Scandinavian Society for Biomaterials

Newsletter
Autumn issue, 2025

Letter from the board

Dear ScSB members,

As the weather is getting gradually colder and the days ever shorter, it's time for us took back and remember the chilly May winds in Finland that brough us even a few surprising snowflakes during the annual ScSB meeting at Vanajanlinna Manor near Hämeenlinna, Finland. The weather aside, I think Miina and her ScSB2025 team could not have created a warmer and more welcoming environment for us to meet, network, share research ideas and learn from the impressive roster of invited speakers! And let us not forget the exciting social programme at the meeting: not only did our fatbiker team nearly get lost in an unexpected logging site in the nearby forest, but also the archery team nearly murdered an innocent robot lawn mower. Luckily, we all returned home from ScSB2025 unharmed and with a big smile on our faces that will surely last until we all meet again at ScSB2026 at the west coast of Sweden!

During our general assembly in Hämeenlinna, we had the pleasure to award an old friend of the ScSB, Professor Duncan Sutherland from Aarhus University, with the 2025 ScSB Research Award for his exceptional contribution to the understanding of the events occurring at the nano-scale interfaces between material surfaces and living systems. The ScSB board congratulates Duncan for his well-deserved award. You will hear more about Duncan and his research achievements in our next newsletter later this year, but we believe this important award should not go unnoticed in this newsletter either.

We also welcomed three new members on the ScSB board, who took the baton over from Gissur, Alireza and Giuseppe whose time on the board came to an end this spring (for now at least). Dagnija, Bergþóra and Furqan come on board with a bagful of fresh ideas and also make sure all the different regions our society encompasses gets represented on the ScSB board. If you feel like you, too, have something to give to the society and the Nordic and Baltic biomaterials community we represent, perhaps it will be your turn to jump on board the ScSB command deck next year at the annual ScSB meeting that will take place in Fiskebäckskil in Sweden come May 2026. We are on the look out for new board members, including a new student representative.

The ever-darkening autumn days are also the best time of the year to take a deep dive into science again after the long and lazy summer. We hope that Antonia Ressler's science opinion column gives you a good dose of scientific curiosity and keeps you scientifically entertained until our next newsletter comes and brightens up the greyness of early winter. Until then, stay curious!

Hanna,

On behalf of the ScSB board

Our president

Hanna Tiainen
Associate Professor
University of Oslo, Norway

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Fiskebäckskil – B. Müller

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ScSB 2025 meeting highlights

What a pleasant and inspiring event ScSB 2025 was! While the spring weather was characteristically Finnish—even offering a few snowflakes—the people (and a touch of sauna) created a warm and welcoming atmosphere for sharing science and ideas.

In addition to the excellent oral and poster presentations, we had the pleasure of hosting five keynote talks and award lectures by two ScSB awardees. Beyond the scientific program, a variety of social events provided opportunities for networking and building connections with both Scandinavian and international experts in the field.

To our knowledge everyone stayed healthy and happy, excluding maybe the questionable mental state of the robotic lawn mower who persistently kept minding the grass on the line of fire during archery session.

We would like to thank the scientific committee for their excellent work in evaluating the abstracts and crafting a balanced, impactful scientific program that highlights various aspects of physiologically relevant biomaterials.

The event kept running smoothly owing to our excellent volunteer team. Warm thank you to you all Kati Rinnekari, Sweeta Akbari, Katri Ala-Mononen, Maria Heilala, Karoliina Hopia, Briitta Korsulainen, Mart Kroon, Mari Niemelä, Tuulia Taipale and Heidi Vänskä!

ScSB 2025 was proudly supported by our sponsors:

- **Gold Sponsors**: AM Technologies by Brinter, Merck, and CELLINK
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- **Bronze Sponsors**: BioNavis and Optics11Life

On behalf of the organizing team, I would like to thank all ScSB 2025 participants. What a knowledgeable and welcoming community we have!

And while I have your attention, I'd like to introduce the author of the science piece in this newsletter—my colleague and fellow ScSB organizer, Antonia Ressler (who's got the best ScSB dance moves!). She will shed light on a topic close to her heart: affordable and personalized solutions for bone regeneration.

Miina Björninen (ScSB board member),
on behalf of the ScSB 2025 organizing team: Antonia Ressler,
Janne Koivisto, and Minna Kellomäki

Photos: Kati Rinnekari

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Welcome to ScSB 2026

With "**From Discovery to Device**" as this year's theme, we highlight how breakthroughs in biomaterials research are translated into technologies that shape healthcare and society. The program brings together leading researchers who will share new perspectives across this spectrum, creating space for dialogue, exchange of ideas, and new collaborations.

Complementing the scientific program, we invite you to join a range of social activities offering opportunities to connect with colleagues from Scandinavia and beyond in an informal yet engaging atmosphere.

We look forward to welcoming you to an inspiring meeting!

– The ScSB 2026 team

Keynote speakers

Prof. Serena Best, University of Cambridge, UK
Prof. Ralph Müller, ETH Zürich, Switzerland
Prof. Michael Gelinksy, Technische Universität Dresden, Germany
Prof. Rickard Brånemark, MIT, USA and University of Gothenburg, Sweden
Prof. Maria Asplund, Chalmers University of Technology, Sweden
Prof. Hanna Isaksson, Lund University, Sweden
Prof. Lars Kölby, University of Gothenburg, Sweden

JOIN US IN SWEDEN!

Submit abstracts by 15 Jan 2025
Register by 1 March 2025

Visit https://scsb.eu/scsb2026 for more info

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Meet our new board members

Dagnija Loča
Professor
Riga Technical University,
Latvia

I have dedicated my career to developing biomaterials for bone repair and regeneration, including drug-loaded scaffolds and controlled drug delivery systems for targeted therapies. As Director of the Rudolfs Cimdins Riga Biomaterials Innovations and Development Centre and coordinator of multiple national and international research projects, I have extensive experience leading multidisciplinary teams and mentoring young scientists.

Throughout my career, I have actively engaged with the scientific community, contributing to numerous scientific articles and participating in many international conferences. My role in major initiatives such as the Baltic Biomaterials Centre of Excellence, has further strengthened my commitment to advancing scientific collaboration far beyond national borders.

In my role as a ScSB board member, I aim to strengthen international collaboration by leveraging my network to engage researchers across the Baltic region in ScSB activities and to support early-career scientists by fostering mentorship and professional development opportunities.

I am enthusiastic about the opportunity to contribute to the ScSB community and to work alongside esteemed colleagues in advancing the biomaterials field. I believe my experience and dedication will help further the mission and impact of the society.

Bergþóra S. Snorradóttir
Assistant Professor
University of Iceland, Iceland

I'm a lecturer with a background in multidisciplinary projects, mainly within drug delivery. My work has involved using silicon and other materials as matrices for drug delivery applications. At present, my research focuses on developing a transdermal drug delivery system for hand osteoarthritis, in addition to collaboration projects on electrospinning with the University of Copenhagen and hydrogels with the University of Ljubljana. I also have a strong interest in experimental design and its application in research and processing. I look forward to connecting with more researchers in the Nordic region working in biomaterials and to becoming an active member of the ScSb community.

Furqan A. Shah
Associate Professor
University of Gothenburg, Sweden

My research focusses on structure–property–function relationships in mineralised tissues, to understand the materials science behind bone formation and repair—to inform the development of biomaterials that truly mimic the tissues they replace. I am eager to bring my scientific and administrative expertise, and contribute to ScSB's mission by strengthening interdisciplinary collaborations, organising high-quality scientific and networking events, and supporting early-career researchers.

Current board members and roles

Assoc. Prof. Hanna Tiainen, *University of Oslo, Norway*, President
Assoc. Prof. Natalia Ferraz, *Uppsala University, Sweden,* Board Member, Treasurer
Assoc. Prof. Pablo Pennisi, *Aalborg University, Denmark*, Board Member, Website manager
Dr Miina Björninen, *Tampere University, Finland*, Board Member, Social Media responsible
Prof. Dagnija Loča, *Riga Technical University, Latvia ,* Board Member, Newsletter responsible
Assoc. Prof. Furqan A. Shah, *University of Gothenburg, Sweden*, Board Member
Asst. Prof Bergþóra Sigríður Snorradóttir, *University of Iceland*, Board Member
Enrique Oreja Remartinez, *University of Oslo, Norway*, Student representative, Secretary

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Stay tuned and follow our LinkedIn, loads of interesting news coming!

Contact

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20520 Turku, Finland

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Revolutionizing Bone Regeneration with Personalized and Affordable Solutions

Revolutionizing Bone Regeneration with Personalized and Affordable Solutions

The incidence of bone fractures is increasing globally, with consequential economic implications. Bone grafting, a surgical procedure conducted on a global scale, now stands as the second most prevalent tissue transplantation, exceeded only by blood transfusions [1]. The new cutting-edge fabrication techniques are driving breakthroughs in the development of biomimetic scaffolds for bone regeneration, allowing the precise recreation of bone-like structures and the integration of key biological factors. Recent advancements in ceramic additive manufacturing techniques, particularly ceramic vat photopolymerization (CVP), have opened new avenues for the development of personalized and affordable scaffolds for bone augmentation applications. This is particularly important for dental implants, where the absence of adequate bone can hinder the attachment of implantable screws. The CVP technique uses light to cure ceramic slurry layer by layer, creating highly precise and complex structures. Obtained scaffolds can replicate natural bone chemical and phase composition, as well as microstructure, providing a more effective solution for the bone regeneration process.

High resolution and accuracy of the CVP method enable the production of complex computer-aided designs with high precision. This is particularly useful when scaffolds need to fit the **complex shape** of bone injuries. Scaffolds based on **different ceramic biomaterials**, for example hydroxyapatite, tricalcium phosphate, and bioactive glass, or their combinations, can be produced. However, as post-treatment of obtained scaffolds includes debinding and sintering at high temperatures, calcium phosphate materials (e.g. octacalcium phosphate pentahydrate) that are unstable at elevated temperatures cannot be used when CVP is employed. Compared to other additive manufacturing methods, CVP fabrication method is **faster and more efficient**, making it a good choice for mass production of custom-made scaffolds in the future.

Fig. 1 illustrates the morphology and microstructure of calcium phosphate-based scaffolds fabricated using the CVP method that demonstrate the high complexity of scaffolds that can be achieved using this method. However, due to the required debinding and sintering [2]. when the CVP method is used, achieving a balance between optimal mechanical properties and bioactivity requires a compromise

The integration of the CVP method into bone regeneration strategies can significantly enhance the development of bone scaffolds in several ways. The ability to produce scaffolds tailored to individual patient needs ensures a better fit and integration, leading to improved outcomes in bone augmentation procedures. Using bioactive ceramics that mimic natural bone properties promotes faster and more effective bone regeneration. The efficiency and scalability of CVP can help reduce costs, making these advanced treatments more accessible to a larger population.

Recent developments in ceramic three-dimensional fabrication, especially CVP, are the first step toward revolutionizing the field of bone augmentation procedures and bone regeneration in general. However, before CVP method and the personal scaffolds approach are used worldwide, obstacles regarding sample preparation, post-processing treatment and ceramic slurry development need to be addressed. While CVP exhibits no limitations in producing complex structures, characterized by small, interconnected pores and channels, cleaning such as-printed porous structures poses a significant challenge due to the inherent characteristics of the CVP process.[3] More studies are needed on appropriate cleaning solutions and protocols in the future to understand their effects on the properties of scaffolds. In addition, new ways of cleaning uncured slurry need to be explored (e.g., vacuum cleaning) to ensure the possibility of cleaning scaffolds of various dimensions and complexities without causing surface damage.

Would you like to submit a column contribution?

We would like to invite anyone among our members to propose their contribution to this new column for the ScSB newsletter. Our goal is to enrich our community with expert opinions and angles from our diverse members. So, if you are brimming with exciting research, interesting viewpoints, or cool commentaries, we will be happy to take a look at it!

Feel free to email your piece for our review.

Revolutionizing Bone Regeneration with Personalized and Affordable Solutions

The second major obstacle of the CVP method is the lengthy debinding and sintering process. These steps increase the cost of the final biomaterial, are time-consuming, and can delay the overall production of scaffolds, making it less efficient for rapid manufacturing needs. Further, optimization of the printable ceramic slurry is highly complex compared to printing polymer-based slurries, due to light scattering and absorption of ceramic particles, high slurry viscosity when the required solid loading is achieved, ceramic particle sedimentation, and shrinkage during post-processing. These challenges are highly affecting layer adhesion, defect formation, reduced resolution, dimensional accuracy, etc.

Nowadays, CVP technology and the personal scaffolds approach are used for complex clinical cases of bone regeneration where there are no other treatment options. However, the mentioned obstacles need to be overcome to make biomaterials obtained by the CVP method accessible to a wider population. During the next ten years, I believe we will overcome these challenges and develop additional solutions that will lead to the use of CVP as one of the leading methods for biomaterials development in hard tissue regeneration applications.

References

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[3] A. Ressler, S. Zakeri, P. Konnunaho, M. Schwentenwein, E. Levänen, E. J. Frankberg, Cleaning strategies for 3D-printed porous scaffolds used for bone regeneration fabricated via ceramic vat photopolymer-ization, Ceram. Int. 50 (2024) 53107-53119-

Dr. Antonia Ressler
Post-doctoral Researcher Fellow
Tampere Institute of Advanced Study
Tampere University
Organizer of the ScSB2025 meeting

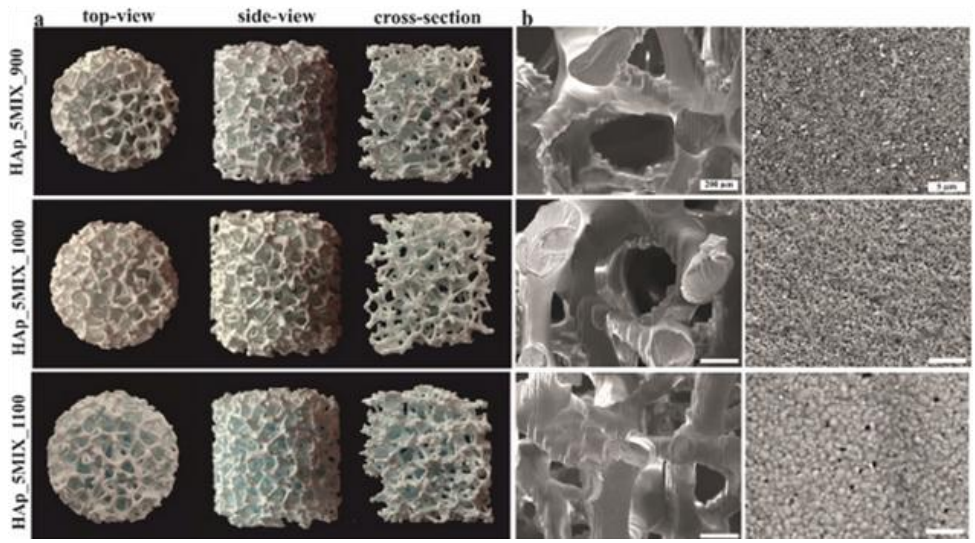

Figure 1. (a) Morphology and (b) microstructure of scaffolds fabricated via CVP method.

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Upcoming events in Scandinavia

FIN OoC 2025 is a national and international forum for Organ-on-Chip, organoid, and in silico experts. FIN OoC continues the tradition of bringing together experts and professionals from across Finland and beyond. Our goal is to strengthen the Organ-on-Chip (OoC) network nationally and in Northern Europe.

The meeting is hosted by the Centre of Excellence in Body-on-Chip research (CoEBoC, Tampere University) at the Finnish OoC hotspot, Kauppi campus in Tampere. Join us for insightful discussions, network and visit our laboratories.

We look forward to having you at the meeting!

Centre of Excellence in Body-on-Chip Research

Tampere University

https://events.tuni.fi/finooc/

Career

Here we list upcoming PhD defences, open positions as well as other career opportunities. Please feel free to send us relevant information to include in this column!

Open positions

SHIELD, an EU-funded doctoral network coordinated by University of Gothenburg, is looking for talented PhD candidates with interest in biomaterials and implant-associated infections for several exciting positions across Europe, including Sweden and Norway.

scan for more info

Young Scientist Forum

A series of webinars specifically aimed to the young biomaterials scientists – A platform where you can hear experts talk about science, useful career tips, and scientific debates.

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Do you have a suggestion for webinar topics? Contact one of our YSF representatives or fill in our feedback form!

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About ScSB

The Scandinavian Society for Biomaterials (ScSB) was founded in May 2008. The focus of our activities is centred on organizing an annual Biomaterials meeting and thereby promote cross-fertilization of Biomaterials research in the Nordic countries and the Baltic states. In addition to academic researchers, the society welcomes students and industry to participate in the yearly meetings. ScSB is an affiliated society to the European Society for Biomaterials (ESB) and its President takes part in the ESB National Societies Meetings.

Where to find us

You can reach us and follow ScSB's updates on different communication channels and network.

- Website: Scandinavian Society for Biomaterials
- Social media:

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