



# 2022 MRS Spring Meeting & Exhibit

May 8-13, 2022 | Honolulu, Hawai'i | #s22mrs

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# CALL FOR PAPERS

Abstract Submission Opens—Thursday, September 23, 2021

Abstract Submission Closes—Thursday, October 28, 2021 (11:59 PM ET)

## Symposium SB09: Genetically-Encoded and Bioinspired Materials Science

Living cells exhibit exquisite control over their molecular networks to detect environmental changes and to execute sophisticated commands. Bio-inspired or bio-integrated engineering of these cellular processes have enabled new avenues to manipulate the form and function of cells and tissue both ex vivo and in vivo. In this symposium, we will actively discuss how the convergence of materials science, synthetic biology, and bioengineering has facilitated the evolution of biomaterials from passive scaffolds to dynamic systems. We will focus on the materials design of genetically-encoded and biomolecular materials and their application in understanding living systems as well as in the development of new treatment concepts and therapeutics.

This symposium will be devoted to both fundamental research and applications of genetically-encoded materials grouped into the following themes: tissue engineering, nanomedicine and bioelectronics. In the first theme on tissue engineering, we will cover topics on bioactive hydrogels, cellular bioprinting, and other materials approaches that incorporate biological matter and/or genetic engineering to assemble complex microenvironments for tissue modeling and regeneration. In the second theme on nanomedicine, we will focus on the molecular assembly of biomolecular (e.g. nucleic acids and proteins), nanoscale (e.g. viruses and exosomes) and cellular material to enable new therapeutic approaches. Finally, the bioelectronics theme will explore topics that include redox and conductive biomolecules as well as genetically-encoded reporters and actuators of cellular activity. This symposium will highlight multidisciplinary efforts to advance biomaterials research towards new approaches and solutions for precision medicine.

### Topics will include:

- Tissue engineering
- In situ tissue chemistry
- Organoids, spheroids and multicellular assembly
- Biomolecular self-assembly
- Nanomaterial-cellular interface
- Biorthogonal chemistry
- Supramolecular chemistry
- Bioelectronics
- Nanomedicine
- Synthetic Biology

### Invited speakers include:

<b>Daniel Anderson</b>	Massachusetts Institute of Technology, USA	<b>Matthias Lutolf</b>	École polytechnique fédérale de Lausann, Switzerland
<b>Kristi Anseth</b>	University of Colorado Boulder, USA	<b>Nikhil Malvankar</b>	Yale University, USA
<b>David Baker</b>	University of Washington, USA	<b>Chad Mirkin</b>	Northwestern, USA
<b>Zhenan Bao</b>	Stanford University, USA	<b>Adrianne Rosales</b>	University of Texas Austin, USA
<b>Warren Chan</b>	University of Toronto, Canada	<b>Tatiana Segur</b>	Duke, USA
<b>Bianxiao Cui</b>	Stanford University, USA	<b>Mikhail Shapiro</b>	California Institute of Technology, USA
<b>Cole Deforest</b>	University of Washington, USA	<b>Mark Skylar-Scott</b>	Stanford University, USA
<b>Paula Hammond</b>	Massachusetts Institute of Technology, USA	<b>Nicole Steinmetz</b>	University of California San Diego, USA
<b>Yamuna Krishnan</b>	University of Chicago, USA	<b>Samuel Stupp</b>	Samuel Stupp, USA
<b>Jennifer Lewis</b>	Harvard, USA	<b>Liangfang Zhang</b>	University of California San Diego, USA
<b>Jia Liu</b>	Harvard University, USA		

### Symposium Organizers

#### Ritchie Chen

Stanford University  
Bioengineering  
USA  
Tel (857) 928-1530, [ritchen@stanford.edu](mailto:ritchen@stanford.edu)

#### Ester Kwon

University of California, San Diego  
Bioengineering  
USA  
Tel (206) 437-2915, [ejkwon@ucsd.edu](mailto:ejkwon@ucsd.edu)

**Polina Anikeeva**

Massachusetts Institute of Technology  
Materials Science and Engineering  
USA  
Tel (617) 258-7348, [anikeeva@mit.edu](mailto:anikeeva@mit.edu)

**Molly Stevens**

Imperial College London  
Materials and Bioengineering  
United Kingdom  
Tel 44-(0)20-7594-6804, [m.stevens@imperial.ac.uk](mailto:m.stevens@imperial.ac.uk)