

2023 / AIChE ANNUAL MEETING

November 5 - 10, 2023
Hyatt Regency Orlando • Orlando, FL

BIOENGINEERING USERS GUIDE



LEADING
THE WAY TO A
SUSTAINABLE
FUTURE



SBE WISHES TO RECOGNIZE THIS YEAR'S AWARD HONOREES

D.I.C. WANG AWARD FOR EXCELLENCE IN BIOCHEMICAL ENGINEERING



HUIMIN ZHAO,
UNIVERSITY OF ILLINOIS

JOIN US FOR THE WANG AWARD LECTURE

SESSION 340 | NOV. 7, 2023 | 6:15 PM
PLAZA INTERNATIONAL BALLROOM G/H

JUNE WISPELWEY BIO LEADERSHIP FELLOWSHIP



MATTHEOS KOFFAS,
RENSSELAER POLYTECHNIC INST.

AWARD TO BE PRESENTED

SESSION 340 | NOVEMBER 7, 2023 | 6:15 PM
PLAZA INTERNATIONAL BALLROOM G/H

CATO T. LAURENCIN REGENERATIVE ENGINEERING SOCIETY FOUNDER'S AWARD



ANTONIOS G. MIKOS,
RICE UNIVERSITY

JOIN US FOR THE LAURENCIN AWARD LECTURE

SESSION 270 | NOVEMBER 6, 2023 | 6:15 PM

JAMES E. BAILEY AWARD



GREGORY N. STEPHANOPOULOS,
MASSACHUSETTS INSTITUTE
OF TECHNOLOGY

JOIN US FOR THE BAILEY AWARD LECTURE

SESSION 382 | NOVEMBER 8, 2023 | 4:30 PM
PLAZA INTERNATIONAL BALLROOM G/H

AWARDS SESSIONS AND RECEPTIONS

MONDAY, NOVEMBER 6

CATO T. LAURENCIN REGENERATIVE ENGINEERING FOUNDER'S AWARD LECTURE SESSION I

6:15 PM - 6:45 PM	AWARD LECTURE: BIOMATERIALS FOR REGENERATIVE ENGINEERING
6:45 PM - 8:30 PM	REGENERATIVE ENGINEERING SOCIETY RECEPTION

TUESDAY, NOVEMBER 7

SBE AWARDS SESSION 9

6:15 PM - 6:25 PM	INTRODUCTION OF AWARDS
6:25 PM - 6:40 PM	JUNE C. WISPELWEY BIO LEADERSHIP FELLOWSHIP
6:40 PM - 6:45 PM	BIOTECHNOLOGY PROGRESS AWARD FOR EXCELLENCE IN BIOLOGICAL ENGINEERING PUBLICATION
6:45 PM - 7:20 PM	D.I.C. WANG AWARD AND LECTURE
7:20 PM - 8:20 PM	SBE HOSPITALITY SUITE

WEDNESDAY, NOVEMBER 8

4:30 PM - 5:30 PM	JAMES E. BAILEY AWARD LECTURE AND PRESENTATION
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SBE conferences cover the bioengineering field.



SBE conferences bring you the latest developments from fundamental and emerging fields of bioengineering. Connect, collaborate, showcase your work, and expand your horizons.



November 15-17, 2023 • Austin, TX • aiche.org/cellfree

This conference will provide a broad overview of the research and industrial applications in the field. This research encompasses a variety of fields and topics — including diagnostics, protein engineering, manufacturing, circuit design, synthetic cells, high-throughput characterization, fundamental research into chemistry of life, and other areas. The program is unique in that it focuses specifically on cell-free systems and all their exciting applications.



December 8-10, 2023 • Berkeley, CA • aiche.org/microbiome

ICME brings together leaders and experts from academia and industry to discuss progress and needs—to develop research, technology, and innovation in microbiome engineering. Microbial engineers at all levels, from trainees to established researchers, are welcomed to participate.



April 21-24 • Boston MA • aiche.org/mRNA

The 2024 mRNA Technology Conference will showcase never before presented research and technology advances from both established leaders and early career professionals providing insights into present, developing, and future mRNA Applications. Topics include rapid advancement of new modalities, ground breaking mRNA applications for broad spectrum mRNA vaccines, mRNA cancer treatments, overcoming mRNA challenges to enable feasible global distribution, storage, and advancing mRNA formulations..



June 24-27, 2024 • Atlanta, GA • aiche.org/seed

SEED is the leading technical event for synthetic biology — covering the field from its foundations to its commercial applications. Gain insight into next-generation development strategies from leaders in research and industry.

SBE's meeting formats encourage close interactions and discussions between researchers of all expertise levels and disciplines, including faculty, industry program leads, students, post-docs, and industry scientists and engineers.

Visit aiche.org/sbe-conferences for the complete list of conferences.

Event details including dates and locations are subject to change; please check website for most current information.

ADD TO YOUR MEMBERSHIP

Established by AIChE, the **Society for Biological Engineering** is a community for engineers and applied scientists integrating biology with engineering.

Be a part of a vibrant community who share your passions.

As a member of SBE, you will enjoy a vast array of opportunities to communicate with leading international engineers, researchers, academics and scientists. Connect for ideas, inspiration, and technical information.



- Gain an international professional network
- Receive discounts on leading biological engineering conferences
- Access first-hand information from academic and industrial experts
- Enjoy SBE's monthly e-newsletter Connections
- Read through a semi-annual BioSupplement to *Chemical Engineering Progress* (CEP)
- Realize a voice in education, employment and technology advancement topics
- Watch webinars featuring cutting edge topics covered by the current experts

Join today!

www.aiche.org/sbe/membership

Managing Board

SBE is governed by a Managing Board of industrial and academic leaders, which sets the course for the society.

Georges Belfort, *Chair*

Omolola Eniola-Adefeso, *Board Representative*

Julianne Holloway, *Board Representative*

Dana Anderson, *Managing Board*

William E. Bentley, *Managing Board*

Timothy Charlebois, *Managing Board*

Brian H. Davison, *Managing Board*

Gregory Frank, *Managing Board*

Michael Jewett, *Managing Board*

Paul Mensah, *Managing Board*

Kristala Jones-Prather, *Managing Board*

June C. Wispelwey, *Managing Board*

ADD TO YOUR MEMBERSHIP



The **FP&BE** division ("Division 15") provides engineers and scientists interested in the field of food, pharmaceuticals, and bioengineering with places to join and to discuss. It also supplies technical publications and information in these fields, including papers at national Institute meetings.

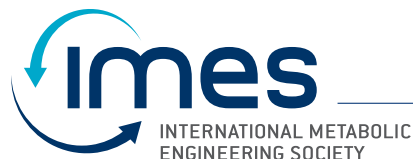
In addition, the division coordinates the Institute's activities in the fields of food, pharmaceuticals, and bioengineering with the activities of other related societies. Further, the FP&BE encourages the focus of biological sciences in chemical engineering curricula and promotes the application of sanitary design principles for process equipment and installations.

More information at: www.aiche.org/fpbe



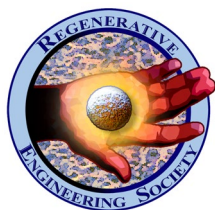
The **Pharmaceutical Discovery, Development and Manufacturing Forum (PD2M)** promotes the interchange of ideas, concepts, know-how, and experiences in Pharmaceutical Discovery, Development and Manufacturing with other groups within and outside of the Institute.

More information at: www.aiche.org/pd2m



The **International Metabolic Engineering Society (IMES)**, seeks to promote and advance metabolic engineering as an enabling science for bio-based production of materials, pharmaceuticals, food ingredients, chemicals and fuels.

More information at: www.aiche.org/imes



The mission of **The Regenerative Engineering Society** is to promote and advance regenerative engineering, a new field defined as the Convergence of Advanced Materials Sciences, Stem Cell Science, Physics, Developmental Biology and Clinical Translation for the regeneration of complex tissues and organ systems.

More information at: www.aiche.org/resociety

FEATURED PROGRAMMING Be sure to attend these conference highlights –

SUNDAY, NOVEMBER 5, 2023

Area Plenary: Bionanotechnology (Invited Talks)

3:30 PM – 6:00 PM

Hyatt Regency Orlando, Bayhill 29

MONDAY, NOVEMBER 6, 2023

Regenerative Engineering Society I

8:00 AM - 10:30 AM

Hyatt Regency Orlando, Regency Ballroom P

Regenerative Engineering Society II

12:30 PM - 3:00 PM

Hyatt Regency Orlando, Regency Ballroom P

Regenerative Engineering Society III

3:30 PM - 6:00 PM

Hyatt Regency Orlando, Regency Ballroom P

Pharmaceutical Discovery, Development, and Manufacturing Forum Awards Ceremony

6:15 PM – 8:00 PM

Hyatt Regency Orlando, Windermere Ballroom X

Cato T. Laurencin Regenerative Engineering Founder's Award Lecture and Reception

6:15 PM – 8:00 PM

Hyatt Regency Orlando, Plaza International Ballroom G/H

Biomaterials for Regenerative Engineering

Antonios G. Mikos, *Rice University*

TUESDAY, NOVEMBER 7, 2023

Charge Neutral Polymer Complexes as Battery Components

Kristala L. J. Prather, *Massachusetts Institute of Technology*

Division Plenary: Food, Pharmaceutical, and Bioengineering Division (Invited Talks)

3:30 PM – 6:00 PM

Hyatt Regency Orlando, Regency Ballroom P

SBE Awards Session

6:15 PM – 7:20 PM

Hyatt Regency Orlando, Plaza International Ballroom G/H
Synthetic Biology 2.0: the Dawn of a New Era
Huimin Zhao, *University of Illinois*

SBE's Hospitality Suite, Sponsored by Pfizer

7:20 PM – 8:20 PM

Hyatt Regency Orlando,
Plaza International Ballroom G/H



WEDNESDAY, NOVEMBER 8, 2023

Plenary Session: Pharmaceutical Discovery, Development and Manufacturing Forum

8:00 AM – 10:30 AM

Hyatt Regency Orlando, Regency Ballroom Q

John M. Prausnitz AIChE Institute Award Lecture

11:15 AM – 12:15 PM

Hyatt Regency Orlando, Plaza International Ballroom G/H
Translation of Biomedical Microtechnologies from the Lab to the Clinic
Mark R. Prausnitz, *Georgia Institute of Technology*

SBE's James E. Bailey Award Lecture

4:30 PM – 5:30 PM

Hyatt Regency Orlando, Plaza International Ballroom G/H
Can Biotechnology Deliver Cost Effective Fuels with Reduced Carbon Footprint?
Gregory Stephanopoulos, *Massachusetts Institute of Technology*

BIOENGINEERING PROGRAM GRID

Property Key
Hyatt Regency Orlando = HRO

TIME	SESSION #	SESSION	PROPERTY	ROOM
SUNDAY, NOVEMBER 5				
3:00 PM	3	Area Plenary: Bionanotechnology	Hyatt	Bayhill 29
3:30 PM	180	Bioprocess Design and Scale-Up	Hyatt	Celebration 15
3:30 PM	441	Biomaterials in Industry and the Clinic	Hyatt	Celebration 9
3:30 PM	468	Computational and Analytical Tools for Efficient Biomanufacturing	Hyatt	Celebration 1
3:30 PM	469	Biomaterials Science and Engineering: Faculty Candidates	Hyatt	Celebration 5
3:30 PM	601	Modification, Functionalization, and Processing of Biomaterials	Hyatt	Celebration 3
3:30 PM	618	Systems and Quantitative Biology: Disease Mechanisms, Biomarkers, and Therapies I	Hyatt	Celebration 4
MONDAY, NOVEMBER 6				
8:00 AM	10	Regenerative Engineering Society I	Hyatt	Regency Ballroom P
8:00 AM	105	Advances in Algae Cultivation, Conversion and Products	Hyatt	Regency Ballroom T
8:00 AM	250	Biorenewable Resource Engineering for Food, Health, and Environmental Applications	Hyatt	Celebration 15
8:00 AM	251	Advanced Separations Processes in Bioprocessing and Biomaterials	Hyatt	Discovery 45
8:00 AM	253	Efficient Processing of Lignin to Bioproducts and Biofuels	Hyatt	Challenger 38/39
8:00 AM	313	Mixing in Biotechnology, Food & Beverage, and Agriculture Sectors	Hyatt	Bayhill 31
8:00 AM	443	Biosensors for Proteins	Hyatt	Celebration 2
8:00 AM	495	Biomaterials Science and Engineering: Faculty Candidates II	Hyatt	Celebration 9
8:00 AM	511	Engineering Cells, Culture Conditions, and Cell-Free Production for Desired Biomanufacturing Targets	Hyatt	Celebration 1
8:00 AM	563	Control Strategies for Biopharmaceutical and Pharmaceutical Process Design and Development	Hyatt	Celebration 6
8:00 AM	627	Systems and Quantitative Biology: Disease Mechanisms, Biomarkers, and Therapies II	Hyatt	Celebration 4
8:00 AM	657	Process Models for Drug Substance, Drug Product, and Biopharmaceuticals, Part I	Hyatt	Celebration 8
12:30 PM	29	Leaders in Biomaterials (Invited Talks)	Hyatt	Celebration 9
12:30 PM	110	Faculty Candidate Session: Food, Pharmaceuticals, and Bioengineering	Hyatt	Celebration 15
12:30 PM	111	Advances in Biofuels Production and Alternative Fuels I	Hyatt	Challenger 38/39
12:30 PM	114	Regenerative Engineering Society II	Hyatt	Regency Ballroom P
12:30 PM	405	Biosensors for Nucleic Acids	Hyatt	Celebration 2
12:30 PM	634	Scaling Up: Approaches for Streamlining Biomanufacturing Time to and Output of Product	Hyatt	Celebration 1
12:30 PM	635	Systems and Quantitative Biology: Integrative Omics Analysis	Hyatt	Celebration 4
3:30 PM	27	Poster Session: Bioengineering	Hyatt	Regency Ballroom R/S

This program is as of October 1, 2023. An up-to-date program is available at [aiche.org/annual](https://www.aiche.org/annual) and in the AIChEvents app.

BIOENGINEERING PROGRAM GRID

TIME	SESSION #	SESSION	PROPERTY	ROOM
3:30 PM	28	Poster Session: Engineering Fundamentals in Life Science	Hyatt	Regency Ballroom R/S
3:30 PM	29	Poster Session: Food and Bioprocess Engineering	Hyatt	Regency Ballroom R/S
3:30 PM	198	Poster Session: Pharmaceutical Discovery Development and Manufacturing (PD2M)	Hyatt	Regency Ballroom R/S
3:30 PM	200	Advances in Biofuels Production and Alternative Fuels II	Hyatt	Challenger 38/39
3:30 PM	203	Regenerative Engineering Society III	Hyatt	Regency Ballroom P
3:30 PM	204	University/Industry Partnerships in Bioseparations (Invited Talks)	Hyatt	Coral Spring I/II
3:30 PM	265	Biomaterials for Drug Delivery I: Particle Platform	Hyatt	Celebration 12
6:15 PM	270	Cato T. Laurencin Regenerative Engineering Founder's Award Celebration and Reception	Hyatt	Plaza International Ballroom G/H
TUESDAY, NOVEMBER 7				
8:00 AM	370	Bionanotechnology Graduate Student Award Session	Hyatt	Discovery 44
8:00 AM	568	Hydrogel Biomaterials I: Cell-Instructive Platforms	Hyatt	Celebration 12
8:00 AM	614	Metabolic Engineering in Non-Traditional Hosts	Hyatt	Celebration 1
8:00 AM	623	New Approaches for Gene and Protein Regulation: Cell-Free Systems and DNA Assembly Platforms	Hyatt	Celebration 2
8:00 AM	660	Process Models for Drug Substance, Drug Product, and Biopharmaceuticals Part 2	Hyatt	Celebration 7
11:15 AM	290	Andreas Acrivos Award for Professional Progress in Chemical Engineering Lecture	Hyatt	Plaza International Ballroom G/H
12:30 PM	138	Biomanufacturing of Food and Bioproducts	Hyatt	Celebration 4
12:30 PM	141	Bionanotechnology for Gene and Drug Delivery	Hyatt	Discovery 44
12:30 PM	218	Characterization of Biomaterials and Biological Systems	Hyatt	Plaza International Ballroom I
12:30 PM	221	Biological Conversions and Processes for Renewable Feedstocks	Hyatt	Regency Ballroom T
12:30 PM	283	Faculty Candidate Session: Food, Pharmaceuticals, and Bioengineering II	Hyatt	Celebration 15
12:30 PM	416	Modeling of Lipid Membranes and Membrane Proteins	Hyatt	Celebration 8
12:30 PM	579	Metabolic Engineering- Applications in Health	Hyatt	Celebration 1
12:30 PM	580	Hydrogel Biomaterials II: Emerging Applications	Hyatt	Celebration 12
12:30 PM	604	Microfluidic Cell Culture Platforms and 1Bioreactors	Hyatt	Celebration 3
1:00 PM	337	Meet the Industry Candidates Poster Session: Process and Product Development and Manufacturing in Chemicals and Pharmaceuticals	Hyatt	Regency Ballroom R/S
3:30 PM	66	Division Plenary: Food, Pharmaceutical, and Bioengineering Division (Invited Talks)	Hyatt	Regency Ballroom P
3:30 PM	229	Bionanotechnology for Gene and Drug Delivery II	Hyatt	Discovery 44
6:15 PM	340	D.I.C. Wang Award Lecture	PCC	Plaza International Ballroom G/H

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BIOENGINEERING PROGRAM GRID

TIME	SESSION #	SESSION	PROPERTY	ROOM
WEDNESDAY, NOVEMBER 8				
8:00 AM	75	Plenary Session: Pharmaceutical Discovery, Development and Manufacturing Forum (Invited Talks)	Hyatt	Regeny Ballroom Q
8:00 AM	341	Biosensors for Cells	Hyatt	Celebration 1
8:00 AM	342	Novel Process Technologies in Food and Biomanufacturing	Hyatt	Celebration 15
8:00 AM	426	Nanostructured Biomimetic and Biohybrid Materials and Devices	Hyatt	Discovery 44
8:00 AM	502	Decoding the Cell Microenvironment: Chemical and Physical Signaling and Cellular Responses	Hyatt	Celebration 3
8:00 AM	605	Metabolic Engineering II- General Topics	Hyatt	Celebration 2
12:30 PM	236	Biomolecular Engineering I- Discovery, Design, and Applications of Novel CRISPR Tools	Hyatt	Celebration 3
12:30 PM	299	Bionanotechnology for Sensors and Imaging	Hyatt	Discover 44
12:30 PM	387	Synthetic Biology and Microbiome in Agriculture, Food, and Health	Hyatt	Celebration 15
12:30 PM	389	Process Innovation in Bioseparations	Hyatt	Coral Spring I/II
12:30 PM	458	Next-Gen Manufacturing in Pharma, Food, and Bioprocessing 1	Hyatt	Bayhill 32
12:30 PM	519	Biomaterials: Graduate Student Award Session and IDEAL Discussion Panel	Hyatt	Celebration 5
12:30 PM	553	Engineering Protein Therapeutics	Hyatt	Celebration 1
12:30 PM	639	Systems and Quantitative Biology: Metabolic Modeling	Hyatt	Celebration 2
3:30 PM	304	Advances in Bioseparations	Hyatt	Coral Spring I/II
3:30 PM	351	Biomaterials for Drug Delivery III Hydrogel Platform	Hyatt	Celebration 12
3:30 PM	352	Bionanotechnology for Sensors and Imaging II	Hyatt	Discovery 44
3:30 PM	394	Biomolecular Engineering II: The design, modulation, and analysis of engineered proteins and peptides for therapeutic applications	Hyatt	Celebration 4
3:30 PM	395	Biomaterials I: Building Blocks for Novel Functionalities	Hyatt	Celebration 5
3:30 PM	460	Cell and Tissue Engineering: Tissue Engineered Models	Hyatt	Celebration 15
3:30 PM	596	Metabolic Engineering I- Biosynthesis	Hyatt	Celebration 2
3:30 PM	648	Systems and Quantitative Biology: Modeling Traits. Regulation, and Interactions	Hyatt	Celebration 3
4:30 PM	382	SBE's James E. Bailey Award Lecture	Hyatt	Plaza International Ballroom G/H

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BIOENGINEERING PROGRAM GRID

TIME	SESSION #	SESSION	PROPERTY	ROOM
THURSDAY, NOVEMBER 9				
8:00 AM	172	Advances in Biocatalysts and Biocatalytic Processes	Hyatt	Celebration 1
8:00 AM	306	Biomolecular Engineering III: The Design, Engineering, and Study of Therapeutics, and Their Disease Targets	Hyatt	Celebration 4
8:00 AM	396	Biopolymers	Hyatt	Celebration 9
8:00 AM	436	Biomaterials II: Applications in Healthcare and Beyond	Hyatt	Celebration 13
8:00 AM	485	Advances in New Modalities, Discovery, and Production	Hyatt	Celebration 7
8:00 AM	507	Integrated Biorefineries: Technologies and TEA/LCA I	Hyatt	Bayhill 29
8:00 AM	629	New Methods in Protein Engineering	Hyatt	Celebration 2
8:00 AM	645	Systems and Quantitative Biology: Microbial Communities	Hyatt	Celebration 3
12:30 PM	246	Biobased and Bioderived Processes for Value Added Chemicals and Advanced Materials	Hyatt	Celebration 1
12:30 PM	247	Biomaterial Scaffolds for Tissue Engineering	Hyatt	Celebration 13
12:30 PM	309	Biocatalysis and Enzyme Engineering	Hyatt	Celebration 2
12:30 PM	437	Cell and Tissue Engineering: Engineering the Immune Response	Hyatt	Celebration 4
12:30 PM	526	Integrated Biorefineries: Technologies and TEA/LCA II	Hyatt	Bayhill 29
12:30 PM	704	Thermal and Thermocatalytic Biomass Conversion and Biorefining II	Hyatt	Florida Ballroom A
3:30 PM	490	Cellular Engineering Approaches to Modulate Gene Expression and Functions for Biomedical Applications	Hyatt	Celebration 2
3:30 PM	575	Machine Learning Based Protein Engineering	Hyatt	Celebration 1
3:30 PM	649	Pharma 4.0 (Advanced Controls, Process Automation, Data Analytics, Etc.): Processes and Applications	Hyatt	Celebration 8

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