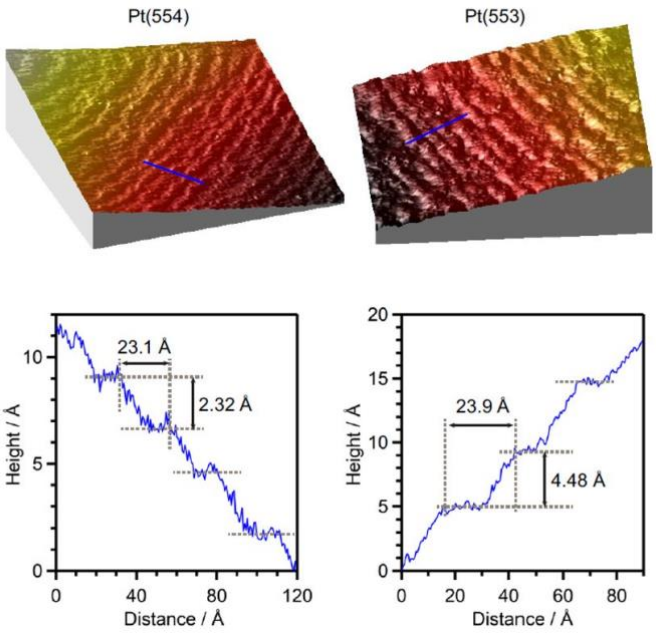
DUTCH ASSOCIATION FOR CRYSTAL GROWTH

nederlandse vereniging voor kristalgroei

FACET

DACG Newsletter

Newsletter of the
Dutch Association for Crystal Growth (DACG),
section of the KNCV and the NNV.



FACET Issue 1/2025
October 2025
Editor: Joop H. ter Horst (Info@dacg.nl)

DUTCH ASSOCIATION FOR CRYSTAL GROWTH
nederlandse vereniging voor kristalgroei

Table of Contents

Cover photo

EC-STM Measurements of Pt(111)-Vicinal Surfaces: Step bunching, not uniform spacing, dominates high-index Pt surfaces. 3D EC-STM images of Pt(554) (a) and Pt(553) (b) recorded in 0.1 M $HClO_4$ (U_s = 0.1 V, U_t = 0.15 V; 48 × 48 nm²). Pt(554) displays regular monoatomic steps and terrace widths matching the nominal structure, while Pt(553) exhibits predominantly bunched steps of double height. Line profiles along the blue markers (c, d) confirm this difference, showing that both surfaces have nearly equal terrace widths, despite theory predicting ~46% narrower terraces on Pt(553).

Image provided by Marcel Rost, from:

F. Valls Mascaró, M.T.M. Koper, M.J. Rost, Step bunching instability and its effects in electrocatalysis on platinum surfaces, *Nat Catal* **7** (2024) 1165–1172.

https://doi.org/10.1038/s41929-024-01232-2

From the editor

Dear all,

We had excellent symposia on the 17th of January 2025 and on 28 May, 2025 at Wetsus as you can see from the report in this FACET. The next symposium will be located at Nobian in Enschede. You can find the agenda of this symposium in this FACET.

Your ideas for the FACET are welcome! For instance submitting a nice cover photo is highly appreciated. It is easy to contribute to the FACET. Just send an email with your contribution to the editor via info@dacg.nl.

Looking forward to seeing you at the symposium in October!

Joop ter Horst

Coming DACG fall symposium at Nobian

You can register for the coming DACG symposium at the DACG website:

https://dacg.nl/event/dacg-fall-symposium-2025-gmm/

DACG Fall symposium & General Members Meeting
31 October 2025

10:00 – 10:30 **Registration and coffee**

10:30 – 11:00 ***Refining lithium: variations on the theme of reciprocal salt systems***
Paul Verwer (Nobian)

11:00 – 11:30 ***Understanding the dehydration mechanism of hydrated salts***
Anne Claude (University of Amsterdam)

11:30 – 12:00 ***Brine treatment for water and salt recovery by membrane distillation crystallization***
Norbert Kuipers (Wageningen University & Research)

12:00 – 12:45 **Lunch**

12:45 – 13:30 **General Members Meeting DACG 2025**

13:30 – 14:30 ***My counterpoints in crystal growth***
Hugo Meekes (Radboud University Nijmegen)

14.30 – 15.00 **Coffee**

15:00 – 15:30 ***Ultra-fast deracemization via metastable phases***
Susanna Bertuletti (AMOLF)

15:30 – 16:00 ***Boron-doped diamond: A highly versatile electrode material***
Ivan Buijnsters (Delft University of Technology)

16:00 – 16:45 **Company visit**

16:45 – 17:30 **Drinks/nibbles**

LOCATION:
Nobian
The Gallery
Hengelosestraat 500
7521 AN Enschede

Annual Report Dutch Association for Crystal Growth (DACG)

October 2024 – September 2025

Secretariat

Dr Antoine van der Heijden
TU Delft
Leeghwaterstraat 39
2628 CB Delft
Tel.: +31 (0) 6 20 43 60 39
E-mail: antoine.vanderheijden@tno.nl
Web: www.dacg.nl

Members

The total number of members is 76: 50 regular members, 20 “calendar year” members and 6 lifetime members. The “calendar year” members that registered for the DACG annual meeting (17 January 2025) or for the spring symposium held on 28 May 2025, are offered the possibility to attend a DACG symposium for the registration fee of a regular DACG member for the symposium to be organized on 31 October 2025.

Board

The DACG Board is shown in the table below. During the General Members Meeting on 17 January 2025, Carmen Guguţă and Hans te Nijenhuis stepped down, and René Steendam and Annemerel Mol were unanimously elected and welcomed as new board members. During the first Board meeting with the new board members, it was decided that René Steendam would take up the role of Chair and Annemerel Mol the role as Treasurer. The Board had six online video meetings and one face-to-face meeting at Wageningen University & Research (WUR) on 28 March 2025. Since 2023 Anne Claude (PhD student UvA) supports the board as a representative of the Young-DACG and since 2025 she is a regular, KvK-registered member of the DACG Board. As previous Board member, Hans te Nijenhuis offered to support the Board with the implementation of the WBTR regulation in the articles (‘statuten’) of the DACG (see under WBTR) and the dissolution of the Stichting (see under Stichting “International Conferences on Crystal Growth”).

Role	2024 – 2025	Appointment deadline	E-mail
Chair	René Steendam	Oct 2027	rene.steendam@ardena.com
Secretary	Antoine van der Heijden	Oct 2025	antoine.vanderheijden@tno.nl; info@dacg.nl
Treasurer	Annemerel Mol	Oct 2027	annemerel.mol@wur.nl penningmeester@dacg.nl
FACET	Joop ter Horst	Oct 2026	jthorst@tiofarma.nl
Young-DACG	Anne Claude	Oct 2026	a.claude@uva.nl
Member	Elias Vlieg	Oct 2026	e.vlieg@science.ru.nl

FACET Newsletter

The DACG Newsletter, FACET, was issued in September 2025. Joop ter Horst is the editor of the FACET. The objective of the newsletter is to stimulate the communication between scientists and users in the area of crystallization or crystal growth in the Netherlands. The newsletter publishes summaries of relevant PhD theses, upcoming events related to crystallization (conferences, symposia), highlights in crystal growth research and other activities relevant to crystal growers. Several academic scientists have been requested to collect news from their network/colleagues as input to the newsletter, but also members may submit input. Furthermore, initiatives, decisions and plans of the DACG will be published in the FACET Newsletter. FACET is issued electronically or can be downloaded from the DACG website. An overview of the DACG correspondents can be found on the DACG website.

Stichting "International Conferences on Crystal Growth"

Currently the Stichting Board consists of the following members: Hans te Nijenhuis, Antoine van der Heijden, René Steendam, and Annemerel Mol (the latter two replacing Carmen Guguta and Marketta Uusi-Penttilä). As discussed during the last General Members Meeting on 17 January 2025, there is currently no reason to keep the Stichting 'alive'. The steps that need to be taken to dissolve (terminate) the Stichting have recently been explored by Hans te Nijenhuis, who is supporting the Board with this process. The bank account controlled by the 'Stichting' will be transferred to the DACG. This amount of money will be allocated to e.g. financially support the organization of symposia and conferences relevant to the DACG.

Website

The DACG website (https://dacg.nl/), formerly hosted by Radboud University Nijmegen, was modernized and officially launched by the end of 2023. The information on the new website is regularly updated to include the most recent information related to the announcement of upcoming symposia. Historical data from the old website (e.g. past newsletters, previous editions of the crystal growth award, etc.) is gradually transferred to the new website.

WBTR

Since 1 July 2021, the WBTR (= *Wet bestuur en toezicht rechtspersonen* or Management and Supervision of Legal Persons Act) entered into force. The WBTR has consequences for the Articles (Statuten) of the DACG. Hans te Nijenhuis took up the task to investigate what modifications in the current Articles (dating from 19 November 1998) would be necessary to comply with the WBTR. Assistance was received from the NNV and KNCV (the DACG is a section of both of these societies). A proposal for the modifications of the Articles will be presented and put to the vote at the next General Members Meeting on 31 October 2025.

Young-DACG

No Early Career Event was held in 2025 for reasons of time. However, an interactive workshop was organized during the spring symposium, where young and senior researchers were discussing together about "hot topics" encountered in crystallization. This was an informal moment for sharing thoughts, which gave the opportunity to everyone to participate and network. Besides, a collaboration with the network of PhDs/PDs from Johnson & Johnson has been established thanks to Rob Geertman. Invitations to join the DACG early-career event will be sent to this community.

Piet Bennema Crystal Growth Award 2024

In October 2024 a call for nominations was issued for the 2024 edition of the Piet Bennema Crystal Growth Award. A jury consisting of Dr Bart Zwijnenburg (chair), Dr Marketta Uusi-Penttilä and Prof Sarah (Sally) Price was installed to evaluate the nominations. The DACG Board followed the recommendation prepared by the jury to award the prize to Dr Jan-Joris Devogelaer for his PhD thesis entitled *"Co-crystal prediction using network science and machine learning"* (Radboud University Nijmegen).

Meetings / excursions organized by DACG

On 17 January 2025 the DACG's symposium and annual meeting was organized at Radboud University Nijmegen, hosted by Hugo Meekes and Elias Vlieg. At this symposium the Piet Bennema Crystal Growth Award 2024 was handed over to Dr Jan-Joris Devogelaer. On 28 May 2025 the spring symposium was held at Wetsus in Leeuwarden, hosted and organized by Chris Schott and Annemerel Mol. Reports of the meetings have been published in the newsletter FACET.

Activities relevant to DACG community

- René Steendam, as chair of the DACG board, is the national representative on behalf of the Netherlands in the IOCG Council.
- Elias Vlieg is currently President of the IOCG (since July 2023).
- Burak Eral (TU Delft) and Bart Zwijnenburg (Nobian) are the Dutch representatives in the Working Party on Crystallization.

Upcoming activities

- KNCV-event "Avond van de Chemie", 15 October 2025, Concertgebouw "De Vereeniging", Nijmegen (Over Avond van de Chemie 2025 - KNCV).
- NNV Advisory Board Meeting, December 2025 (section boards will be invited).
- April/May 2026: spring symposium DACG, date and location to be decided.
- October 2026: DACG annual meeting + fall symposium, date and location to be decided.
- 2027: conference jointly organized with BACG (UK).

Agenda DACG General Members Meeting, 31 October 2025

1. Opening
2. Finalize agenda
3. Minutes Annual meeting 17 January 2025
4. Documents sent / received: report of the financial audit committee (see agenda item 6)
5. Annual Report Oct 2024 – Sep 2025
6. Financial
   (a) Annual Financial Report Oct 2024 – Sep 2025
   (b) Report Financial Audit Committee (Lian Blijlevens, Dirk Kok)
   (c) Budget Oct 2025 – Sept 2026
7. Status Stichting
8. Young-DACG
9. DACG website
10. Board

Role	2024 – 2025	Appointment deadline
Chair	René Steendam	Step down Oct 2027
Secretary	Antoine van der Heijden	Step down Oct 2025
Treasurer	Annemerel Mol	Step down Oct 2027
FACET	Joop ter Horst	Step down Oct 2026
Young-DACG	Anne Claude	Step down Oct 2026
Member	Elias Vlieg	Step down Oct 2026

- Since 2023 Anne Claude (PhD student UvA) succeeded Marloes Bistervels to support the board as a representative of the Young-DACG. Since 2025 Anne is a regular, KvK-registered board member.
- Joop ter Horst decided to step down one year earlier, so October 2025. He is not re-electable. Antoine van der Heijden has his official appointment deadline in October 2025, but he indicated that he would be available for one extra year in his current position, so until October 2026, pending agreement of the General Members Meeting. We received a nomination from Bart Zwijnenburg for a board membership. During the General Members Meeting the members can cast their votes for both candidates.
- In October 2026 the board will potentially have three vacancies to be filled, depending on the re-electability of board members that step down in October 2026. DACG-members who would like to apply for a board membership **as of October 2026**,

can announce themselves by sending an e-mail to the DACG secretariat (antoine.vanderheijden@tno.nl).

11. Activities 2025 – 2026
    a. April/May 2026: spring symposium DACG, date and location to be decided
    b. October 2026: DACG annual meeting + fall symposium, date and location to be decided
12. Questions before closure of the meeting
13. Adjourn

DACG symposium 17 January 2025, Radboud University Nijmegen

Antoine van der Heijden

On 17 January, 2025, the DACG organized the fall symposium hosted at Radboud University in Nijmegen. Due to difficulties in finding a location for this event in October/November 2024, the date shifted to January 2025.

Symposium program and speakers

After opening of the symposium by **Elias Vlieg** (Radboud University Nijmegen, RUN), **Anton Tuluk** (also RUN) kicked off with a presentation on *"Crystal growth in confined spaces: a study of crystallization pressure in a potash alum model system"*. **Dirk Kok** (Malvern Panalytical) followed with a topic related to X-ray diffraction, presenting developments on *"Crystal orientation using the azimuthal scan method"*. The newest insights on the mechanism of non-photochemical laser induced nucleation (NPLIN) were presented by **Burak Eral** (Delft University of Technology). The use of biocrystallization for resource recovery were highlighted by **Annemerel Mol** (Wageningen University & Research). The final presentation of the regular symposium program was given by Ariane Mader (AMOLF) on *"Directing sequential self-organization with self-assembled nanocrystals"*.

Symposium opening by Elias Vlieg (Radboud University Nijmegen)

Anton Tuluk (Radboud University Nijmegen)

Dirk Kok (Malvern Panalytical)

Burak Eral (Delft University of Technology)

Annemerel Mol (Wageningen University & Research)

Ariane Mader (AMOLF)

General Members Meeting

After the lunch break the General Members Meeting of the DACG was held, chaired by Carmen

Guguta. The minutes of this meeting will be shared separately.

Piet Bennema Crystal Growth Award 2024

The award ceremony of the 2024 edition of the Piet Bennema Crystal Growth Award was opened by Bart Zwijnenburg, chairman of the jury, that further consisted of Marketta Uusi-Penttilä and Sarah (Sally) Price. The prize winner **Jan-Joris Devogelaer** (Johnson & Johnson Innovative Medicine) was handed over the award certificate for his PhD research performed at Radboud University Nijmegen on *"Co-crystal prediction using network science and machine learning"*. After the award ceremony, Jan-Joris closed the symposium with a lecture, presenting the results of his award winning PhD research.

Jan-Joris Devogelaer (l) receiving the certificate of the Piet Bennema Crystal Growth Award 2024 for his PhD research "Co-crystal prediction using network science and machine learning"

After a visit to the Free-Electron Lasers for Infrared eXperiments (FELIX) and the High Field Magnet Laboratory (HFML), the symposium closed with an informal get-together and drinks. The DACG symposium was attended by 33 participants. On behalf of the DACG board, we acknowledge Hugo Meekes and his supporting team, for organizing this symposium.

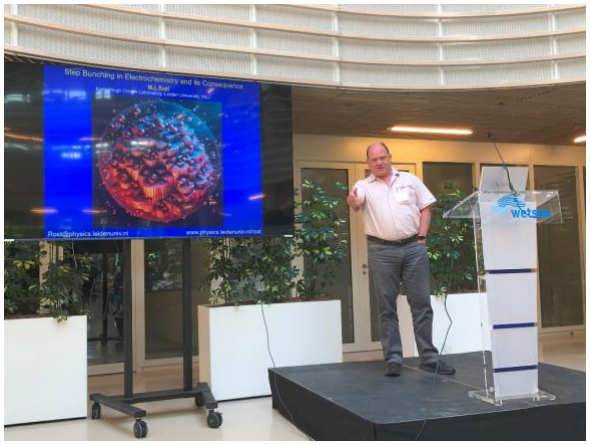
DACG symposium 28 May 2025, Wetsus, Leeuwarden

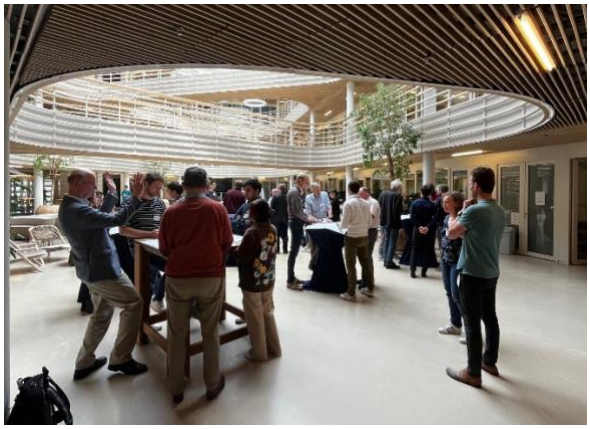
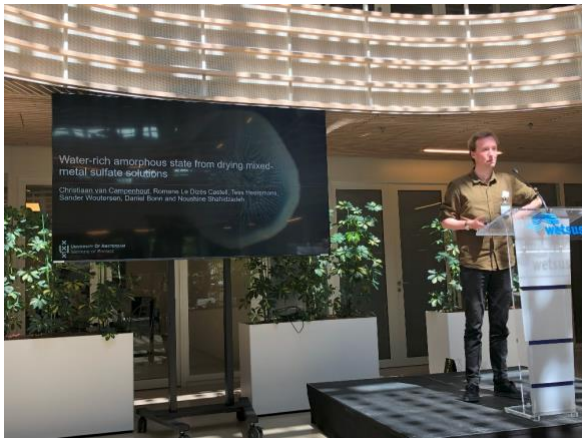
Antoine van der Heijden & Annemerel Mol

For the first time in DACG's history of more than 50 years, we organized a symposium in the province of Fryslân. On 28 May, 2025, Wetsus hosted the DACG spring symposium in Leeuwarden. The local organizers were Chris Schott and Jannie Mulder. Wetsus is the European centre of excellence for sustainable water technology and is located at the WaterCampus Leeuwarden.

After Rene Steendam (chair DACG) welcomed the ca. 35 participants, the symposium was kicked off by a presentation on Wetsus by **Chris Schott**. He highlighted a selection of crystallization-related research topics at Wetsus, i.e., an electrochemical method for the crystallization of calcium phosphate (Simona Prutti), eutectic freeze crystallization of lactose (Ruben Halfwerk), magnetic vivianite recovery (Wokke Wijdeveld) as well as his own research on phosphorus recovery from animal manure. On this last topic, **Lilian Quispe Livisi** (Wetsus) continued with a presentation on her PhD research on the pseudomorphic replacement of struvite by calcium phosphate in cow manure. In pseudomorphic replacement, the crystal shape is preserved while, under the proper conditions, its composition gradually changes from struvite to (amorphous) calcium phosphate. **Michel Leeman** (Symeres) talked about the resolution of racemates with and without resolving agents to produce enantiopure compounds. The last presentation before lunch was by **Marcel Rost** (Leiden University) on step bunching in electrochemistry on platinum surfaces.

After lunch, a World Café style session was organized to discuss several hot topics in crystal growth. The participants were divided into six smaller groups that within the course of one hour cycled along three topical tables. A specific request to was made for *accessible* communication, to be able to take everyone in a group, despite different backgrounds and level of knowledge. The goal of this session, whilst discussing crystal growth topics that lie close to are hearts and minds, was to get to know each other. The topics on offer were: 'Crystal growth in sustainability and recovery', 'Crystal growth techniques, methods and approaches' and 'Fundamentals of crystal growth'. First, participants shortly introduced themselves and described how they deal with crystal growth in their research or work. Then the bell rang, and the rounds started. Although the time per round was tight (just 10 minutes) we observed that participants got to know each other better and enjoyed learning about the diversity of topics relevant to crystal growth. After all groups had passed all topic, the moderators (Elias Vlieg, Antoine van der Heijden and Chris Schott) of the table briefly wrapped up their respective topics. Wise comments that stayed in mind are: *'The challenge in science (and thereby crystal growth research) is not about finding the right answers, but asking the right questions'*, *'When is something a crystal?'* and last but not least *'Experiments will be required'*.

	
Opening of the symposium by René Steendam	*Chris Schott (Wetsus)*
	
Lilian Quispe Livisi (Wetsus)	*Michel Leeman (Symeres)*
	
Marcel Rost (Leiden University)	*Impression of the discussion on hot topics in crystal growth (1/2)*

	
Impression of the discussion on hot topics in crystal growth (2/2)	*Christiaan van Campenhout (UvA)*
	
An Qi (Delft University of Technology)	*Martijn van Veggel (KWR)*

We learned that the number of topics and questions per topic were quite ambitious for the time given. However, we enjoyed the interactive element, and we will try different interactive content-related meeting forms during the symposia to come.

The symposium program continued with a presentation by **Christiaan van Campenhout** (University of Amsterdam) on the emergence of a glassy amorphous phase in mixed sulfate solutions due to suppression of crystallization by hydrogen bonding with metal-water complexes. **An Qi** (Delft University of Technology) presented results on the polymorph control of glycine through evaporative crystallization of sessile droplets using electrowetting. The final presentation by **Martijn van Veggel** (KWR) highlighted how several problems like scaling and presence of iron in water, were successfully converted into products such as calcium carbonate (softening of water to prevent scaling) and removal of iron sludge that can be applied as a coagulant in wastewater treatment, as an energy carrier material or as an adsorbent for arsenic, phosphate and hydrogen disulfide.

The symposium was closed with a lab tour, showing the lab facilities supporting the research at Wetsus and showcasing some of the experimental set-ups of the ca. 60 PhD candidates working at Wetsus.

On behalf of the DACG board, we would like to acknowledge Chris Schott and Jannie Mulder, for organizing this successful symposium and for hosting the DACG community in Leeuwarden!

Might DACG members enjoy further study or contemplation, here we share the hot topics discussed during the interactive World café session:

Topic 1: Crystal growth techniques, methods and approaches

- Can Machine Learning help to predict new compounds with desired properties?
- What new techniques could promote the nucleation of a stable phase (overcoming the metastable phase), that cannot be formed by the common nucleation techniques?
- What are strategies for scale-up / crystallizer design based on crystallization kinetics?
- How can defect-free heteroepitaxial thin films be grown for any combination of two materials?
- Which approaches can be used to crystallize large molecules, such as proteins?
- How can you design a crystallization process to design a certain polymorph?

Topic 2: Fundamentals of crystal growth

- How to define supersaturation for solids with extremely low solubility?
- Biomineralization: what parameters drive the transition of amorphous biologically produced solids to their crystalline phases?
- How to predict solubility of (new) compounds in solvents?
- How to predict polymorphs and to determine the most stable form?
- What is the structure of a nucleus and how does it evolve to a full crystal?
- What is the role of nucleation in polymorphic control?

Topic 3: Crystal growth in sustainability and recovery

- How can crystal growth support the UN development goals?
- What characteristics should crystals from recovered resources have?
- How can a crystallization process for recovery take the application into account? (design for purpose)
- What is the role of crystal growth in the energy transition?

Brief report of ICCGE-21, 3-8 August 2025, Xi'an, China,

Elias Vlieg

Because of covid, the tri-annual International Conference on Crystal Growth was held only two years after the previous one (2023 in Naples), bringing the series back on its normal schedule. Due to the current financial and geopolitical issues, the number of participants was less than normal; around 500. The majority came from China, with also a strong delegation from Japan. The large participation from China is logical both because of the location of the meeting, but also because crystal growth is very important in China. The country has a clear, long-term strategy and funding, in particular in the production of the next generation of substrates for electronic applications and the growth of large crystals for non-linear optics. There were (only) two participants from The Netherlands. Historically, the ICCGE meeting have a focus on the growth of large single crystals and thin films, but there were also interesting contributions on organic compounds. For details of the program, see https://www.iccge21.com/. A well-attended crystal growth school (ISSCG-19) was held the week before the ICCGE-21.

Xi'an was the first capitol of China and the location from where the full country was united for the first time (about 2200 years ago). It is famous for the Terracotta Warriors, part of the mausoleum of the first emperor Qin Shi Huang.

The meeting was very well organized in a large conference center and close to several hotels. The outside temperatures went up to 42°C, so the inside air-conditioning was very welcome. China is technologically very advanced, and, for example, no projectors were used but large 'TV' screens with sizes up to 20 x 4 m^2. All the keynote speakers were excellent, providing a good overview of a wide range of topics. The first speaker was Hiroshi Amano, who was co-recipient of the 2014 Nobel prize in Physics for the invention of efficient blue GaN LEDs. This is one of the two Nobel prizes that can be directly associated with crystal growth (the other is the 2000 Physics Nobel prize on semiconductor heterostructures). Amano described not only the work that yielded the GaN LEDs, but also new results as he continues to be an active and innovate researcher. The impact of his work is really enormous, because the GaN LEDs of course changed the way we create artificial light: he quoted a recent study that found that the total cost savings due to the high efficiency of the LEDs amounts to more than 800 billion Euros.

The meeting was organized by a local committee on behalf of the International Organization for Crystal Growth (IOCG). During the ICCGE, a number of IOCG committee meetings is always held and in which the DACG is formally represented by our chair (René Steendam) as a Council member. Elias Vlieg is currently President of the IOCG and was elected for another term of three years.

The next ICCGE meeting will be held 23-28 July 2028, Grenoble, France.

A selection of recent publications

On the epitaxial growth in ALD Co3O4- and NiO-based bilayers

R. van Limpt, C.A.A. van Helvoirt, M. Creatore, M.A. Verheijen, *Nanoscale* 17, (2025) 11037-11048. https://doi.org/10.1039/D5NR01212K

Accordini, P.; Takke, J.; van Enckevort, W. J. P.; Vlieg, E. Growth and Morphology of PbSe Mesocrystals. *Crystal Growth & Design* **2025**, *25* (11), 3894–3905. https://doi.org/10.1021/acs.cgd.5c00329.

Qi An, Pingping Cui, Nagaraj Nagalingam, Noah Binan, Bijoy Bera, Massimo Mastrangeli, Johan T. Padding, and Hüseyin Burak Eral, Influence of Electrowetting on Glycine Polymorphic Form in Evaporative Crystallization of Sessile Droplets, *Crystal Growth & Design* **2025** *25* (17), 7123-7132. https://doi.org/10.1021/acs.cgd.5c00497

Pinetre, C.; van Dongen, S. W.; Brandel, C.; Léonard, A.-S.; Charpentier, M. D.; Dupray, V.; Oosterling, K.; Kaptein, B.; Leeman, M.; Kellogg, R. M.; ter Horst, J. H.; Noorduin, W. L. Enantiopurity by Directed Evolution of Crystal Stabilities and Nonequilibrium Crystallization. *J. Am. Chem. Soc.* **2025**, *147* (10), 8864–8870. https://doi.org/10.1021/jacs.5c00569.

Dennis J. Klaassen, Lumen Eek, Alexander N. Rudenko, Esra D. van 't Westende, Carolien Castenmiller, Zhiguo Zhang, Paul L. de Boeij, Arie van Houselt, Motohiko Ezawa, Harold J. W. Zandvliet, Cristiane Morais Smith & Pantelis Bampoulis, Realization of a one-dimensional topological insulator in ultrathin germanene nanoribbons. *Nat Commun* **16**, 2059 (2025). https://doi.org/10.1038/s41467-025-57147-4

R. Wijnhorst, T. Chekai, S. Faucher, H. Derluyn, N. Shahidzadeh, Salt crystallization at hydrophobic/hydrophilic interfaces in two- and three-dimensional model porous networks and its consequences on drying, *Phys. Rev. Applied* 23 (2025) 054048. https://doi.org/10.1103/PhysRevApplied.23.054048

Niels Schreiner, Angela Angelodimou, Mohammad Soleimani, Auguste Stanionytė, Richard Matysek, Giuditta Perversi, The road to high-entropy: Combinatorial sequential doping study of Ba2In2O5, *Solid State Ionics*, 427 (2025) 116901. https://doi.org/10.1016/j.ssi.2025.116901.

Adrianus Julien Theodoor van der Ree, Majid Ahmadi, Gert H. Ten Brink, Bart J. Kooi, George Palasantzas, Neuromorphic-like dynamics in percolating copper nanoparticle networks: Synthesis, characterization, and limitations, *Phys. Rev. Materials* 9 (2025) 036001. https://doi.org/10.1103/PhysRevMaterials.9.036001

Annemerel R. Mol, Rieks de Rink, Renata D. van der Weijden, Johannes B.M. Klok, Cees J.N. Buisman, Sulfur crystal growth control in a biological gas desulfurization installation, *Journal of Environmental Chemical Engineering* 13 (2025) 115899. https://doi.org/10.1016/j.jece.2025.115899.

Recent Theses

Wouter Peeters, Epitaxy of hexagonal SiGe heterostructures

PhD defense: 25 feb 2025, Eindhoven University of Technology, Eindhoven

Promoter: prof. dr. Erik Bakkers

Co-promoter: dr. Marcel A. Verheijen

Silicon-germanium (SiGe) is the backbone of modern electronics—but in its usual cubic form, it cannot emit light efficiently. Wouter Peeters' PhD research shows how growing SiGe in a rare hexagonal structure unlocks light emission, paving the way for silicon-based lasers. His work demonstrates key steps toward integrating energy-efficient light sources directly onto computer chips, with exciting prospects for faster data communication and advanced sensing.

https://research.tue.nl/nl/publications/epitaxy-of-hexagonal-sige-heterostructures

Mathijs Mientjes, Growth and characterization of Pb1−xSnxTe nanocrystals for topological quantum devices

PhD defense: 22 may 2025, Eindhoven University of Technology, Eindhoven

Promoter: prof. dr. Erik Bakkers

Co-promoter: dr. Marcel A. Verheijen

Topological materials could provide the stable building blocks needed for future quantum computers. In his PhD research, Mathijs Mientjes studied how to grow and control nanostructures of PbSnTe, a promising topological crystalline insulator. He demonstrated new growth methods, observed quantum effects that signal topological behavior, and developed models to better understand crystal formation. His findings bring us closer to quantum devices where qubits are naturally protected from disturbances.

https://research.tue.nl/en/publications/growth-and-characterization-of-pb1xsnxte-nanocrystals-for-topolog