



OCTOBER 28 - NOVEMBER 2 • PITTSBURGH, PA

## 2018 AIChE® ANNUAL MEETING: BIOENGINEERING SESSIONS

The 2018 AIChE Annual Meeting is your once-a-year opportunity to gain the latest information, network, uncover new ways to innovate, and grow professionally. Join the below sessions and deepen your knowledge in many areas of bioengineering.

### Property Key

**DLCC** = David L. Lawrence Convention Center

**Omni** = Omni William Penn Hotel

**Westin** = Westin Convention Center

| SATURDAY • OCTOBER 27 |        |   |                      |                           |
|-----------------------|--------|---|----------------------|---------------------------|
| TIME                  | BOOK # | TITLE   | PROPERTY             | ROOM                      |
| 2:45 PM               | EVENT  | Chemical Engineering in Pharmaceuticals   | DLCC                 | 306/307                   |
| SUNDAY • OCTOBER 28   |        |   |                      |                           |
| 3:30 PM               | 9      | 3D Printing I   | DLCC                 | 333                       |
| 3:30 PM               | 15     | Automation and High-Throughput Technologies for Pharmaceutical Discovery and Development            | Westin               | Fayette                   |
| 3:30 PM               | 16     | Biobased Intermediates and Biomaterials   | DLCC                 | 335                       |
| 3:30 PM               | 17     | Biobased Materials: Design and Application  | Westin               | Westmoreland West-Central |
| 3:30 PM               | 18     | Bioinspired Membranes and Membrane Processes  | DLCC                 | 302                       |
| 3:30 PM               | 19     | Biomaterials for in vitro Tissue Models and Improved Therapeutic Strategies                         | DLCC                 | 331                       |
| 3:30 PM               | 20     | Bioplastics, Biocomposites and Value-Added Uses of Biofuel Coproducts for Sustainable Manufacturing | DLCC                 | 325                       |
| 3:30 PM               | 27     | Feedstock Logistics for Biorefineries   | DLCC                 | 316                       |
| 3:30 PM               | 33     | Hydrogel Biomaterials   | DLCC                 | 328                       |
| 3:30 PM               | 34     | Innovations in Pharmaceutical Discovery, Development, and Manufacturing                             | Westin               | Washington                |
| 3:30 PM               | 36     | Microbiomes and Metabolomes in Food, Health, and Bioprocessing                                      | Westin               | Westmoreland East         |
| 3:30 PM               | 39     | Nanostructured Biomimetic and Biohybrid Materials and Devices                                       | DLCC                 | 311                       |
| 3:30 PM               | 48     | Reactor Engineering for Biomass Feedstocks  | DLCC                 | 317                       |
| 8:00 PM               | EVENT  | University of Pennsylvania Chemical and Biomolecular Engineering Department Dessert Reception       | Heinz History Center | Heinz History Center      |
| MONDAY • OCTOBER 29   |        |   |                      |                           |
| 8:00 AM               | 63     | Biobased Fuels and Chemicals: Biosynthetic Pathway Engineering & Enzymatic Conversion               | Westin               | Westmoreland West-Central |
| 8:00 AM               | 64     | Biomaterials  | DLCC                 | 311                       |
| 8:00 AM               | 65     | Biomaterials and Life Science Engineering: Faculty Candidates                                       | DLCC                 | 328                       |

*\*Information as of September 27, 2018 and subject to change*



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**MONDAY • OCTOBER 29 (continued)**

| TIME     | BOOK # | TITLE   | PROPERTY | ROOM                        |
|----------|--------|---|----------|-----------------------------|
| 8:00 AM  | 56     | 3D Printing II  | DLCC     | 333                         |
| 8:00 AM  | 66     | Biotechnology & Materials U.G. Research Session (Invited Talks)                               | DLCC     | 302                         |
| 8:00 AM  | 81     | Forum Plenary: Pharmaceutical Discovery, Development, and Manufacturing Forum (Invited Talks) | Westin   | Allegheny Grand Ballroom II |
| 8:00 AM  | 96     | Nanomaterials for Biological Application I  | DLCC     | 412                         |
| 8:00 AM  | 102    | Reaction Engineering in Pharmaceuticals and Fine Chemicals                                    | DLCC     | 404                         |
| 8:00 AM  | 104    | Stem Cell and Tissue Engineering I: Engineering Cells   | Westin   | Butler                      |
| 8:00 AM  | 107    | Topical Plenary: Microbial Interaction with Biointerfaces (Invited Talks)                     | Westin   | Pennsylvania East           |
| 10:00 AM | 111    | Microbes at Biomedical Interfaces Undergraduate Poster Competition                            | DLCC     | Exhibit Hall B              |
| 10:00 AM | 116    | Undergraduate Student Poster Session: Food, Pharmaceutical, and Biotechnology                 | DLCC     | Exhibit Hall B              |
| 11:15 AM | 121    | 2018 Danckwerts Lecture   | Westin   | Allegheny Grand Ballroom II |
| 12:30 PM | 125    | Advances in Algal Biorefineries I   | DLCC     | 315                         |
| 12:30 PM | 127    | Advances in Protein Expression, Post-Translational Modification and Biomanufacturing          | Westin   | Westmoreland East           |
| 12:30 PM | 131    | Area Plenary: Leaders in Biomaterials (Invited Talks)   | DLCC     | 328                         |
| 12:30 PM | 132    | Area Plenary: Sustainable Biorefineries (Invited Talks)                                       | DLCC     | 316                         |
| 12:30 PM | 134    | Biosensors, Biodiagnosis and Bioprocess Monitoring: Materials and Devices                     | Westin   | Westmoreland West-Central   |
| 12:30 PM | 139    | Computational Solid State Pharmaceuticals   | Westin   | Washington                  |
| 12:30 PM | 142    | Developments in Petroleum and Biofuels Refining Technologies                                  | DLCC     | 323                         |
| 12:30 PM | 144    | Efficient Processing of Lignin to Bioproducts and Biofuels I                                  | DLCC     | 318                         |
| 12:30 PM | 168    | Nanomaterials for Biological Application II   | DLCC     | 412                         |
| 12:30 PM | 171    | Pharmaceutical Process Development and Pilot Plants   | DLCC     | 336                         |
| 12:30 PM | 176    | Stem Cell and Tissue Engineering II: Engineering Tissue                                       | Westin   | Butler                      |
| 12:30 PM | 178    | Topical Plenary: Advances in Biosensing (Invited Talks)                                       | Westin   | Pennsylvania West           |
| 12:30 PM | 314    | Advancements in Materials Science for Powder Handling in Pharmaceutical Process Development   | Westin   | Cambria                     |
| 3:30 PM  | 204    | Advances in Algal Biorefineries II  | DLCC     | 315                         |
| 3:30 PM  | 216    | Efficient Processing of Lignin to Bioproducts and Biofuels II                                 | DLCC     | 318                         |
| 3:30 PM  | 222    | Graduate Student Competition in Microbiointerface Research                                    | Westin   | Pennsylvania East           |
| 3:30 PM  | 188    | Poster Session: Bioengineering  | DLCC     | Exhibit Hall B              |
| 3:30 PM  | 191    | Poster Session: Food and Bioprocess Engineering   | DLCC     | Exhibit Hall B              |
| 3:30 PM  | 194    | Poster Session: Materials Engineering & Sciences (08B - Biomaterials)                         | DLCC     | Exhibit Hall B              |
| 3:30 PM  | 199    | Poster Session: Novel Products from Forest and Plant Biomass                                  | DLCC     | Exhibit Hall B              |
| 3:30 PM  | 202    | 3D Printing of Composites   | DLCC     | 333                         |
| 3:30 PM  | 200    | Poster Session: Pharmaceutical  | DLCC     | Exhibit Hall B              |
| 6:30 PM  | 250    | Pharmaceutical Discovery, Development, and Manufacturing Forum Awards Ceremony                | Westin   | Allegheny Grand Ballroom II |

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| MONDAY • OCTOBER 29 (continued) |        |  |          |                            |
|---------------------------------|--------|--|----------|----------------------------|
| TIME                            | BOOK # | TITLE  | PROPERTY | ROOM                       |
| 8:00 AM                         | 68     | Cell Culture Engineering & Process Design  | Westin   | Fayette                    |
| 8:00 AM                         | 69     | Cells, Organs, and Labs on a Chip I: Modeling Cell Interactions                                      | Westin   | Cambria                    |
| 8:00 AM                         | 70     | Cellulose-Based Materials I  | DLCC     | 325                        |
| 12:30 PM                        | 123    | 3D Printing Keynote (Invited Talks)  | DLCC     | 333                        |
| 12:30 PM                        | 137    | Cellulose Based Materials II   | DLCC     | 325                        |
| 6:00 PM                         | 249    | D.I.C. Wang Award Lecture  | Westin   | Allegheny Grand Ballroom I |
| TUESDAY • OCTOBER 30            |        |  |          |                            |
| 8:00 AM                         | 252    | Advancements in Polymers and Amorphous Solids for Pharmaceutical Process Development                 | Westin   | Fayette                    |
| 8:00 AM                         | 255    | Advances in Membrane Technologies for Food and Bioprocessing   | Westin   | Westmoreland East          |
| 8:00 AM                         | 256    | Advances in Metabolic Engineering: Biosynthetic Pathway Engineering and Enzymatic Conversion         | Westin   | Westmoreland West-Central  |
| 8:00 AM                         | 259    | Alternative Fuels including Biofuels, Hydrogen, Renewable Hydrogen, and Syngas                       | DLCC     | 324                        |
| 8:00 AM                         | 261    | Area Plenary: Bionanotechnology (Invited Talks)  | DLCC     | 311                        |
| 8:00 AM                         | 263    | Biofuels Production: Design, Simulation, and Economic Analysis                                       | DLCC     | 316                        |
| 8:00 AM                         | 264    | Biomaterials for Drug Delivery   | DLCC     | 328                        |
| 8:00 AM                         | 265    | Biosensors, Biodiagnosis and Bioprocess Monitoring: Cell and Protein Detection                       | Westin   | Cambria                    |
| 8:00 AM                         | 266    | Chemical Modifications and Processing of Biomaterials  | DLCC     | 325                        |
| 8:00 AM                         | 279    | Electroactive Biomaterials to Sense and Control Microbial Infections                                 | Westin   | Pennsylvania East          |
| 8:00 AM                         | 281    | Emerging Technologies in Pharmaceutical Research and Manufacturing                                   | Westin   | Washington                 |
| 8:00 AM                         | 282    | Engineering the Tissue and Cell Microenvironment I: Development and Disease                          | Westin   | Butler                     |
| 8:00 AM                         | 289    | In Honor of Professor D. Ramkrishna's Contributions to Biopharmaceutical Industry (Invited Talks)    | Westin   | Somerset                   |
| 8:00 AM                         | 292    | Materials Chemistry for Biosensors   | Westin   | Pennsylvania West          |
| 8:00 AM                         | 297    | Numerical Analyses of Mixing Processes in Bioreactors  | DLCC     | 334                        |
| 8:00 AM                         | 299    | Photochemical Reaction Engineering in Fine Chemical and Pharmaceutical Industries                    | DLCC     | 404                        |
| 12:30 PM                        | 319    | Biocolloids, Biomolecules, and Nanomaterials of Medical Relevance                                    | Westin   | Pennsylvania East          |
| 12:30 PM                        | 320    | Biomolecular Engineering   | Westin   | Cambria                    |
| 12:30 PM                        | 321    | Biosensor Devices: Applications I  | Westin   | Pennsylvania West          |
| 12:30 PM                        | 330    | Crystallization of Pharmaceutical and Biological Molecules   | DLCC     | 302                        |
| 12:30 PM                        | 337    | Engineering the Tissue and Cell Microenvironment II: Directing Cell Behavior with Extracellular Cues | Westin   | Butler                     |
| 12:30 PM                        | 338    | Environmental Implications of Nanomaterials: Biological Interactions                                 | DLCC     | 309                        |
| 12:30 PM                        | 346    | Life Cycle Analysis of Bio-Based Fuels, Energy, and Chemicals  | DLCC     | 316                        |

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| TUESDAY • OCTOBER 30 (continued) |        |  |          |                             |
|----------------------------------|--------|--|----------|-----------------------------|
| TIME                             | BOOK # | TITLE  | PROPERTY | ROOM                        |
| 3:00 PM                          | EVENT  | Meet SSPC: the SFI Pharmaceutical Research Centre  | DLCC     | 338                         |
| 3:30 PM                          | 386    | Biomaterials: Graduate Student Award Session   | DLCC     | 328                         |
| 3:30 PM                          | 387    | Bionanotechnology Graduate Student Award Session   | DLCC     | 310                         |
| 3:30 PM                          | 388    | Biosensor Devices: Applications II   | Westin   | Pennsylvania West           |
| 3:30 PM                          | 395    | Developments in Biorefineries  | DLCC     | 316                         |
| 3:30 PM                          | 398    | Division Plenary: Food, Pharmaceutical, and Bioengineering Division (Invited Talks)                                | Westin   | Allegheny Grand Ballroom II |
| 3:30 PM                          | 399    | Electrocatalysis and Photoelectrocatalysis VI: Biomass Processing and Ammonia Synthesis                            | DLCC     | 401                         |
| 3:30 PM                          | 420    | Plenary Session: Multifunctional Biomaterials Addressing Current Healthcare Challenges (Invited Talks)             | Westin   | Pennsylvania East           |
| 3:30 PM                          | 424    | Separation Processes in Biorefineries  | DLCC     | 324                         |
| 3:30 PM                          | 426    | Thermodynamics of Biomolecular Folding and Assembly  | DLCC     | 307                         |
| 3:30 PM                          | 381    | Advancements in Particle Engineering for Crystallization in Pharmaceutical Process Development                     | Westin   | Fayette                     |
| 6:00 PM                          | EVENT  | 8B Biomaterials Business Meeting   | DLCC     | 328                         |
| 6:00 PM                          | 433    | SBE's James E. Bailey Award Lecture  | Westin   | Allegheny Grand Ballroom I  |
| WEDNESDAY • OCTOBER 31           |        |  |          |                             |
| 8:00 AM                          | 437    | Advances in Biocatalysis and Biosynthesis  | Westin   | Westmoreland West-Central   |
| 8:00 AM                          | 438    | Advances in Bioseparations   | DLCC     | 301                         |
| 8:00 AM                          | 444    | Biomolecules at Interfaces I   | Omni     | Conference Center B         |
| 8:00 AM                          | 447    | Cell Biomechanics, Adhesion and Migration I: Implications in Cancer  | Westin   | Butler                      |
| 8:00 AM                          | 448    | Computational Catalysis IV: Biomass Chemistry and Chemicals Production   | DLCC     | 402                         |
| 8:00 AM                          | 452    | Drug Delivery I: Biologics   | Westin   | Cambria                     |
| 8:00 AM                          | 454    | Enabling Technologies for Immunotherapy Development  | Westin   | Pennsylvania East           |
| 8:00 AM                          | 460    | Hydrodynamics of Biological Systems  | Omni     | Frick                       |
| 8:00 AM                          | 466    | Mixing Scale-up/Scale-down Issues in Pharmaceutical and Biopharmaceuticals Processes                               | DLCC     | 334                         |
| 8:00 AM                          | 470    | Multivariate Experimentation and Modeling for Pharmaceutical Products and Processes                                | Westin   | Fayette                     |
| 8:00 AM                          | 473    | Panel: Pharmaceutical Engineering Challenges As Approached By Chemical Engineers Outside of Pharma (Invited Talks) | Westin   | Somerset                    |
| 8:00 AM                          | 475    | Reaction Engineering for Biomass Conversion I  | DLCC     | 401                         |
| 8:00 AM                          | 482    | USA-China Progress in Biomass Conversion Technologies I  | DLCC     | 325                         |
| 11:30 AM                         | EVENT  | Planning Meeting for Area 2G, Bioseparations   | DLCC     | 301                         |
| 12:30 PM                         | 495    | Biomass Thermal Deconstruction via Fast Pyrolysis Biorefineries  | DLCC     | 316                         |
| 12:30 PM                         | 496    | Biomaterial Scaffolds for Tissue Engineering I: Musculoskeletal Applications                                       | DLCC     | 328                         |

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| WEDNESDAY • OCTOBER 31 (continued) |        |   |          |                              |
|------------------------------------|--------|---|----------|------------------------------|
| TIME                               | BOOK # | TITLE   | PROPERTY | ROOM                         |
| 12:30 PM                           | 497    | Biomolecules at Interfaces II   | Omni     | Conference Center B          |
| 12:30 PM                           | 498    | Bionanotechnology for Gene and Drug Delivery I  | DLCC     | 309                          |
| 12:30 PM                           | 499    | Bioseparations and Downstream Processing  | Westin   | Somerset                     |
| 12:30 PM                           | 513    | Emerging Tools and Enabling Technologies in Synthetic Biology: Sensors and Actuators      | Westin   | Westmoreland<br>West-Central |
| 12:30 PM                           | 517    | Immunotherapy Applications  | Westin   | Pennsylvania East            |
| 12:30 PM                           | 519    | Membranes for Bioseparations  | DLCC     | 301                          |
| 12:30 PM                           | 525    | Nanotechnology for Biotechnology and Pharmaceuticals I                                    | DLCC     | 311                          |
| 12:30 PM                           | 535    | Reaction Engineering for Biomass Conversion II  | DLCC     | 401                          |
| 12:30 PM                           | 540    | USA-China Progress in Biomass Conversion Technology II                                    | DLCC     | 325                          |
| 3:30 PM                            | 548    | Poster Session: Sustainability and Sustainable Biorefineries                              | DLCC     | Exhibit Hall B               |
| 3:30 PM                            | 553    | Biomanufacturing  | Westin   | Pennsylvania East            |
| 3:30 PM                            | 554    | Biomaterial Scaffolds for Tissue Engineering II: Bioactive and Drug-Eluting Materials     | DLCC     | 328                          |
| 3:30 PM                            | 555    | Bionanotechnology for Gene and Drug Delivery II   | DLCC     | 309                          |
| 3:30 PM                            | 556    | Cells, Organs, and Labs on a Chip II: Tissues and Diseases                                | Westin   | Somerset                     |
| 3:30 PM                            | 563    | Emerging Tools and Enabling Technologies in Synthetic Biology: Design of Complex Circuits | Westin   | Westmoreland<br>West-Central |
| 3:30 PM                            | 568    | Integrative Systems Biology   | Westin   | Butler                       |
| 3:30 PM                            | 575    | Nanotechnology for Biotechnology and Pharmaceuticals II                                   | DLCC     | 311                          |
| 3:30 PM                            | 591    | USA-China Progress in Biomass Conversion Technology III                                   | DLCC     | 325                          |
| THURSDAY • NOVEMBER 1              |        |   |          |                              |
| 8:00 AM                            | 600    | Applications in Immunology and Immunotherapy  | Westin   | Washington                   |
| 8:00 AM                            | 601    | Big Data in Chemical and Pharmaceutical Processes   | DLCC     | 410                          |
| 8:00 AM                            | 603    | Biomaterials for Immunological Applications   | DLCC     | 331                          |
| 8:00 AM                            | 604    | Biomimetic Materials  | DLCC     | 328                          |
| 8:00 AM                            | 607    | Cell Biomechanics, Adhesion and Migration II: Cell Movement                               | Westin   | Cambria                      |
| 8:00 AM                            | 626    | Mechanistic Models for Integrated Pharmaceutical Product and Process Design               | Westin   | Fayette                      |
| 8:00 AM                            | 635    | Recalcitrance of Woody Biomass  | DLCC     | 324                          |
| 8:00 AM                            | 636    | Self-Assembled Biomaterials   | DLCC     | 311                          |
| 8:00 AM                            | 640    | Thermochemical Conversion of Biomass  | DLCC     | 325                          |
| 12:30 PM                           | 645    | Application of Process Modelling to Pharmaceutical Process Design and Scale-up            | Westin   | Fayette                      |

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| THURSDAY • NOVEMBER 1 (continued) |        |  |          |                              |
|-----------------------------------|--------|--|----------|------------------------------|
| TIME                              | BOOK # | TITLE  | PROPERTY | ROOM                         |
| 12:30 PM                          | 649    | Biochemical Conversion Processes in Forest/Plant Biomass Biorefineries I                         | DLCC     | 325                          |
| 12:30 PM                          | 650    | Biomacromolecular Gels   | DLCC     | 326                          |
| 12:30 PM                          | 651    | Biomass Characterization, Pretreatment, and Fractionation I                                      | DLCC     | 324                          |
| 12:30 PM                          | 652    | Biomaterials in Industry and the Clinic  | DLCC     | 328                          |
| 12:30 PM                          | 655    | Catalytic Processing of Fossil and Biorenewable Feedstocks I: Acids, Alcohols, and Polyols       | DLCC     | 405                          |
| 12:30 PM                          | 658    | Complex and Networked Chemical and Biochemical Systems   | DLCC     | 409                          |
| 12:30 PM                          | 662    | Engineering in Cancer Biology and Therapy I: Signaling   | Westin   | Cambria                      |
| 12:30 PM                          | 665    | Gene Regulation Engineering: Medical and Biotechnological Tools and Applications                 | Westin   | Westmoreland<br>West-Central |
| 12:30 PM                          | 675    | Multiscale Systems Biology   | Westin   | Butler                       |
| 12:30 PM                          | 676    | Nanobiotechnology for Sensors and Imaging I  | DLCC     | 311                          |
| 12:30 PM                          | 678    | Novel Nanoparticles and Nanostructured Materials for Pharmaceuticals and Medical Applications I  | DLCC     | 413                          |
| 3:30 PM                           | 690    | Biochemical Conversion Processes in Forest/Plant Biomass Biorefineries II                        | DLCC     | 325                          |
| 3:30 PM                           | 691    | Biomass Characterization, Pretreatment, and Fractionation II                                     | DLCC     | 324                          |
| 3:30 PM                           | 692    | Bioprinting of Scaffolds, Tissues, and Organs  | DLCC     | 328                          |
| 3:30 PM                           | 693    | Catalytic Biomass Conversion to Chemicals  | DLCC     | 323                          |
| 3:30 PM                           | 695    | Catalytic Processing of Fossil and Biorenewable Feedstocks II: Upgrading Bio-Oils & Lignin       | DLCC     | 405                          |
| 3:30 PM                           | 696    | Computational Methods in Biological and Biomedical Systems                                       | DLCC     | 408                          |
| 3:30 PM                           | 702    | Engineering in Cancer Biology and Therapy II: Tumor Microenvironment and Mechanics               | Westin   | Cambria                      |
| 3:30 PM                           | 712    | Nanobiotechnology for Sensors and Imaging II   | DLCC     | 311                          |
| 3:30 PM                           | 719    | Predictive Scale-up/Scale-down for Production of Pharmaceuticals and Biopharmaceuticals          | Westin   | Fayette                      |
| 3:30 PM                           | 725    | Synthetic Biology Applications   | Westin   | Westmoreland<br>West-Central |
| 3:30 PM                           | 726    | Value-Added Co-Products from Biorefineries   | DLCC     | 316                          |
| 3:30 PM                           | 714    | Novel Nanoparticles and Nanostructured Materials for Pharmaceuticals and Medical Applications II | DLCC     | 413                          |
| 3:30 PM                           | 711    | Modeling and Engineering Cellular Communities  | Westin   | Westmoreland East            |
| FRIDAY • NOVEMBER 2               |        |  |          |                              |
| 8:00 AM                           | 729    | Bio-Based Polymers   | DLCC     | 319                          |
| 8:00 AM                           | 730    | Catalytic Processing of Fossil and Biorenewable Feedstocks III: Furan Chemistry                  | DLCC     | 315                          |
| 8:00 AM                           | 735    | Modeling of Biomaterials   | DLCC     | 321                          |
| 8:00 AM                           | 738    | Pyrolysis of Biomass   | DLCC     | 317                          |
| 8:00 AM                           | 741    | Thermophysical Properties of Biological Systems  | DLCC     | 307                          |

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