Scandinavian Society for Biomaterials

Newsletter
Autumn issue, 2023

Letter from the board

Dear ScSB members,

One of the most magical things about living in our little northern corner of the world is the gradual but constant change of seasons: last time we send out our newsletter in June, we were all excited about the chance to escape the daily grind for a few weeks of summer holiday and spending some time just basking in the endless daylight of the Scandinavian summer. And suddenly, now it is November again and all that summer light we took for granted all summer has gradually faded away and the long days of winter darkness are almost upon us. But November is not really as bad as we often make it out to be. Somehow I always find this time of the year as the most productive in terms of getting stuff done. What else could one do but to buckle down, close the curtains in the office and pretend the outside world does not really exist?

*Talking about being productive and getting stuff done: Alireza and his ScSB2024 team at DTU has been working hard all autumn putting together an almost irresistible scientific programme for the annual ScSB meeting in Helsingør with an impressive lineup of invited speakers. Now it is your turn to do rest of the work for completing the scientific programme – abstracts for ScSB2024 are due on **16 November**, so make sure to use some of your boost of autumn efficiency on writing your abstracts for the event. You wouldn't want to miss out on a chance to enjoy a bit of Danish hygge.*

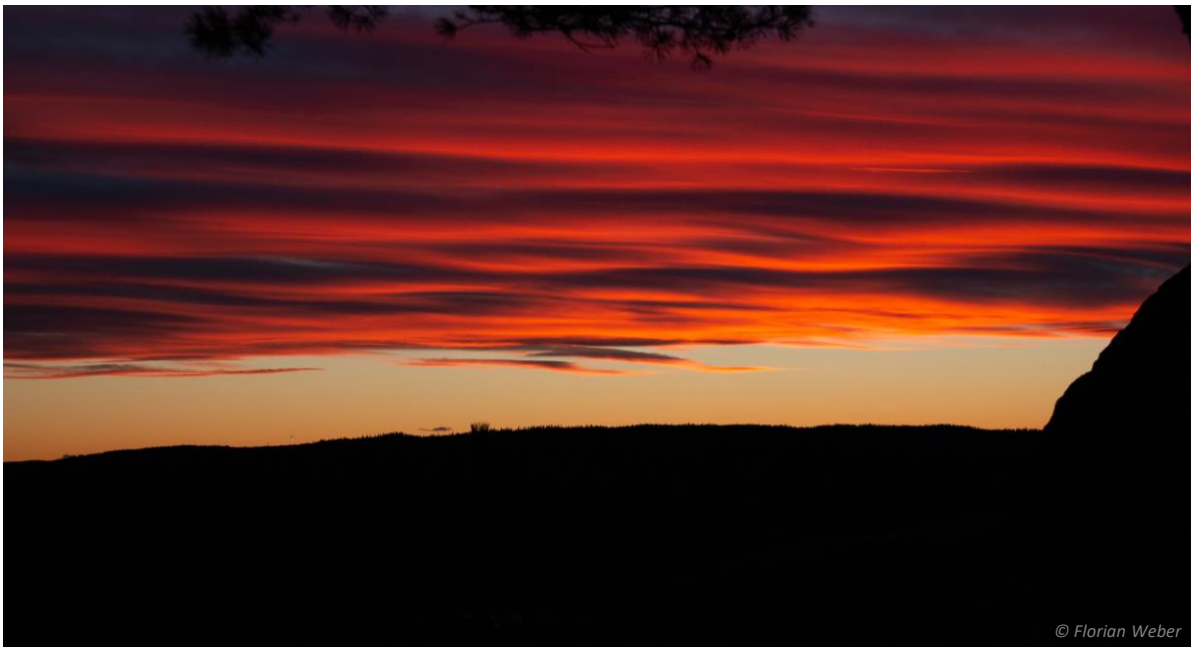
And since we are on the topic of abstracts, we hope to see a strong Nordic and Baltic presence at the World Biomaterials Congress in South Korea in May. This is a good window for us to showcase our collective research competence to the rest of the biomaterials world. WBC2024 is still accepting abstracts until 30 November.

We are also looking for a new student representative to join the ScSB board. Our current student representative Asli has finished her PhD and is now sadly approaching the end of her term on the ScSB board. We need someone to fill in her shoes, so all PhD students ahoy: this is your chance to hop on-board and help us shape the future of biomaterials research in the Nordic and Baltic countries. If you are wondering why you (or your PhD student) should become our new student representative, flip to a few pages forward to read about Asli's time on the ScSB board.

Hanna,
On behalf of the ScSB board

Our president

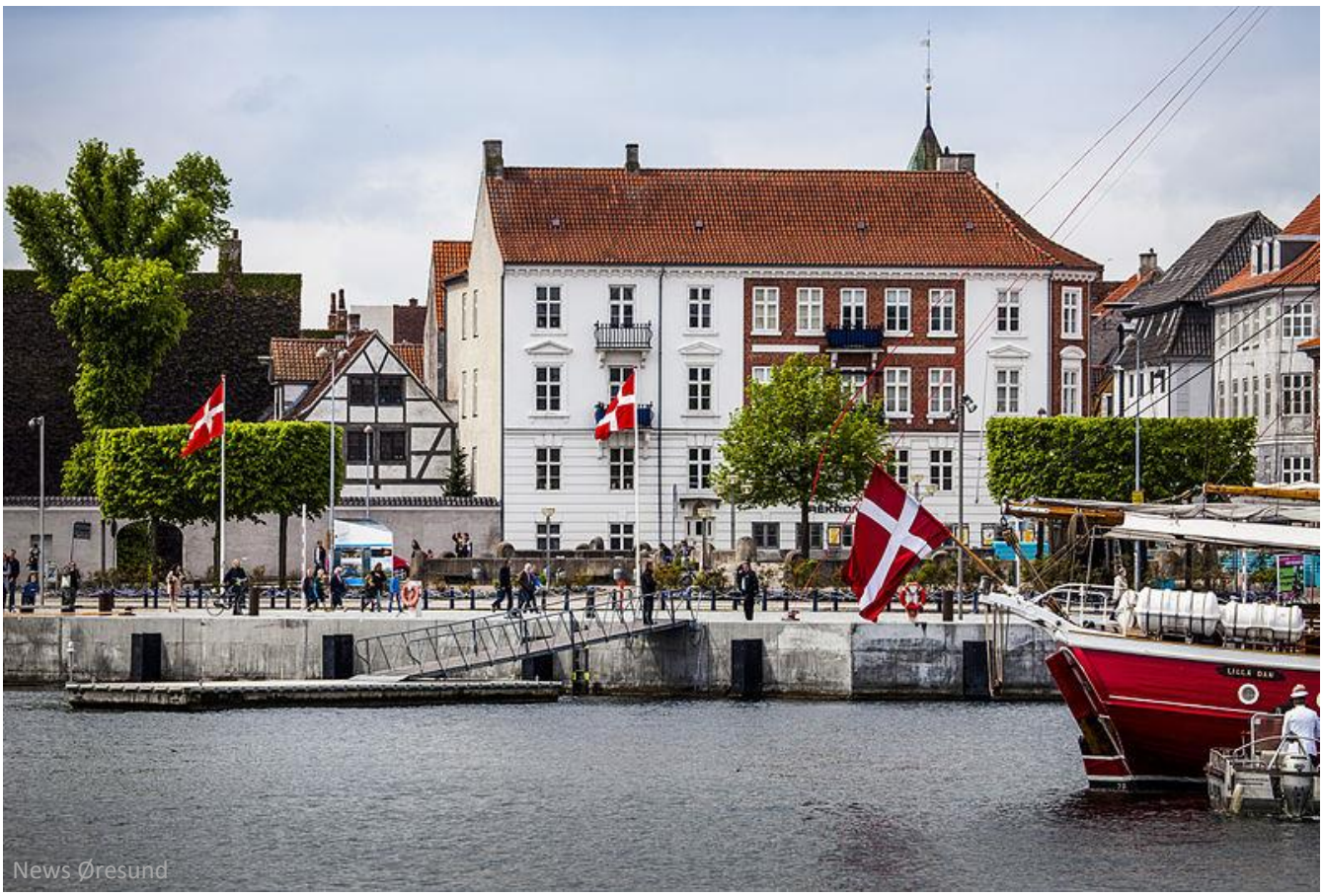
Hanna Tiainen
Associate Professor,
University of Oslo, Norway



Scandinavian Society for Biomaterials

Newsletter
Autumn issue, 2023

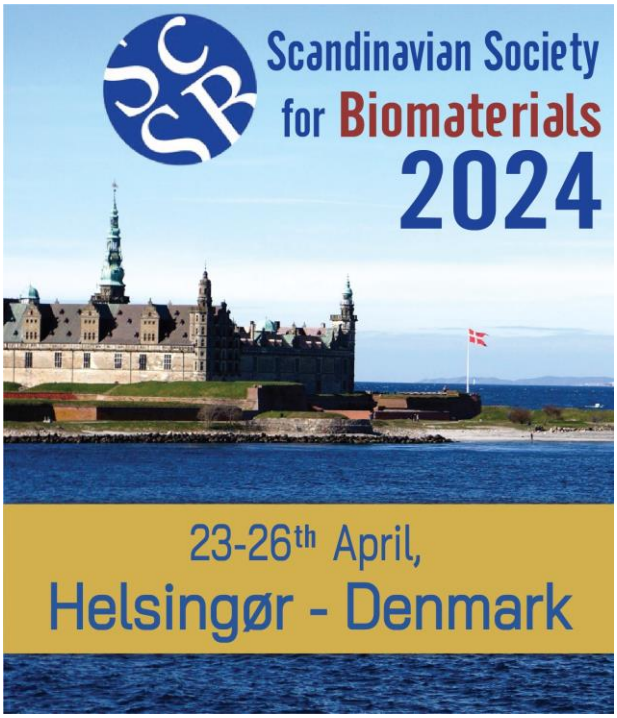
Table of contents



Scandinavian Society for Biomaterials

Newsletter
Autumn issue, 2023

Welcome to ScSB 2024



Welcome to ScSB 2024 at MarienLyst Hotel, located in the Danish historical town of Helsingør, at 45 minutes in the north of Copenhagen, which is well-known as the city of Hamlet's Castle by Shakespeare, listed as UNESCO world heritage site.

The scientific programme for ScSB 2024 will be based on Soft Materials with Dynamics Properties. We will explore soft biomaterials and their versatile applications in medical and biomedical field. Furthermore, in a *"Hygge"* Danish manner, we are organizing social activities that will further strength the value of socializing and networking with our Scandinavian and International scientists.

We look forward to meeting you in Helsingør!

The ScSB 2024 team

DON'T MISS YOUR CHANCE TO JOIN US IN DENMARK!

Make sure you register by 16 November 2023

Visit scsb.eu/scsb2024 for more info

Keynote speakers

Molly Stevens
Imperial College, United Kingdom

Gorka Orive
University of the Basque Country, Spain

Rui Reis
University of Minho, Portugal

Akhilesh Gaharwar
Texas A&M University, USA

Aldo Boccaccini
University of Erlangen-Nuremberg, Germany

Yu Shrike Zhang
Harvard Medical School, USA

We look forward to meeting you in Copenhagen on 23-26 April 2024!

Want to be our new board member?

Asli's term as our student representative is ending, and we are seeking a passionate and dedicated individual to fill her shoes.

Qualifications:

Biomaterials PhD student
Excellent communication and interpersonal skills
Dedicated to serving the ScSB community

Apply by 15/02/2024:

Submit your nomination letter and CV.

For more information:

Read Asli's reflections about their time on the ScSB board.

Join us in shaping the future of ScSB!

Asli Aybike Dogan
Postdoctoral researcher
Novo Nordisk, Denmark

My term on the ScSB board has been a transformative journey that has profoundly shaped my personal and professional growth. I have gained invaluable knowledge, meaningful connections, and a deep sense of belonging to a community passionate about advancing the field of biomaterials.

From the beginning, I was captivated by the welcoming and supportive environment fostered by the board members. The board's harmony and shared passion for biomaterials extended beyond scientific discussions, creating a sense of family that has enriched my overall experience.

My involvement with the ScSB board has enhanced my understanding of biomaterials and their immense potential to revolutionize healthcare. I have contributed to various projects and initiatives, including managing meeting records, providing essential administrative support, and actively maintaining and updating the ScSB website, optimizing its content for visual appeal and user-friendliness. These experiences have allowed me to apply my theoretical knowledge to practical scenarios and gain a deeper understanding of the complexities of running a successful organization.

Beyond my formal responsibilities, I have also found immense value in engaging with the broader biomaterials community. I have actively participated in outreach initiatives to inspire the next generation of biomaterials researchers and foster connections with fellow students and professionals. These interactions have broadened my perspective, honed my communication skills, and instilled a profound sense of personal fulfillment in contributing to the field's growth.

To all students interested in biomaterials, I whole-heartedly encourage you to consider the rewarding experience of joining the ScSB board. The opportunity to connect with like-minded individuals, learn from experienced professionals, and contribute to society's growth is truly invaluable. I firmly believe that the ScSB board offers a unique and enriching opportunity for students interested in biomaterials to expand their knowledge, develop valuable skills, and connect with a network of passionate individuals dedicated to the field. Together, we can continue to advance the field of biomaterials and positively impact the world.

Current board members and roles

Assoc. Prof. Hanna Tiainen, *University of Oslo, Norway*, President
Dr Gissur Örlygsson, *IceTec*, Vice-President, Newsletter responsible
Assoc. Prof. Alireza Dolatshahi-Pirouz, *DTU*, Board Member, Organizer of ScSB 2024
Assoc. Prof. Giuseppe Schiavone, *University of South-Eastern Norway*, Board Member
Dr Miina Björninen, *Tampere University, Finland*, Board Member, Social Media responsible
Assoc. Prof. Natalia Ferraz, *Uppsala University, Sweden,* Board Member, Treasurer
Assoc. Prof. Pablo Pennisi, *Aalborg University, Denmark*, Board Member
Dr Asli Aybike Dogan, *Novo Nordisk*, Student rep., Secretary and Website manager

Please find our contact information here

BRINTER®

PRINTING LIFE ONE LAYER AT A TIME™

Modular design

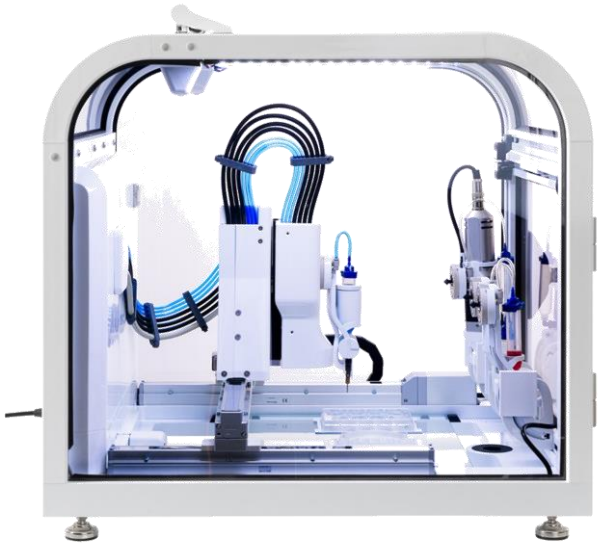
Unlimited bioinks

Ease of Use

Surface of your choice

Clean working

Introducing the **Multifluidics Tool and Droplet Tool** print heads:



The **Multifluidics Tool** enables the triaxial printing of up to three different materials simultaneously, i.e., the core, intermediate, and outer shell, or selective mixing of multiple materials and co-extrusion, enabling numerous combinations of mixing.

The **Droplet Tool print head** utilizes state-of-the-art electromagnetic actuation to precisely control the deposition of material with unprecedented accuracy. Say goodbye to layer misalignment and nozzle clogs, and say hello to intricate, flawless prints. Enables contactless dispensing (drop-on-demand) or contact dispensing of low-viscosity bioinks and media from 20 nL up to 5 µL.

contact@brinter.com

Home

www.brinter.com

Brinter Ltd
Itäinen Pitkäkatu 4A
20520 Turku, Finland

Scandinavian Society for Biomaterials
Newsletter
Autumn issue, 2023

Science opinion

The world of organ-on-chip (OOC) has grown rapidly over the last decade. A landmark study, lung-on-a-chip was published in 2010, and now, there are approximately 30 companies with commercialized OOC devices for various applications. The expectations of OOC to complement or even replace some animal models have risen especially since the FDA Modernization Act 2.0., which allows the use of the best methods for testing drug safety. This means animal experiments are not required if there is a better method for testing in the US – this has given the momentum where the human cell-based OOCs could win many of those races.

While there are several challenges but also impressive advancements in the OOC field, to me it seems that biomaterials science is the area that does not have enough work power or is simply not getting the attention it should have in the OOC development. A good example is the latest MPS World Summit, which is the main gathering of the world OOC community, with only one session in five days for biomaterial advancements. Even though developments in tissue engineering and regenerative medicine do have contributions to OOC development and vice versa, they have significant differences in the requirements of biomaterials.

Roughly, OOC could be summarized as tissue engineering on a microscale for modelling tissues and tissue functions. Another term used for modelling tissues, especially in North America is microphysiological systems (MPS). Stem cell and tissue engineering technologies play an important role in OOCs. Human-based cell sources often better model the human condition in comparison to animal-based models. However, equally important is the environment created for the tiny tissues and the means to monitor and analyse the them - preferably in real-time. For instance, the optical transparency of the chip platform and the tissue construct, usually containing hydrogel, are often required.

Like in tissue engineering, biomaterials can be used as scaffolds for the cells. These are typically hydrogels, of which mechanical, and often biological, properties can closely resemble the extracellular environment. Importantly, they can also be injected into the tiny tissue chambers. Both natural and synthetic polymers are used but, natural polymers seem to be more commonly used owing to their bioactivity. However, animal-derived products, which natural polymers are often derived from, are not ethically sustainable sources. Also, batch variation could be a major problem in cell response or gelation. Tuning the hydrogel for different conditions could be challenging. For example, hydrogel degradation properties may drastically change when the researcher slightly changes the cell type or cell culture medium.

Another important use for biomaterials is the actual chip material. Currently, polydimethylsiloxane (PDMS) is the most used for chips owing to things like easy processability, optical properties and biocompatibility. However, PDMS has considerable limitations including its absorbance of hydrophobic molecules and swelling.

While a lot of practical problem solving is needed, there are so many intriguing possibilities that biomaterials experts could bring to OOC. Oxygen scavenging hydrogels to create hypoxic conditions or magnetic nanoparticles for directing cell alignment are great examples of the vast possibilities. Unlike in tissue engineering, OOC tissues are not implanted into humans and hence the compatibility and safety requirements could differ from that aspect and bring flexibility in innovation. I hope this has sparked some new interest from the biomaterials experts to take on a new challenge in the field of OOCs.

On behalf of my colleague Heidi Haikala from the University of Helsinki, I would like to invite you to the first Helsinki Organ-on-a-Chip meeting held on 11th December this year!

Miina Björninen
ScSB Board Member
Postdoctoral Research Fellow,
Tampere University
miina.bjorninen@tuni.fi

Would you like to submit a column contribution?

We would like to invite anyone among our members to propose their contribution to the 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.

Scandinavian Society for Biomaterials

Newsletter
Autumn issue, 2023

Upcoming events in Scandinavia

Welcome to the 1st Helsinki Organ-on-a-Chip meeting on Monday 11.12.2023

Dear all,

We are excited to announce that registration for the **1st Helsinki Organ-on-a-Chip Meeting**, taking place on **Monday, 11th of December at Biomedicum 1** (Haartmaninkatu 8, Helsinki, Finland), is now open!

Seize the opportunity to listen to and discuss current advances in the field of organ-on-a-chip and alternatives to animal testing. While we hope that as many of you as possible can join us at Biomedicum to facilitate active discussion, we understand that not everyone may be able to attend in person. Therefore, for reach and sustainability reasons, we have also established an opportunity for remote participation.

Please register for the event by completing the registration form.

Registration for the onsite participation is open until **Friday 24 November 23.59 (UTC +2)** and for the online participation until **Friday 8 December 23.59 (UTC +2).**

The preliminary program can be viewed from our website. We also invite you to present your progress in the field through oral or poster presentations. To this end, please complete the abstract submission form by **Friday 24 November 23.59 (UTC +2)**.

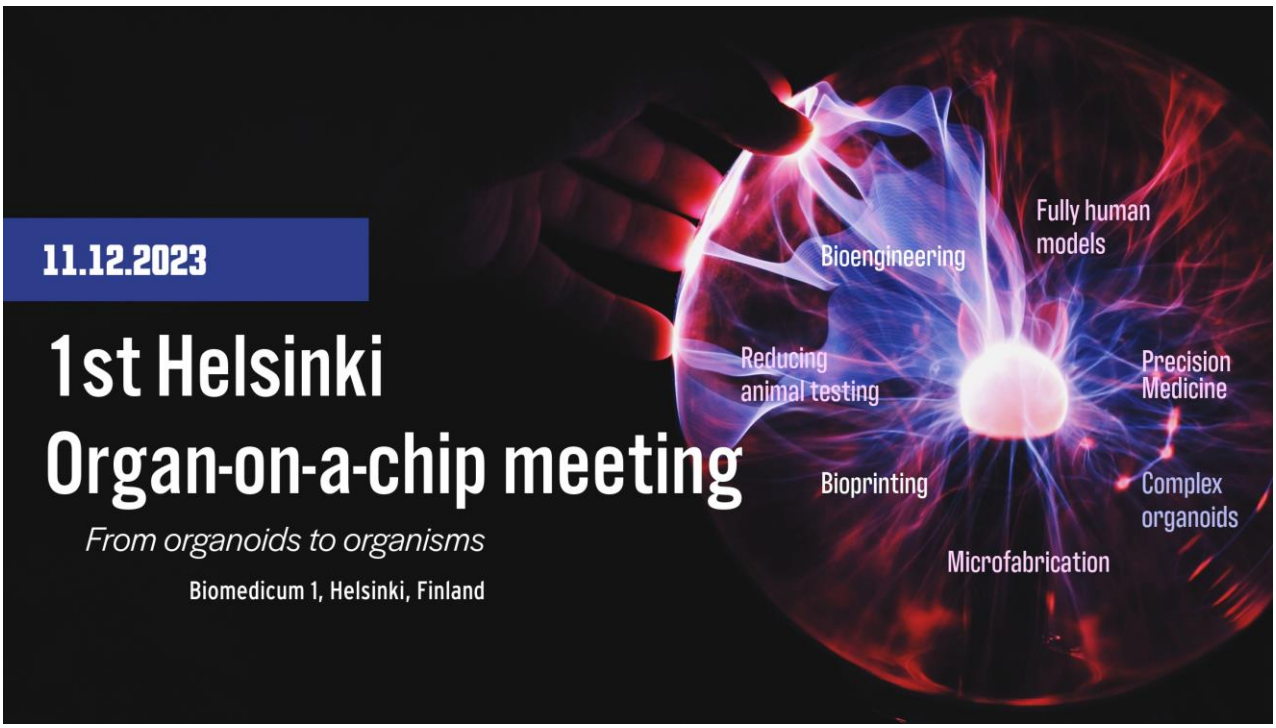
A selected number of abstracts will be chosen for short oral presentations and all are welcome to present posters, pending space availability.

Abstract submitters will be informed of decisions by **1st December 2023**.

Should you have any questions, do not hesitate to contact us at heidi.haikala@helsinki.fi .

Kind regards,

HOOC organizing committee



Career

Here we list upcoming Ph.D. Defenses, open positions as well as other career opportunities. Please feel free to send us relevant information for inclusion in this column!

Open positions

There is a call out for a PhD position in *biophysics and nanofabrication for biomedical research* at the Bionanotechnology and Biomaterials group at the Department of Physics at Norwegian University of Science and Technology in Trondheim. Application deadline**: 15.12.2023**

Special issues

We would like to draw your attention to the following special issues on various biomaterials-related topics:

- Frontiers in Medical Technology on '**Accelerating the Preclinical and Translational development of Medical Devices Using In Vitro Systems**'; (contact Giuseppe Schiavone, guest editor, for 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.

Next webinar: Monday 4th December 2023
Topic: starting your own research group

For info and registration, please visit our website.

Information for advertisers

The newsletter of the ScSB is published 2-4 times per year. It is distributed by e-mail to a highly focussed Scandinavian and international readership, bringing news and reports of interest to our subscribers. Accounts of activities in the participating countries, such as new research projects and new facilities are published, and open positions and PhD defences are announced. There are currently approximately 500 subscribers to the newsletter.

Current advertisement and promotion article prices (€):

One page:	100
Half page:	70
Quarter page:	50

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:

- e-mail list: Sign up here to our e-mail list and don't miss our latest news
- Newsletter : e-mail distribution.

European Society for Biomaterials & National Affiliated Societies

WEBINAR SERIES 2023| National Society Awardees

29 NOVEMBER 2023 | 12:00-13:30 (CEST)

European Society for Biomaterials

CHAIRS: Maria Grazia Raucci[1] and Nicholas Dunne[2]

[1]Institute of Polymers, Composites and Biomaterials – National Research Council (IPCB-CNR)
[2]School of Mechanical and Manufacturing Engineering – Dublin City University

HELENIC SOCIETY FOR BIOMATERIALS

Dimitrios Fotiadis | Carotid Artery Disease: Risk Stratification through Multiscale Modelling and Machine Learning

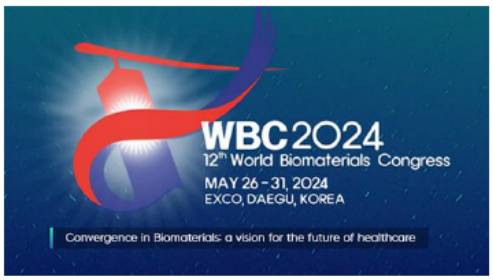
ITALIAN SOCIETY FOR BIOMATERIALS

Clara Mattu and Carlotta Mattioda | Biomaterials and Processes for Sustainable Nanomedicine

SWISS SOCIETY FOR BIOMATERIALS AND REGENERATIVE MEDICINE

Riccardo Rizzo | Development and application of photosensitive bioresins for 3D biofabrication strategies: from volumetric printing to two-photon stereolithography

Link to access the registration form: https://form.jotform.com/231134533595354



SAVE THE DATE