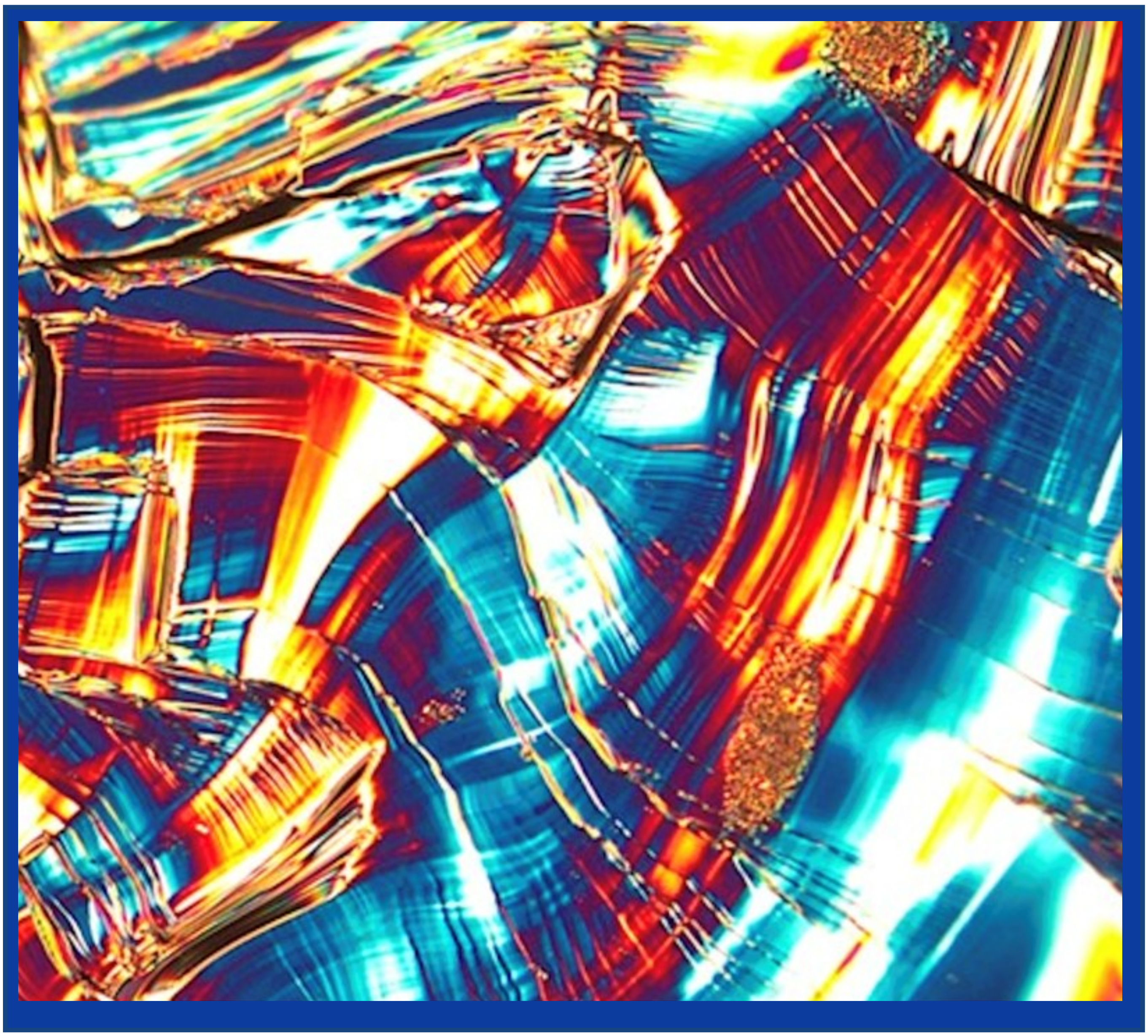
American Association for Crystal Growth

Volume 3, Issue 2, Winter 2025



Letter from the Editor

I hope you enjoy this latest issue of your AACG newsletter! We are always on the lookout for content to include in the next newsletter. If you have ideas of interesting people we should interview, news from your business or local AACG chapter, companies we should profile, technical contributions or anything else you'd like to see included, please reach out to me at kevin.schulte@nrel.gov.

One new section we would like to trial in the next issue is a Research Highlights section, in which we feature new research from our members. In the proposed format, we would link to a new or recent technical publication and provide a short summary of the work and its importance to crystal growth. Please submit your own research or research from a deserving colleague that you would like to see highlighted in the next issue.

Kevin Schulte
AACG Newsletter Editor

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ON THE COVER and AT RIGHT:

"Stardust in Crystal," Natural Untouched Photograph earned 1st Place in the ACCGE-24 // OMVPE-22 Photo Contest. The image, submitted by Sakiko Kawanishi (Kyoto University), was selected as the featured image for the AACG West Conference on Crystal Growth & Epitaxy.

AACG
WESTERN SECTION

29th AACG Western Section Conference on Crystal Growth & Epitaxy

Fallen Leaf Lake, California, USA
June 7-11, 2026

We're excited to introduce something new for our upcoming AACG-West 2026 meeting. **The program has been extended by one additional day of talks and activities, and the meeting will now take place June 7-11, 2026.**

The overall format remains the same: arrive Sunday and depart Thursday (instead of Wednesday, as in past years). This extension will give us more time for additional talks and student poster sessions. Aside from the usual annual cost adjustments, there will not be a change to the registration fee from previous years. **As always, the registration fee includes all sessions, lodging, recreation and meals.**

The five focus topics this year include: (1) fundamentals of crystal growth, (2) crystallization of biological and biomimetic materials, (3) crystallization in colloidal systems, (4) epitaxial crystal growth, and (5) artificial intelligence/machine learning in crystal growth. All five focus areas will emphasize the interplay between synthesis, characterization, theory and modeling, and application in a wide range of crystalline material systems. Of course, we also welcome submissions in the broader area of crystal growth.

Additional details describing the scope of each of the focus topics, as well as other conference details, are provided on the AACG West website: www.AACGWest.org. Submission & Registration will open January 2026.

AACG West Chair, Talid Sinno (University of Pennsylvania)

Updates & news can be found at: www.AACGWest.org

President's Corner

Pete Schunemann, D. Eng,
Sr. Director of Crystal Growth, Onsemi
President, American Association of Crystal Growth

Here in the Northeast a chill is in the air, stunning Fall foliage has come and gone, and crystals have already begun falling from the sky. In this issue of the AACG Newsletter we recap our biennial national conference held in July, recognize our award-winning scientists, reflect on current and future challenges, look ahead to future "growth," and mourn the recent passing of vital contributors to our field.

The 24th American Conference on Crystal Growth and Epitaxy (ACCGE-24) – co-located with the 22nd US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-22), was held this summer at the Skamania Lodge in Stevenson, Washington, from July 13-18. The meeting was a technical and networking success for all who were able to attend, and the venue itself was spectacular, allowing attendees and their families to enjoy outdoor activities amidst the beauty of the Pacific Northwest during free time and excursions. (My wife Mary Ann had a wonderful time with the other accompanying spouses.) The quality of talks was excellent, questions and discussion were vibrant, and interaction among the attendees at social events and between sessions was robust. We also recognized the scientific accomplishments and outstanding service of our members: **Mercouri Kanatzidis** received the AACG Distinguished Scientist Award, **Jason Kawasaki** the Young Scientist Award (don't miss his interview with our editor, Kevin Schulte, in this issue), and **Luis Zepeda-Ruiz** the Gentile Service Award. Congratulations to these, and to Conference Co-chairs **Siddha Pimputkar** and **Balaji Raghothamachar,** Program Chair **Kevin Daniels,** symposium organizers, and many other volunteers whose tireless efforts made for an unforgettable conference experience.

National AACG conferences in the past benefitted from many more attendees. Regrettably, ACCGE-24 suffered from the absence of a significant number of AACG members who faithfully attended ACCGE for years. I personally missed seeing many old friends and all that they contribute. The attendance at our national meetings has been trending downward for several years for various reasons, the most concerning of which is the increasing number of competing scientific conferences whose content and schedule overlap closely with our own. This year the impact was greater than ever with the absence of many in the OMVPE, Ferroelectric, and Radiation Detector communities due to the following meetings that occurred during or immediately before and after ACCGE-24: ICNS-15, Malmo, Sweden, July 6-11, 2025 (Nitride Semiconductors); ISAF 2025, Graz, Austria, July 13-18, 2025 (Ferroelectrics); NRSEC, Nashville, TN, July 14-18, 2025 (Radiation detectors); 26th Int. Workshop on Radiation Imaging Detectors, Bratislava, Slovenia, July 6-10, 2025, ICCGE-21, Shanghai, China, Aug 3-8, 2025 (Crystal Growth). Financially, ACCGE-24 was still able to finish in the black, but our surplus fell short of the income needed to cover AACG operating expenses between conferences. We will need to redouble our efforts at future conferences to minimize conflict with related meetings, encourage submissions and attendance, and maximize exhibitor participation and government support.

To that end, please plan to attend our next American Conference on Crystal Growth and Epitaxy (**ACCGE-25**) to be held at **Cheyenne Mountain Resort, Colorado Springs, CO, USA July 25-29, 2027.** This is another fabulous resort venue boasting beautiful Rocky Mountain views, outdoor activities, generally dry sunny weather, and convenient connections to Colorado Springs (15 min) or Denver International Airport (75 min). The success of this conference rests squarely on my shoulders as Conference Chair and AACG President (alas, my term ends with the conclusion of the conference), and I will need the help of many dedicated volunteers to pull it off!

The first volunteers to step up so far have been Kevin Daniels, who will co-chair the conference with me, and Vince Fratello, who will help with government sponsorship. (Many thanks to both!) I also look forward to working with **Sage Fennig**, our new conference planner, who signed on with AACG to fill the shoes of **Dori Nielson**, our longtime conference planner who has been integral in selecting and negotiating with our conference venues since 1990! (Which was also my first AACG meeting!) Thank you, Dori, for helping Sage take over the reins, and for all you have done over the last 35 years to land the ACCGE in some of the most memorable conference locations I have ever experienced!

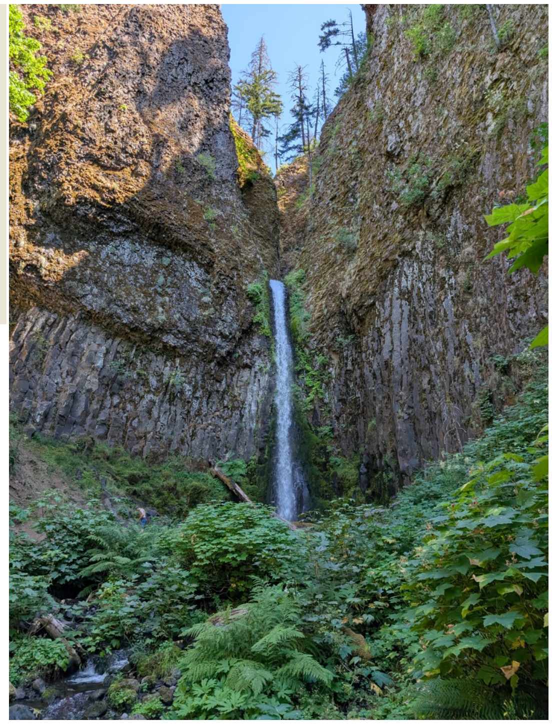
If you haven't yet served on an ACCGE conference committee, it is a perfect opportunity to get connected with our community and expand your network. So if you would like to pitch in, please email me at pete.schunemann@onsemi.com or schunemann@alum.mit.edu.

If you can't wait until 2027, I encourage you to attend the 29th AACG Western Section Conference on Crystal Growth & Epitaxy at Fallen Leaf Lake, California, USA, June 7-11, 2026. Held at the beautiful Stanford Sierra Conference Center in South Lake Tahoe, this is an intimate workshop-sized meeting (<100 attendees) in the Gordon Research Conference style with morning and evening technical sessions and free afternoons for hiking, relaxing, catching up on work, or just geeking out with fellow crystal growers. Scholarships are available for students to attend. Food, lodging, and conference registration included in one affordable price!

For those planning WAY ahead, mark your calendars for the 23rd International Conference on Crystal Growth and Epitaxy (ICCGE-23) to be hosted by the AACG in Tucson, USA, July 20-26th, 2031. Luis Zapeda-Ruiz (Lawrence Livermore National Lab) and Peter Vekilov (University of Houston) will serve as the conference chairs. Many thanks to Professor Jeff Derby for presented our winning conference proposal to the International Organization for Crystal Growth (IOCG) at ICCGE-21 in Shanghai, which Jeff attended to deliver the Frank Prize keynote lecture. This honor, named for Sir Charles Frank (founding president of the IOCG), is arguably the world's most prestigious crystal growth award, and recognizes "significant fundamental contributions to the field of crystal growth." Derby was a 2025 co-recipient of the prize with Professor Koichi Kakimoto of Kyushu University, Japan. Sincere congratulations to Jeff and Koichi for this tremendous career achievement.

Finally, on a sadder note, we remember **Dr, Jerry Stringfellow**, a giant in the field of crystal growth, and one of the most accomplished and respected members of the AACG community, who passed away on Oct. 3rd. We mourn these others recently lost: **Fred Schmid**, a co-inventor of the heat exchanger method (HEM) for growing single crystal sapphire, and the founder and President of Crystal Systems, Inc., who died on Oct. 31st; **Al Ballman** of Bell Labs, for pioneering contributions to hydrothermal growth of quartz; **Mike Kestigan**, for early work on novel laser host crystals; and **Helmut Coelfen** and **John Spencer Evans**, for fundamental work on nucleation mechanisms. Please read the brief tributes to them in this issue and aspire to leave your own legacy!

ACCGE-24
OMVPE-22
Washington, USA



Recap of the 24th American Conference on Crystal Growth & Epitaxy (ACCGE-24) and the 22nd US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-22)

held from July 13-18, 2025

Submitted by: Kevin Daniels & Kevin Schulte

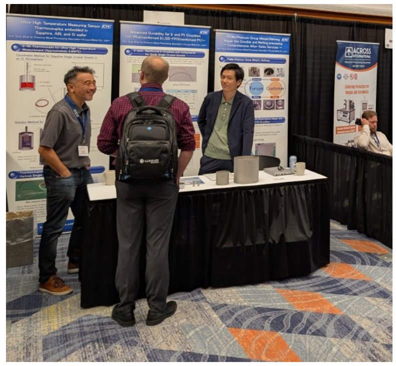
The 24th American Conference on Crystal Growth and Epitaxy (ACCGE-24) held jointly with the 22nd Workshop on Organometallic Vapor Phase Epitaxy (OMVPE -22) gathered researchers to the Skamania Lodge in Stevenson, WA over July 13-18. Set in the stunning Columbia River Gorge, the venue provided a secluded place to discuss the latest advancements in all things crystal growth.

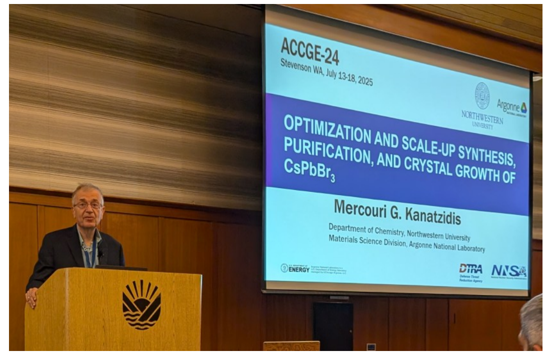
Kevin Daniels put in a tireless effort to organize the program. Three parallel tracks were held throughout the week, during which over 150 talks were presented across 15 symposia. As with the last cycle, there was a strong showing by the community in core topic areas including Bulk Crystal Growth, Ultrawide Bandgap Materials, and Fundamentals of Crystal Growth, along with more material-oriented symposia, such as the 7th Symposium on 2D and Low-dimensional materials, the 5th Symposium on Ferroelectric crystals, and the Symposium on Epitaxy of Complex Oxides. The conference also featured the 22nd Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-22). Despite funding uncertainty and a schedule overlap with an international meeting on nitrides, this year's conference drew strong attendance and lively discussion across sessions.

New programming also resonated, introducing the inaugural Graduate Student Oral Presentation session, a special session on Monday evening contained research presentations from graduate students, whose talks were graded by a committee put together by the conference organizers. The top scoring presentations were honored with awards at the banquet (see below). The session featured 10 participants, three awards, and enthusiastic calls to repeat and expand. The career panel for graduate students, featuring established crystal growers working academia, industry, or at national laboratories was held for the second consecutive conference. The panel gave the graduate student attendees accounts of their unique paths in crystal growth, and what it is like to work at their institutions. The students then were able to ask all their questions about pursuing careers in crystal growth.

While the photo contest saw fewer entries, it sparked concrete ideas for boosting engagement, including a high-school category, opening submissions to non-attendees, app-linked voting, and an art-gallery-style format. Together, these outcomes strengthen momentum for the next conference and outline clear steps to broaden participation across academia, industry, and students.

Moving on to daily highlights, on Monday, there were plenary talks from **Darrell Schlom** ("Suboxides MBE Rocks"), who told us about using suboxides to overcome challenges with oxide MBE growth using traditional precursors. Then **David Kisailus** ("Synthesis of Multiscale High-Performance Biological Composites") showed us how to we could look to nature to inspire us to synthesize new materials with exciting properties. The rest of the day was filled with parallel sessions including sessions on ferroelectrics, advanced growth techniques, and the first OMVPE session. The ferroelectrics session was a standout, spotlighting direc-





Above: Photos from the conference banquet, awards, and Exhibitor Hall.

tionally oriented ceramic microstructures produced by templated grain growth to achieve single-crystal-like performance; **Mark Fanton** (Penn State) gave a talk on tailoring shapes, microstructures, and symmetries for emergent properties, and later work highlighted continuous-feed growth to address non-congruent melting limits.

Tuesday was a packed day filled with parallel sessions, starting at 8 AM and ending with the second OMVPE session at 9:30 PM. Sessions on oxides, other ultrawide bandgap materials, and characterization were held throughout the day. Notably, the first session on using artificial intelligence and machine learning to enhance crystal growth was held. Organized by **Katie Colbaugh** (Leucite), this session gained great attendance and laid the groundwork for a hot topic at this and conferences to come. Attendees' weariness from the long day of sessions was overcome in the evening session by the open bar hosted by Aixtron.

Plenary talks resumed on Wednesday with talks by **Joan Redwing** ("Epitaxy of 2D van der Waals crystals – from fundamentals to applications"), who updated us on efforts to grow 2D materials by Van der Waals epitaxy in an OMVPE reactor. **Bernardette Kunert** ("III-V Integration in Silicon Photonics: Challenges and Opportunities") showed us how to integrate III-V optoelectronics on a Si based device platform. Wednesday afternoon gave attendees time to get out and enjoy all that the Columbia River Gorge area had to offer and get to know our fellow crystal growers in a more informal setting. There were the traditional excursions held at the conference every year, this time including a tour of 620' Multnomah Falls one of the tallest waterfalls in the US, stopping at the historic lodge and crossing Benson Bridge. Other attendees experienced a winery tour, a scenic drive along the river and tastings at a premier vineyard, where "a world of wine in forty miles" came to life with crisp whites and lush reds framed by views of Mt. Hood and Mt. Adams. The third option was the nature tour that offered guided walks to waterfalls and sweeping vistas, sparking lively conversations about the Gorge's flora, fauna, and geology, from basalt cliffs to oak woodlands and wildflower meadows. Across the board, participants praised the knowledgeable guides, breathtaking scenery, and easy camaraderie. Attendees also took advantage of the numerous hiking and biking opportunities to be found in the gorge. Even without leaving the lodge, one could enjoy a respite from technical talks along with the stunning views of the Columbia River outside on the lodge's back patio.

Following the excursions, the conference banquet was held to feed hungry attendees after an afternoon spent outdoors. The conference awards were announced, with **Mercouri Kanatzidis** receiving the AACG Distinguished Scientist Award for his work on radiation detectors and **Jason Kawasaki** the Young Scientist Award for his contributions towards understanding remot epitaxy of materials. **Luis Zepeda-Ruiz** received the Gentile Service Awards for devoted service to the Association, be it his management of the organization's finances as treasurer, or his tireless efforts to enhance participation by young researchers at the ACCGE and ACCGE West conferences. The graduate student talk awards were also announced, with **Lauren Kaliszewski** (Ohio State) winning first prize for "Development of GaAsP/Si virtual substrates for GaInP-based optoelectronics." **Ji Soo Kim** (University of Cambridge) took second prize for "Coercive field control in epitaxial ferroelectric $Hf_{0.5}Z_{0.5}rO_2$ thin films by nanostructure engineering," while third prize went to **Michael Mervosh** (Penn State) for "Improved piezoelectric performance of single crystal and textured materials". We also celebrated the efforts of **Siddha Pimputkar and Bajaji Raghothamachar**, the conference co-chairs for organizing a successful conference.

Finally, the location of ACCGE-25/OMVPE-23, to be held at the Cheyenne Mountain Resort in Colorado Springs, CO, on 25-29, 2027 was revealed. Save the date!

Thursday featured another packed day, with the award talks by Kanatzidis and Kawasaki in the morning. Parallel sessions continued throughout the day and again into the night. Friday morning featured the last sessions, after which we bid farewell to another wonderful conference. If you couldn't make it this year, **we hope you will join us in Colorado Springs in 2027.**

Jeffrey Derby Awarded IOCG Frank Prize at ICCGE-21

Jeffery Derby was awarded the prestigious Frank Prize by the International Organization for Crystal Growth (IOCG). As part of the award, he was invited to give a keynote lecture entitled "Seeing what is hidden by what we see via crystal growth modeling" at the 21st Internation Conference on Crystal Growth and Epitaxy (ICCGE), held in Xi'an, China from August 3-8, 2025.

The Frank Prize is awarded for significant fundamental contributions to the field of crystal growth and reflects Jeff's outstanding career developing computational models to help us understand the physics of crystal growth. Jeff is the Distinguished McKnight University Professor in the Department of Chemical Engineering and Materials Science at the University of Minnesota. Jeff has been a member of The Association for more than three decades and served as President from 2008-2011. He is presently the editor of the Journal of Crystal Growth.

ACCGE 24 – OMVPE 22 Conference Photo Contest

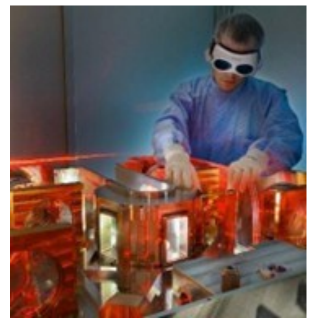
The lanterns have been shut off on the ACCGE 24 – OMVPE 22 Conference in Stevenson, Washington. This conference showcased an engaging photo contest that provided participants with an amazing platform for the visual rendering of their scientific work in two distinct categories: Natural Untouched and Digital Altered. In the Natural Untouched category, participants were challenged to provide awe-inspiring images that captured the essence of our scientific work in its wild beauty. In the Digital Altered category, where creativity knows no bounds, participants were challenged to provide scientific work transformed through digital manipulation to elicit a unique interpretation of reality. Along these categories, an unofficial theme was articulated, "the beauty of our work".

As the contest proceeded, it not only highlighted the creativity of the participants but also exhibited the beauty of the science they conduct and the solutions they provide. From vibrant DIC images of microscopic features observed in silicon carbide thin fragment to the setup of an optical system designed for laser-diode-floating-zone growth of gallium oxide single crystals, each submission praised the intricate details of our scientific work, captivating the conference attendees and judges with its originality and scientific depth.

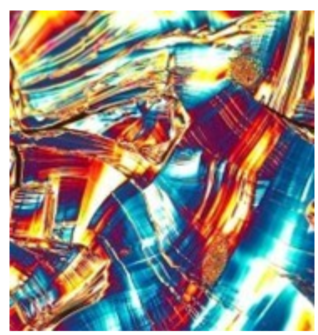
The contest culminated in the presentation of three symbolic awards at the conference banquet. These awards were designed to recognized excellence in each submission category and the best overall student submission. Below are images of the awarded submissions.

Best student photo submission:
This award was attributed to **Yuzhuo Li from Stony Brook University**, featuring Zebra-like contrast patterns arising from variations in lattice strain and defect structures.

Best digital photo submission:
This award recognized the artistic alteration by **Florian Rackerseder from Aachen University, Fraunhofer Institute for Laser Technology ILT**, featuring a setup of an optical system designed for Laser-Diode-Floating-Zone growth of gallium oxide single crystals with diameters up to 38 mm.



Best Natural photo submission:
This award recognizing the raw beauty of the work by **Dr. Sakiko Kawanishi from Kyoto University**, featuring silicon carbide (SiC) stardust



As we look forward to the next conference, we are reminded that the photo contest is a vibrant eco-system for the visibility and storytelling of our science. We extend our heartfelt congratulations to all participants, and look forward to seeing even more awe-inspiring images. Stay tuned for next conference contest,

An Interview with Dr. Jason Kawasaki, AACG Young Author Award Recipient

Dr. Jason Kawasaki is an associate professor at the University of Wisconsin-Madison where his group works to understand how to control the electronic, magnetic, and elastic properties of materials at crystalline interfaces, particularly Heusler compounds. Jason uses molecular beam epitaxy (MBE) to grow the crystalline materials required for his work. Recently he has published several papers helping to understand the proposed concept of "remote epitaxy" by which epitaxial growth on a crystalline substrate may occur through 2D material, maintaining registry to the substrate without binding the epilayer to the substrate. Jason received the Young Author award at this summer at ACCGE-24 for his work. Jason sat down with us for an interview about his career and where he sees his field going. This interview is lightly edited for clarity.

American Association of Crystal Growth (AACG): Hi Jason, thanks for sitting down for the interview. Let's start at the beginning. How did you get into crystal growth as younger person and decide that this was what you wanted to do as a career?

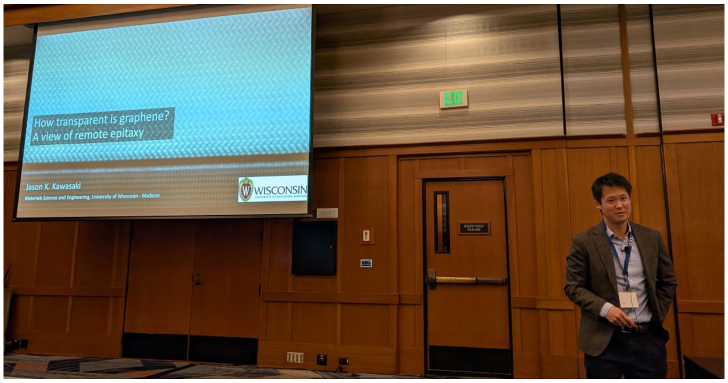
Jason Kawasaki (JK): So, I've always been interested in building things, like, lots of building toy models and stuff as a as a kid. So, when I started getting further along in high school and college, the concept of building things, but at a very small scale, using atoms as building blocks was really attractive to me. So, I think that's how I became interested in crystal growth. It was the idea of kind of controlling matter at the smallest possible length scales.

When I was an undergrad at Princeton, I started doing research with faculty and doing some internships. One summer I was working at Chevron on a project for making diamond like carbon coatings for the inside of pipes. There I learned a lot about thin film growth and plasma processing. Then I did a little bit of theory for one summer using density functional theory to try to understand vibrational modes of in molecules and molecules on surfaces, and then I realized I liked experiments more and then ended up doing a senior thesis on solution-based crystal growth. Then I started getting more specifically into electronic materials kind of later in my undergrad career and so that's how I ended up doing thin film MBE growth, starting compound semiconductors at first, but then moving into interfaces between compound semiconductors and magnetic materials, and that's a theme of the work I've carried on doing today. I like the bottom up assembly and growth themes of controlling matter.

AACG: That seems like it's coming through in your recent work the so-called phenomenon of remote epitaxy. You've been very active there and helping guide an interesting discussion in the field over whether remote epitaxy is truly occurring, or if results in the literature can be explained by pinhole seeded epitaxy. This was a substantial topic of your award talk at ACCGE, and I was hoping you could elaborate on how you see this debate on the ocurrence of remote epitaxy vs. other mechanisms such as pinhole seeded epitaxy.

JK: I would say that it certainly it has not been solved yet. I think the concept is really cool and right that that's why I got into it in the first place, right. It kind of breaks everything that we assume about nearest neighbor interactions dominating and controlling how crystals form. The idea that you could shove something in between a film and a substrate and, somehow, an interaction would permeate through or be mediated through the graphene. We got interested in it because it has the potential to get around a lot of the challenges of traditional epitaxy. You might dream on paper, oh, if I could arbitrarily combine material A and material B that would be great, but in reality there are all these challenges of lattice mismatching and chemical mismatching. And so, there's been a lot of work over the decades and kind of solving that, like metamorphic growth and solving how to put diffusion barriers, so this was an attractive space to ask the question, "does remote epitaxy actually happen?"

I would say that I don't think there's been a definitive experiment that shows remote epitaxy, yet. There is certainly the possibility it could happen, but the current methods to transfer graphene are not clean enough and typically introduce damage like pinholes and tears in the graphene, or trap interfacial contaminants like native oxides. To date, there is no smoking gun experiment that says absolutely it's remote epitaxy and it's not due to pinholes. But, on the other hand, for some applications you might imagine the microscopic mechanism matter. It might be OK to have some pinhole seeding, as long as the majority of the interface has graphene as a separation



Above: Jason Kawasaki presenting his award talk at the 2025 ACCGE Conference, entitled, “How transparent is graphene?: A view of remote epitaxy.” At right: Kawasaki receiving his award plaque from Conference Chair Siddha Pimputkar (left) and AACG President Peter Schunemann (right).

layer in between the two.

AACG: But on the other hand, in your award talk, you also presented some data that suggested you had an epitaxial system in which you thought remote epitaxy was indeed occurring.

JK: In our most recent work, we claimed that we have an observation that you can't attribute to pin holes and you can't attribute to a series of “direct” epitaxial relationships between film and graphene, and then graphene and substrate. I think that is one promising route to go down is to exclude the most plausible alternatives, I would say, to be most humble about what we've shown. That doesn't necessarily mean it's remote, but I'd say that's the most plausible explanation that we have right now. We're searching for what exactly would be the smoking gun evidence, but, as far as we can tell, I think this is the best evidence so far. Almost everything else that that we that we've seen in the literature seems like you could attribute to either pin holes or attribute to the film as epitaxial to graphene. Then graphene happens to be epitaxial to the substrate, and if that's the case, how would you really know?

AACG: This is the gadolinium gold germanium (GdAuGe) work, correct?

JK: Yes, this was the GdAuGe on buffer graphene on silicon carbide work. We had two observations. The first is that films grow on graphene-covered SiC in a different epitaxial orientation than films grown directly on SiC or films grown on multilayer graphene. This difference in epitaxial orientation is inconsistent with nucleation at pinholes. The second observation was the first two layers of GdAuGe at the interface are highly disordered, when imaged by transmission electron microscopy.

We think that these observations arise from epitaxial frustration. If you ask what is the potential above a graphene covered surface, our calculations suggest that there are significant contributions from the graphene, from the screened substrate, and from graphene-induced surface reconstructions, each at different periodicities. We think this causes a geometric “frustration” for the growing film, resulting in a highly disordered first few atomic layers.

AACG: Aside from being a good sandbox in which to study remote epitaxy, what applications do you see for these GdAuGe films?

JK: GdAuGe is a magnetically frustrated material, so there are big opportunities for using strain to tune its magnetic properties. In particular, we found that when we exfoliate single crystalline membranes of GdAuGe, bending-induced strain gradients turn this material from an antiferromagnet to a ferrimagnet. At even larger strain gradients, we have magnetic evidence that it becomes a superconductor. The magnetic phase diagram of this material has some interesting comparisons to non-BCS superconductors like the iron-based superconductors and the heavy fermion superconductors, so we are starting to explore some of those connections now. For applications, these strain induced phase transitions are quite interesting for sensing and for memory.

AACG: The University of Wisconsin-Madison has a strong history in terms of epitaxial crystal growth, and there have been some active members of the association that have come from there, such as Luke Mawst and Tom Kuech. You are continuing their legacy in a sense.
Have you had the chance to interact with them and lean on their experience?

JK: Yes, they have been great colleagues and mentors. Tom helped me a lot when I was writing my first few proposals, in particular my NSF career proposal on remote epitaxy.

He read the first few drafts and really challenged me to think of the broader opportunities remote epitaxy could, beyond the near term first experiments. That kind of like visionary thinking was super helpful. Luke has also been a great collaborator, and his students the photoluminescence measurements in our first paper on remote epitaxy.

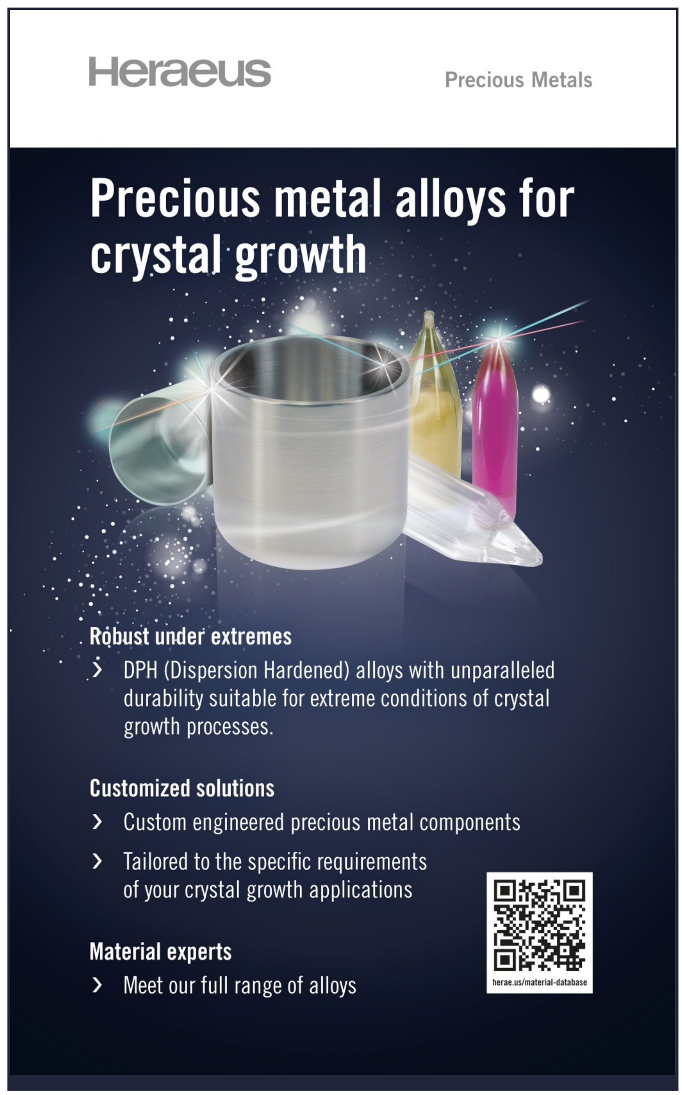
AACG: Looking at the big picture, what do you see as some of the key new directions for crystal growth, or, what's exciting to you about the field of crystal growth in kind of the coming years?

JK: I was really excited about the work on infinite layer nickelates from a few years ago. There had been predictions that a certain structure of layered nickel oxides would replicate the key ingredients of a cuprate superconductor. People had been trying this for decades and Harold Hwang’s group finally figured out how. Starting from a thin film of a perovskite nickel oxide, they reduce it to remove l the apical oxygens. and create the destired “infinite layer” nickelate structure. The key is that epitaxial strain holds it together.. I thought that was a cool concept that marries thinking film growth with solid-state chemistry.

I am also interested in how strain controls point defect formation. This has been a rich area of study for semiconductors and oxides. Much less is known about point defects in intermetallic compounds. I’m also interested in ideas for controlling structures with ordered vacancies.

Another thing I monitor is in ternary intermetallics. It's really, really hard to control the composition and, oftentimes, they're actually alloys and not necessarily compounds.

And if you want to control electronic properties, you're hopefully controlling it down to dopant levels. There are some ideas that I've been following in like how to expand adsorption controlled growth windows and using metal organic precursors to get there, to increase the volatility of some species. I’ve followed the work on hybrid MBE for a while and have been thinking about if there any of the any of reason will be available precursors that would be appropriate for Heusler growth. And I know my for-



mer advisor Chris Palmstrom had been very interested in.

AACG: Changing gears, what kinds of things do you like to do in your spare time, assuming you have any!

JK: I really like cross country skiing, which I picked up during COVID just as a way to get back outside during the winter and it's now my favorite thing to do outside of work.

AACG: Yes, it helps to be moving outside in those Wisconsin winters, and also to have a motivation to go outside in winter. Do you ski in the local parks, or go upstate, or…?

JK: A lot of the parks in town maintain trails which I use, and then and then sometimes we'll go out a little further. If you start driving north, there are a lot more places to go, such Nine Mile State Park, which has like 30 or 40 km of trails. If you go even further there's a great place in the Upper Peninsula of Michigan that I go to a lot.

AACG: Do you have all your own gear or do you rent?

JK: We have all the gear, and for our toddler we have a bike trailer that converts to a ski trailer.

AACG: That's great. It's important to find a way to get outside in the winter in Madison, I feel like. What about it in the summer?

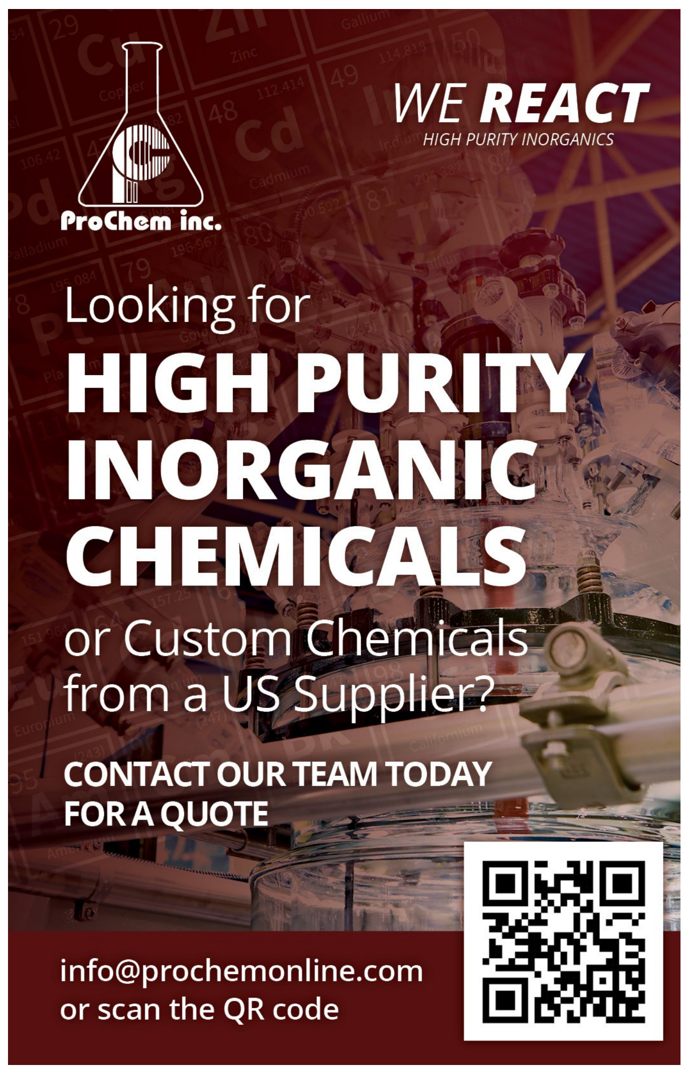
JK: We used to live closer to one of the lakes, so we used to go out on a kayak a lot. I guess, since we moved, we haven't done that as much because it has been less convenient. We used to be able just to walk two blocks to the lake.

AACG: That's great! As we wrap up the interview, is there anything else you want people to know about you or your work?

JK: I think that covers it.

AACG: Excellent. Thanks again for your time, and congratulations again on your Young Author award.

JK: Thanks.



Embracing Machine Learning and Artificial Intelligence for the Future of Crystal Growth

At ACCGE-24/OMVPE-22, the energy around crystal growth and epitaxy research was unmistakable, and the buzz about ML/AI was inspiring! We are entering a phase of the Digital Era where rapid development in generative AI, deep ML, robotics, and the Internet of Things are accelerating at a pace some say fits "Hyper Moore's Law." We are currently outpacing the exponential information technology trend that we have been following since the 1960s.[1] Embracing this rapid technological shift presents its own challenges. While digital transformation is reshaping many industries, crystal growth is uniquely data-challenged and governed by nonlinear, multi-scale phenomena. For many in the community, the promises of AI/ML may feel disconnected from the realities of crystal manufacturing.

As we know, crystals underpin a range of existing and cutting-edge applications, including power electronics, data centers, photonics, sensors, and quantum technologies.[2,3,4,5] The pace of change in these end markets is striking. McKinsey forecasts identify a new industrial paradigm with disruptor OEMs "that are recognizing we are entering an era characterized by immature technology, offering much larger potential for innovation".[6] These disruptors are outperforming, in terms of cost reductions, and unlocking performance improvements at a rate 2 to 3 times higher than established OEMs. They demonstrate innovation cycles that are up to twice as fast. These disruptors drive dramatic pressure across value chains. For bulk and 2D crystal growers, this translates to accelerating and difficult-to-forecast demand, stricter specifications, limited time to commercialization, aggressive cost targets, and increased manufacturing constraints. These stresses on our processes are outpacing the tools that we currently use to optimize them.

Crystal growth is often referred to as a blend of art and science. Experienced practitioners possess tacit knowledge that enables them to engage in intuitive process engineering. Precise procedures have been developed over the course of decades for specific crystals. First-principles calculations and modeling provide insight. However, these approaches are limited when facing today's challenges:

1. Empirical procedures work in stable environments but require long cycles of trial-and-error for modifications or to incorporate new materials.
2. First-principles models are often too computationally expensive, or they are too simplified to capture the dynamics of industrial-scale furnaces.
3. Scale-up introduces complexity that neither empirical heuristics, intuitive decision-making, nor theoretical physics can fully address.

The result is a widening gap between what the market demands and what our current methods can deliver. We must succeed in this era, not only to enable new technology but to sustain the practice of crystal growth and our fundamental understanding at the intersection of chemistry, physics, thermodynamics, and materials science.

There is a case for AI/ML in crystal growth. In adjacent fields, AI is enabling smart manufacturing to drastically improve productivity, safety, and innovation.[7,8,9,10] Rapid material discovery has led to breakthroughs in pharmaceuticals and metal alloys that would have required decades by traditional trial-and-error experimentation.[11,12,13] In the field of crystal growth, as we saw at the conference, ML/AI is allowing us to analyze crystal structures,[14] predict failures, and characterize images faster than ever before.[15] For bulk and 2D crystal production, the promise of AI/ML is compelling if the software is developed and applied in “the right way”.

Generic AI tools will not suffice for improving crystal growth production. Our data are not “big” in the conventional sense; they are small, noisy, heterogeneous, and siloed. Processes are nonlinear and complex. Models built without grounding in materials science and process engineering risk producing spurious correlations, black-box predictions, or outright hallucinations. The solution is physics-informed, domain-guided AI/ML: algorithms that are explicitly designed to respect conservation laws, incorporate domain expertise, and operate effectively on limited datasets.[16]

Physics-informed AI/ML combines the strengths of data-driven methods and mechanistic modeling. If ML models are built by incorporating crystal growth knowledge and trained on industrial datasets, capabilities include:

- **Domain knowledge retention.** Capturing data and trends in the crystal growth process reduces the effects of personnel turnover and enables faster training time for new technicians, scientists, and engineers.
- **Defect reduction and yield optimization.** Analyzing trends between process parameters and defect formation allows for the prediction and prevention of material failure.
- **Process variability analysis.** Identifying subtle correlations between equipment logs and process outcomes enables standardization.
- **Scale-up and process improvement acceleration.** Transfer learning may be used to relate lab-scale to production-scale processes. Bayesian optimization guides faster experimentation.
- **Predictive maintenance.** Beyond uptime, AI models tailored to growth conditions can forecast when subtle deviations will affect yield or when equipment needs maintenance.

Common barriers to adoption that prevent such advancements include data challenges, organizational silos, cultural resistance, talent gaps, and the fact that off-the-shelf AI/ML manufacturing solutions often fail to work effectively. Experimental notes, digital logs, and databases are often fragmented and poorly integrated. Cleaning and connecting this data is essential but underappreciated. New data scientists often get redirected to more urgent but less domain-specific tasks, leaving growth processes unsupported. Engineers may view AI as a threat or as hype disconnected from real-world problems. Experienced crystal growers are retiring, while younger scientists expect digital tools but lack the process context. While there are many AI/ML software solutions on the market, none of them is designed to work for crystal growth. These barriers are real, but they can be surmounted with deliberate strategies.

Based on both industry experience and observations across sectors, we propose the following roadmap:

1. Articulate the Business Case. Demonstrate tangible ROI through fewer scrap runs, faster troubleshooting, and improved yield. When a crystal is delivered on time and to spec, revenue follows.

2. Start with the Data You Have. “Big data” is not required. Modest datasets can yield powerful insights. Simply digitizing and connecting notes, furnace logs, and inspection results can be valuable.

3. Empower Internal Champions. Identify engineers or scientists who can champion the digitization process. They need not be software experts but must be trustworthy, collaborative, and motivated.

4. Build Hybrid Teams. Do not expect domain experts or software specialists to build effective AI/ML models independently.

5. Partner Strategically. External partners can accelerate progress but must stay current and tailor solutions to crystal growth, not generic manufacturing KPIs.

6. Retain and Attract Talent. Younger generations are eager to work with advanced materials and digital tools. Purposeful AI/ML adoption makes the field more attractive while capturing the know-how of retiring experts.[17]

Digitization is not only about efficiency. It is also about culture and knowledge transfer. New employees crave clarity and digital fluency; they are discouraged by messy data and opaque processes. Integrating AI/ML into workflows creates an environment of continuous learning, making the industry more vibrant and attractive. In this way, digitization can help sustain the field by bridging generations and amplifying expertise.

Crystal growth is a complicated and multidisciplinary science. In the digital age, physics-informed AI/ML is the next instrument in the crystal growth toolkit. It does not replace expert intuition, theoretical models, or experimentation. It *enhances* them and provides a way to learn faster, explore more possibilities, and respond to market pressures strategically. The risk of not adopting these tools in our field is being outpaced by others who have already embraced them. The opportunity lies in redefining crystal growth and leading efforts at the forefront of material manufacturing innovation.

The excitement at ACCGE-24/OMVPE-22 reflected a collective recognition that our field is entering a new era. The challenges we face require a new way of working. Let us embrace the potential of AI/ML models as the next generation of scientific instruments. If we do, crystal growth will remain at the heart of technological innovation for decades to come.

If you would like more information or to work with us, reach out!

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[1] Zhu, F. *et al.* Moore's Law: The potential, limits, and breakthroughs. *Applied and Computational Engineering,* 2023, 10, 1, 307. DOI: 10.54254/2755-2721/10/20230038
[2] Yuvaraja, S. Khandelwal, V., Tang, X., Li, X. Wide bandgap semiconductor-based integrated circuits. *Chip.* 2023, 2, 4, 100072. DOI:1016/j.chip.2023.100072
[3] Bond, T. et al. The complex and spatially heterogeneous nature of degradation in heavily cycled Li-ion cells. *Journal of Electrochemical Society.* 2024, 171, 11054. DOI: 10.1149/1945-7111/ad88a8.
[4] Kong, M. et al. Large-size single crystal growth for quantum materials by Czochralski method. *Current Applied Physics.* 2024, 61, 95-100. DOI: 10.1016/j.cap.2024.02.007.
[5] "ECOC 2025 presents latest developments in optical communications" *SPIE.optics.org.* 02 Oct 2025, https://optics.org/news/16/10/5. Accessed 04 Oct 2025.
[6] McKinsey & Company, The Fourth Industrial Revolution and Manufacturing Disruption, Report, 2025.
[7] Smith, Chris. "LG Electronics plans 2nd building, almost doubling size with $100 million investment in Clarksville - ClarksvilleNow.com." *Clarksville Now*, 11 April 2025, https://clarksvillenow.com/local/lg-electronics-plans-2nd-building-almost-doubling-size-with-

100-million-investment-in-clarksville/. Accessed 15 September 2025.

[8] Akhtar, Z.B. Artificial intelligence (AI) within manufacturing: An investigative exploration for opportunities, challenges, future directions. *Metaverse,* 2024, 5(2) 2731. DOI:10.54517/m.v5i2.2731

[9] Kler, R. *et al*. Recognition and implementation of the smart manufacturing systems in industrial sectors for evolving industry 4.0. *Measurement: Sensors,* 2024, 31 100987. DOI: 10.1016/j.measen.2023.100987

[10] Moyne, J. *et al*. A requirements driven digital twin framework: Specification and opportunities. *IEEE Access* 2020, 8 107781. DOI: 10.1109/ACCESS.2020.3000437

[11] Wang, F. *et al.* Experimentally validated inverse design of FeNiCrCoCu MPEAs and unlocking key insights with explainable AI. *npj Computational Materials,* 2025, 11, 124. DOI: 10.1038/s41524-025-01600-x

[12] Liu, X *et al.* Material machine learning for alloys: Applications, challenges and perspectives. *Journal of Alloys and Compounds* 2022, 921, 165984. DOI: 10.1016/j.jallcom.2022.165984

[13] Visan AI, Negut I. Integrating Artificial Intelligence for Drug Discovery in the Context of Revolutionizing Drug Delivery. *Life (Basel)*, 2024, 14(2):233. DOI:10.3390/life14020233.

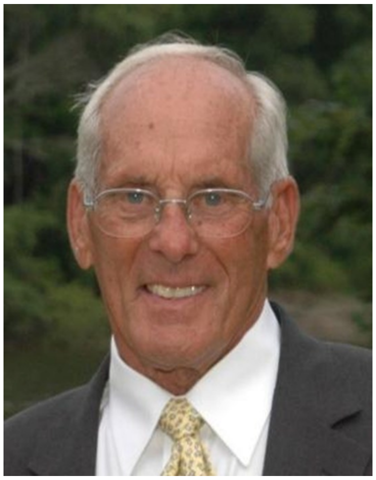
[14] Riesel, E.A. *et al*. Crystal structure determination from powder diffraction patterns with generative machine learning. *Journal of the American Chemical Society,* 2024, 146, 44, 30340. DOI: 10.1021/jacs.4c10244

[15] Taller, S. *et al.* Predicting structural material degradation in advanced nuclear reactors with ion irradiation. *Scientific Reports,* 2021, 11, 2949. DOI: 10.1038/s41598-021-82512-w

[16] Karniadakis, G.E. et al., *Physics-informed machine learning*, Nature Reviews Physics, 2021.

[17] World Economic Forum, *Future of Jobs Report 2023*.

In Memoriam



Albert Ballman

September 1, 1928 ~ June 8, 2025

Albert (Al) Anthony Ballman, a pioneering crystal growth scientist whose work on new and important oxide crystals at Bell Labs, bridged disciplines and inspired colleagues around the world, passed away at home on January 13, 2025 at the age of 98, surrounded by his large loving family. Known for his curiosity, integrity, and dedication to discovery, he leaves behind a legacy of innovation that continues to shape the fields he touched. Al was born in West Bergen NJ, to Theresa and Charles Ballman. Al displayed a fascination with how the world worked from an early age, that is if blowing up tin cans as a kid was such a portent of his future success. After earning his BS in chemistry from Rutgers, he first worked at Merck Sharp & Duhme before moving to Bell laboratories in Murray Hill and Holmdel for the next 36 years, retiring in 1986. He went on to build an influential career marked by groundbreaking research, thoughtful mentorship, and a relentless commitment to scientific rigor. His work advanced our understanding of materials processing technology and opened new pathways for future researchers.

Some of Al's major contributions to the crystal growth field include his significant collaboration with Bob Laudise on the development a high-speed hydrothermal growth process for the large- scale production of high-quality synthetic quartz crystals, which became crucial for telecommunications after World War 2, replacing natural quartz imported from other countries. These crystals found applications in watches, computer clocks and communication switching systems.

He also helped develop methods for the growth and poling of crystals of the ferroelectric compound lithium metaniobate ($LiNbO_3$). In 1965 he was the first to grow large single crystals (1-3 in. long) using the Czochralski method. This important compound was found useful in electrical, optical and acoustical applications such as tunable oscillators, crystal filters, etc. In addition, he worked on the growth and poling of the related ferroelectric $LiTaO_3$.
In another program he grew and studied the properties of the piezoelectric bismuth germanium oxide single crystals ($Bi_{12}GeO_{20}$). Amongst other oxide crystals whose growth he pioneered or improved were Beryl crystals, zinc oxide and sillenite thin films.

During his time at Bell Labs he received 32 patents and published over 100 papers dealing with crystal growth. He was a member of the American Association of Crystal growth. In 2000, he was inducted into the New Jersey Inventors Hall of Fame.

Al was predeceased by his beloved wife, Margaret Boyle Ballman, and children Thomas and Rosemary. He is survived by his close-knit family including son Christopher and daughter-in-law Susan McCabe; daughters Karen and Peggy, and daughter-in-law Donna Peger. He had many grandchildren and great grandchildren. In 2009, Al was blessed with a second marriage to Joyce DeSilvia Laudise, former wife of Bob Laudise and who survives him.

Beyond his professional accomplishments, Al was a skilled carpenter who volunteered with his parish in renovating homes, he was a radio enthusiast, a runner and avid golfer. He was also an avid sailor and once sailed across the Atlantic with two friends. He was admired for his humility, warmth, and generosity. He was a collaborative colleague, and a steadfast friend.

I remember an amusing incident while visiting Al at the Holmdal facility back in the early 1970's. I needed instructions to find his office and a charming young lady directed me to him. When I described to Al that I had been helped by this young person he said, proudly, oh! that was my daughter.

Submitted by Bob Feigelson

Helmut Coelfen

1965 - 2023

Helmut Coelfen was a Professor of Physical Chemistry at the University of Konstanz, and before that, Group Leader at the Max Planck Institute of Colloids and Interfaces. Helmut developed an understanding of pre-nucleation clusters and nanoparticle assembly as "mesocrystals" and proposed non-classical routes of crystallization, especially in biomineralized systems. His more than 500 papers have been cited over 43,000 times with an h-index of 100. At the time of his death Helmut listed his research interests as Non-Classical Crystallization, Synthesis of organic-inorganic hybrid colloids with complex form, Synthesis of amphiphilic functional block copolymers, and Fractionating methods of colloid and polymer analytics. Helmut was much beloved as a teacher and mentor, especially by David Kisailus and Jong Seto. And in 1987, he was the lead singer and guitarist for the independent rock band T-42.

Submitted by Vince Fratello

John Spencer Evans

1957 - 2024

John Spencer Evans was a scientific researcher and tenured professor at the New York University (NYU) College of Dentistry for 26 years. He earned a a D.D.S. from the University of Illinois Chicago College of Dentistry, and a PhD in Chemistry from the California Institute of Technology. John investigated biological mechanisms of nucleation and crystal growth and developed early methods of Nuclear Magnetic Resonance. John was an avid outdoorsman and enjoyed rock climbing, bicycling, skateboarding, fishing, and archery. Later in life, he achieved his dream of earning a pilot's license and flying a plane. He met his wife, Annette, at an improv workshop at Second City in Chicago and pursued his interest in comedy and filmmaking in Chicago and later Los Angeles.

Submitted by Vince Fratello

In Memoriam

Micheal Kestigian

September 1, 1928 ~ June 8, 2025

Michael "Mike" Kestigian, one of the founding members of the AACG, passed away at his home in Waterford, CT on June 8th 2024 at the age of 95. He was born in Charlton MA, the seventh and last child of Vartan and Vartanoush Kestigian. He served in the army as a Sergeant in the Pacific during WWII. He received a Ph.D in Chemistry from the University of Connecticut. His main research activities at various companies including DuPont, RCA, Sperry Rand, Honeywell and Loral included the preparation of novel compounds some of which included components for color television, the first laser ever used in cataract surgery, night vision devices and was involved with some NASA space programs. He coauthored over 200 publications in leading scientific journals on materials such as Nd:YAG, $RbFeF_3$ and on crystal growth equipment such as the Verneuil method. He retired from full time employment at Hye Technology Associates in 2000 where he served as president.

I first met Mike when I joined the newly formed Sperry Rand Research Center in Sudbury MA in 1961. He was already in the Chemistry Lab where I was assigned, and engaged in crystal growth activities. This is where I got my first assignment growing crystals and, with his help, led to my lifetime career.

Mike was one of founding members of the precursor organization to the AACG, known as the American Congress of Crystal Growth. He served as one of the first members of the AACG executive committee from 1966 until 1987. He was on the awards committee for AACG-3 (1975), co-chaired the committee with August Witt for AACG-4 (1979) and chaired the awards committee for AACG-5 (1981).

He is survived by his wife of 74 years, Jean Kestigian, two sons, Michael and Mark, their wives and two grandchildren and his sister Betty. One his co-workers from Sperry Rand in the 1970's wrote "He was the kindest and most genuine person I ever met."

Submitted by Bob Feigelson

Frederick Schmid

June 2, 1936 ~ October 31, 2025

Frederick Schmid, co-inventor of the heat exchanger method (HEM) of crystal growth and founder of Crystal Systems, Inc. of Salem, Mass., passed away peacefully on October 31, 2025, surrounded by his family. Fred was born on June 2, 1936, outside Cooperstown, N.Y. As a first-generation German immigrant, he worked on the family dairy farm and learned English by attending the local elementary school during World War II. Fred's persistence under adverse conditions as well as his resourcefulness and hands-on skills learned on the farm were traits that he demonstrated for the rest of his life.

His educational interests led him away from the farm and he graduated from Lafayette College with a bachelor's degree in mechanical engineering and earned his master's degree in mechanical engineering with an option in materials at Northeastern University. Shortly after graduating he was working at the Army Materials and Mechanics Research Center, Watertown, Mass., with Dennis Viechnicki on directionally solidifying Al_2O_3 from the melt to make a transparent ceramic armor. During one experiment, in November 1968, he noted the few and unusually large grains resulting. Fred further experimented with the process to develop the HEM method for single crystal growth. Fred left the Army and founded Crystal Systems Inc. in 1971 to commercialize the HEM growth of sapphire.

Fred managed the company until 2010. During those years, Fred demonstrated skills as an entrepreneur as well as an innovator and successfully developed Crystal Systems Inc. into a thriving business. Developments include inventing the fixed abrasive slicing technology (FAST) process for slicing silicon and sapphire; expanding the use of HEM to grow multicrystalline silicon; growing the world's largest Ti-doped Sapphire for ultra-high power lasers; and scaling the sapphire crystal growth to boules of greater than 635 mm and over 270 kg. During this time Fred also proved himself to be a generous and decisive manager who inspired loyalty and admiration in his employees. Fred sold Crystal Systems to GT Advanced Technologies in 2010 and served as an advisor to GT for several years after the sale.

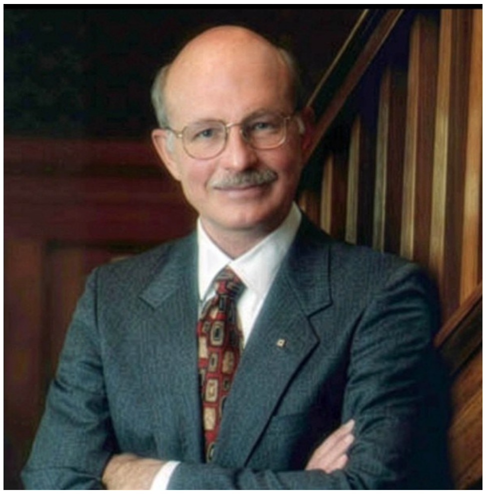
However, Fred's desire to continue innovating led him to found a new company: Crystal Systems Innovations Inc., focused on further developing HEM crystal growth and the FAST slicing technology. Fred thoroughly enjoyed working with the employees of his company until shortly before his passing.

Fred had many passions beyond work, he was an avid sailor and raced in the Marblehead Rhodes 19 fleet, (winning the East Coast Championships, with his wife, Judy), as well as in the PHRF fleet, where he was known as a fierce competitor who loved to recount the races over a beer with his crew and fellow racers. Fred was an avid tennis player, skier, and gardener, who could be found outdoors enjoying nature during his free time. Fred took great delight in having his whole family around to enjoy time together. As he would always say to people when saying goodbye to them, "Have fun, but not too much" with a big smile. Fred leaves behind his wife of 63 years, Judith Atkinson Schmid; his sons, Keil Schmid and Kurt Schmid; his daughter-in-law, Margarita Schmid; and grandkids, Max Schmid, Kaia Schmid, and Timo Schmid.

In lieu of flowers, please donate to the Plummer House, via Plummer Youth Promise | Helping Foster Children, 37 Winter Island Road, Salem, MA 01970-5715. A celebration of Fred's life will be held in the spring.

Submitted by David Joyce

In Memoriam



Gerald B. Stringfellow

April 26, 1942 ~ October 3, 2025

Gerald "Jerry" Stringfellow, a leader in semiconductor synthesis and educator, passed away in Salt Lake City, Utah on October 3, 2025, at the age of 83. Jerry was a key figure in the development of epitaxial techniques essential to most electronic and optoelectronic devices and systems, ranging from high-speed communications to solid-state lighting. His contributions to the underlying science of the epitaxial growth of compound semiconductors were important for the development of the technology and for improving device performance.

Jerry was born and raised in Salt Lake City, Utah. While in his freshman year in High School, he met his future wife and companion, Barbara Farr. Barbara often accompanied Gerry to conferences and functions and was a familiar friendly face to many. His love of science was evident from early on when he developed interests in chemistry and science. He obtained a B.S. degree in condensed matter physics and a Ph.D. in 1968 with a thesis on 'Photoelectric Properties of Zinc Selenide', both from Stanford University, foreshadowing a long career in semiconductor research. From graduate school, Jerry joined the Hewlett Packard Solid State Research Laboratory in Palo Alto. At this lab, Jerry published seminal work on the thermodynamics and phase composition of many semiconductor alloys.

His work on thermodynamics of semiconducting materials continued throughout his career. He proposed and utilized the delta lattice parameter model for the calculation of regular solutions, allowing for the rapid and successful modeling of many complex alloy systems including the doping of semiconductors.

The largest part of his career was spent at the University of Utah starting in 1980. There he made his well-known contributions to semiconductor science and the organometallic vapor phase epitaxy (OMVPE) technique. His contributions to the thermodynamics of alloy systems have gained renewed importance with the development of the family of nitride and metastable semiconductor alloys which underpin new advanced electronic and optoelectronic devices. He also contributed to the fundamental chemistry and reaction mechanisms of the OMVPE process and the investigation of alternative growth chemistries which could have the potential for improvement in process safety. His interest in thermodynamics and reaction kinetics was combined to help resolve the mechanism of cation-ordering in several important alloy systems, such as InGaP, where the interaction of surface chemistry and kinetics resulted in unexpected structural ordering. These broad interests and contributions resulting in more than 400 publications, including his seminal book titled "Organometallic Vapor Phase Epitaxy: Theory and Practice," which serves as a principal entry to the field.

Jerry served two terms as Chair of the Department of Materials Science and Engineering. Stringfellow was selected as Dean of the College of Engineering in 1998. He made significant contributions to the institution with programs to increase the number of engineering graduates. He retired in June 2025 and was named Professor Emeritus. His professional service included his participation in many scientific societies, serving decades on numerous committees associated with the crystal growth and electronic materials communities. He will be remembered by his colleagues for his calm and respectful contributions and wisdom, his personal and professional integrity, and his technical insights which he shared with all. He served as a mentor to many younger scientists and engineers. His wisdom and insights will be missed.

Jerry was an active contributor to the leadership of AACG and IOCG and served on the AACG Executive Committee and was the Chair of the International Conference on Crystal Growth and Epitaxy in 2007, and other professional and conference committees in the crystal growth field. He had served as the Principal Editor for the Journal of Crystal Growth.

His contributions were recognized by many prestigious awards. He received a Humboldt Research Award and was elected to the National Academy of Engineering, as well as to the National Academy of Inventors, both in 2021. He is a Life Fellow of the IEEE and has received the Minerals, Metals and Materials Society's John Bardeen Award, and the Governor's Medal for Science and Technology. Stringfellow was recognized by the American Association for Crystal Growth with their highest honor, the Crystal Growth Award, in 1999, followed in 2016 by the prestigious Frank Prize from the International Organization on Crystal Growth for his pioneering work in the development of the foundations of organometallic vapor phase epitaxial growth of compound semiconductors.

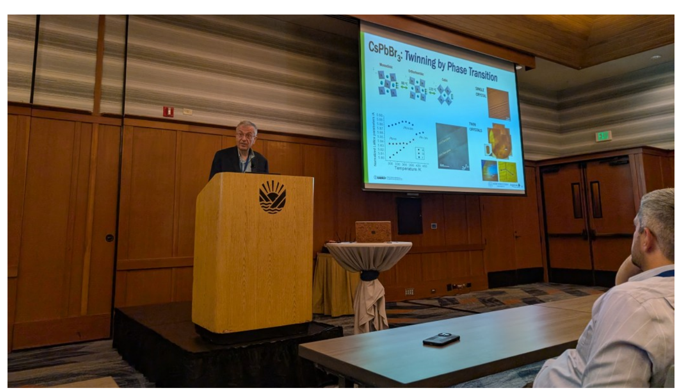
Jerry was preceded in death by his parents and his brother, Dale (Jean). He is survived by his beloved wife of 63 years, Barbara, his 3 children and 3 grandchildren, and his brother, Jeff, and sister, Paulette. A celebration of his life will be held on the University of Utah campus on January 3, 2026, at the Warnock Engineering Building on the University of Utah campus.

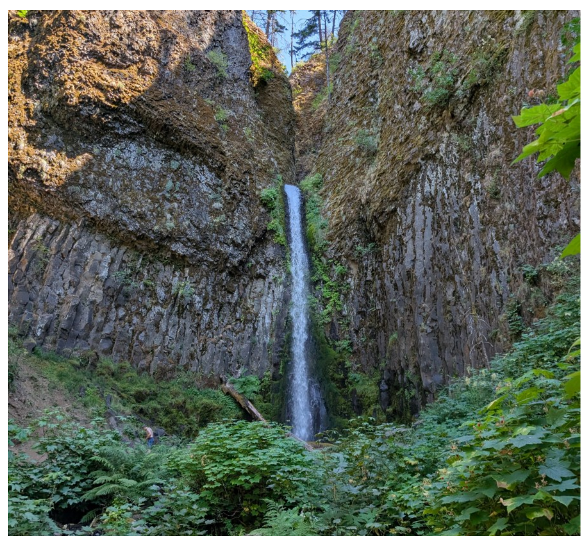
Submitted by Christine Wang and Thomas Kuech

Photos from the ACCGE-24 / OMVPE-22

Photos submitted by Balaji Raghothamachar and Kevin Schulte

Photos from the ACCGE-24 / OMVPE-22





Photos submitted by Balaji Raghothamachar and Kevin Schulte