



Bioinspiration, Biomimetics, and Bioreplication XIV (SSN01)

Conference Chair: **Raúl J. Martín-Palma**, Univ. Autónoma de Madrid (Spain)

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Bioinspiration, Biomimetics, and Bioreplication (B-Cubed) arise from the understanding and adaptation of concepts from nature into a great variety of technical and scientific disciplines. These adapted concepts eventually fertilize the development of disruptive approaches and novel devices with tailored functionalities, and serve for multiple systems such as architecture or civil designs, learning from the eco-system (e.g. forest and/or ocean). This field has a remarkably multidisciplinary character, embracing aspects related to physics, chemistry, biology, engineering, materials science, nanotechnology, neuroscience, robotics, arts, humanities, and the social sciences. Among others, key aspects refer to mechanical properties, optical properties, computing and control, design integration, optimization, multifunctionality, multicontrollability, cost effectiveness, sustainability, energy efficiency, ecology, technology adoption, acceptance, and accessibility.

The 14th edition of this conference welcomes contributions from industry, academia, and government research organizations from around the world. Topics of interest cover any relevant scientific or technological aspects of B-Cubed, from theoretical considerations and design, fabrication, and characterization, to practical applications and upscaling.

Topics include, but are not limited to:

- fundamental research (e.g., aerodynamics, adhesion, superhydrophobicity and self-cleaning, nano and microfluidics, rheology, structural colors, optics, camouflage, photonics, locomotion, visual systems)
- materials design and development (e.g., biomaterials, composites, hybrid materials, structural materials, high-strength membranes, ultralightweight structures, self-healing materials, living materials)
- device design (e.g., sensors, multifunctional devices, miniature devices, neuromorphic devices and systems, photonic devices)
- applications (e.g., robotics, architecture, biomedicine and pharmaceuticals, marine uses, communications and informatics, artificial muscles, functional/decorative coatings, construction, transportation, manufacturing)
- energy efficiency, resource efficiency, waste management, and biobeneficial bioinspiration (e.g., autonomous systems, green energy, biodegradability, circular economy and/or agriculture, architecture, civil design).

The conference will include several invited talks, contributed talks, and posters. Abstracts portraying groundbreaking contributions to the broad field of engineered biomimicry will be promoted to invited talks.

A special session devoted to *Living Materials* will be coordinated by Prof. Zoubeida Ounaies. Here, *Living Materials* are a new paradigm in materials science, where ‘living’ here refers to essential life-like functions such as decision making, energy harvesting and self-powering, structural frame, sensing, actuation, self-healing/self-replication, among others. The materials may contain living cells (so-called engineered living materials) or may be completely synthetic. The vision for these materials has evolved from bioinspiration and biomimetics to a synergy of materials and processing that combine to achieve unprecedented control of material properties and functions.

CRAIG F. BOHREN BEST STUDENT PRESENTATION AWARD

The Bioinspiration, Biomimetics, and Bioreplication XIV conference chairs will issue the “Craig F. Bohren Best Student Presentation Award” for the best presentation given by a student. This award is sponsored by an SPIE Fellow. A cash prize will be given to the first, second, and third place winners.

Present your research at SPIE Smart Structures + NDE

Follow the instructions below to develop a successful abstract for submission to a conference and review policies for publication in the Proceedings of SPIE in the SPIE Digital Library. Submissions subject to chair approval.

Important dates

Abstracts due	13 September 2023
Registration opens	Early December 2023
Author notified and program posts online	4 December 2023
Submission system opens for manuscripts and poster PDFs*	22 January 2024
Poster PDFs due for spie.org preview and publication	28 February 2024
Manuscripts due	6 March 2024
Advance upload deadline for oral presentation slides**	22 March 2024

*Contact author or speaker must register prior to uploading

**After this date slides must be uploaded onsite at Speaker Check-In

What you will need to submit

- Presentation title
- Author(s) information
- Speaker biography
- 250-word abstract for technical review
- 100-word summary of abstract for display in the program
- Keywords used in search for your paper (optional)
- Check the individual conference call for papers for additional requirements (for example, some conferences require two- to three-page extended summary for technical review, or have instructions for award competitions)

Note: Only original material should be submitted. Commercial papers, papers with no new research/development content, and papers with proprietary restrictions will not be accepted for presentation.

How to submit your abstract

- Visit the conference page: www.spie.org/SSN01call
- You may submit more than one abstract, but submit each abstract only once
- Submit by clicking the “Submit an Abstract” button on the conference page
- Sign in to your SPIE account, or create an account if you do not already have one
- Follow the steps in the submission wizard until the submission process is completed
- If your submission is related to an application track below, indicate the appropriate track when prompted during the submission process

Application tracks

An application track is a grouping of presentations on a topic of interest across all conferences. During submission of the abstract, the submitting author should select an application track if it is relevant to their research.

- **AI/ML:** Papers that highlight the use of artificial intelligence, machine learning, and deep learning to create and implement intelligent systems across multiple sectors, technologies, and applications
- **Sustainability:** Papers that highlight the use of optics and photonics for renewable energy, natural resource management, sustainable manufacturing, and greenhouse gas mitigation in support of the UN Sustainable Development Goals
- **Translational research:** Papers that highlight the transition from bench to bedside using the latest photonics technologies, tools, and techniques for healthcare
- **3D printing:** Papers that highlight the innovative use of optics and photonics in multidisciplinary applications for multidimensional manufacturing

Submission agreement

All presenting authors, including keynote, invited, oral, and poster presenters, agree to the following conditions by submitting an abstract:

- Register and pay the author registration fee.
- Oral presenters: recording and publication of your onsite presentation (slides synched with voice) for publication in the Proceedings of SPIE in the SPIE Digital Library
- Poster presenters: submit a poster PDF by the advertised due dates for publication in the Proceedings of SPIE in the SPIE Digital Library; poster PDFs may also be published and viewable in the spie.org program during and immediately after the event. Each poster must have a unique presenter; one person may not present more than one poster per session

- Email messaging for the conference series
- Submit a manuscript by the advertised due date for publication in the Proceedings of SPIE in the SPIE Digital Library
- Obtain funding for registration fees, travel, and accommodations
- Attend the meeting
- Present at the scheduled time

Review and program placement

- To ensure a high-quality conference, all submissions will be assessed by the conference chair/editor for technical merit and suitability of content
- Conference chairs/editors reserve the right to reject for presentation any paper that does not meet content or presentation expectations
- Final placement in an oral or poster session is subject to chair discretion

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- Manuscripts, presentations, and posters will be officially published after the event in the SPIE Digital Library
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- Conference chair/editor decision to accept or reject a manuscript, presentation, or poster for publication is final
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The Univ. of Texas
at Arlington (United States)



Hani Naguib
Univ. of Toronto
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