can register [here](#) and also watch recordings if you cannot attend live sessions.

### VISIT US AT:

[2022 MRS Spring Meeting and Exhibit](#), Honolulu, Hawai'i, May 8-13.

[5<sup>th</sup> International School on Aperiodic Crystals](#), Kutna Hora, Czechia, May 23-27.

[Canadian Chemical Crystallography Workshop](#), Calgary, Canada, June 9-12.

[ACA Summer School](#), West Lafayette, IN, June 12-18.

[Canadian Chemistry Conference and Exhibition 2022](#), Calgary, Canada, June 13-17.

[72<sup>nd</sup> ACA Annual Meeting](#), Portland, OR, July 29-August 3.

[ACS Fall 2022](#), Chicago, IL, August 21-25

[33<sup>rd</sup> European Crystallographic Meeting](#), Versailles, France, August 23-27.

[44<sup>th</sup> International Conference on Coordination Chemistry](#), Rimini, Italy, August 28-September 2.

[8<sup>th</sup> International Conference on Metal-Organic Frameworks and Open Framework Compounds](#), Dresden, Germany, September 4-7.

[CRYSTALLOGRAPHY IN THE NEWS](#)

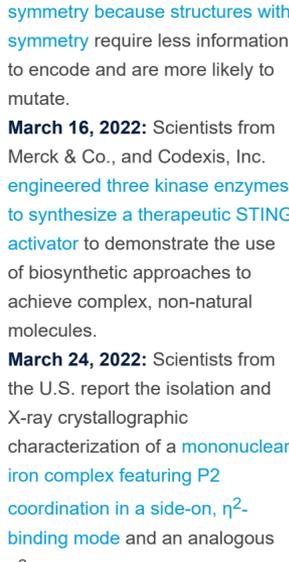
**March 11, 2022:** Researchers from Kuwait, Norway and the U.K. suggest that [evolution favors symmetry because structures with symmetry](#) require less information to encode and are more likely to mutate.

**March 16, 2022:** Scientists from Merck & Co., and Codexis, Inc. [engineered three kinase enzymes to synthesize a therapeutic STING activator](#) to demonstrate the use of biosynthetic approaches to achieve complex, non-natural molecules.

**March 24, 2022:** Scientists from the U.S. report the isolation and X-ray crystallographic characterization of a [mononuclear iron complex featuring P2 coordination in a side-on, η<sup>2</sup>-binding mode](#) and an analogous η<sup>2</sup>-bound bis-trimethylsilylacetylene iron complex.

**March 30, 2022:** Researchers from China and the U.S. have determined the [crystal structure of the UvrD CTD-β pincer complex](#) at 1.7 Å to understand the role and mechanism of transcription-coupled DNA repair in bacteria.

## VIDEO OF THE MONTH



[How to Build a Supernova Early Warning System](#)

The neutrino network primed to catch the next supernova explosion in our galactic neighborhood.

## JOIN US ON LINKEDIN

Our [LinkedIn group](#) shares information and fosters discussion about X-ray crystallography and SAXS topics. Connect with other research groups and receive updates on how they use these techniques in their own laboratories. You can also catch up on the latest newsletter or [Rigaku Journal](#) issue. We also hope that you will share information about your own research and laboratory groups.

[JOIN HERE](#)

## RIGAKU X-RAY FORUM

At [rigakuxrayforum.com](#) you can find discussions about software, general crystallography issues and more. It's also the place to download the latest version of Rigaku Oxford Diffraction's CrysAlis<sup>Pro</sup> software for single crystal data processing.

[JOIN HERE](#)

[Subscribe to Rigaku newsletters!](#)

