

**National Academy of Engineering  
2020 US Frontiers of Engineering**

Virtual  
February 24-26, 2021

**Program**

**All Times are Eastern Time.**

**Wednesday, February 24**

6:00 – 7:00pm	Help Desk / EPB Onboarding	<i>Lobby</i>
7:00 – 8:30 pm	Virtual Welcome Reception	<i>Multipurpose Room</i>
7:10pm	Remarks – Jennifer West, Symposium Chair	<i>Multipurpose Room</i>

**Thursday, February 25**

10:00 – 11:00am	Help Desk / EPB Onboarding	<i>Lobby</i>
11:00 am	Welcome – John Anderson, President, National Academy of Engineering Opening Remarks – Jennifer West, Duke University, Symposium Chair	<i>Lecture Hall</i>
11:10	<b>FOOD FOR THOUGHT: The AgRevolution Shaping What We (Will) Eat</b> Co-chairs: Lily Cheung, Georgia Institute of Technology, and Andrew Coughlin, Syngenta Corp.  <i>10,000 Years of Engineering Plant Genomes: The Essential Role of Genetic Variation in Crop Breeding</i> Aaron Hummel, Pairwise Plants  <i>Peptides as a New Class of Bioinsecticide</i> Kyle Schneider, Vestaron Corp.  <i>Safety Oversight for the Future of Food</i> Patrick Cournoyer, US FDA  <i>Robots as Farmers: Automation in Precision Agriculture</i> Sierra Young, North Carolina State University	

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12:15	Meet and Connect: Open Room Networking	<i>Multipurpose Room</i>
1:00	Break	
1:15	Poster Session 1	<i>Poster Hall</i>
1:45	Poster Session 2	
2:15	<b>NEXT-GENERATION ENERGY SYSTEMS INTEGRATION</b> Co-chairs: Jennifer Kurtz, National Renewable Energy Laboratory, and Javad Lavaei, University of California, Berkeley	<i>Lecture Hall</i>
	<i>Enabling the Operation of Future Grids Using New Tools in Control Theory and AI</i> Johanna Mathieu, University of Michigan	
	<i>Powerful Water and Thirsty Energy: A Systems Challenge</i> Noel Bakhtian, Lawrence Berkeley National Laboratory	
	<i>Enabling Impactful Residential-scale Energy Systems for Native American Communities</i> Suzanne Singer, Native Renewables	
3:15	Break	
3:30	Breakout Session: <i>Next Grand Challenges for Engineering</i>	<i>Multipurpose Room</i>
4:30-5:30	“Happy Hour” (Optional Networking)	<i>Multipurpose Room</i>

### **Friday, February 26**

11:00 am	Announcements	<i>Lecture Hall</i>
11:05	<b>ENGINEERING INNOVATION IN WOMEN’S HEALTH</b> Co-chairs: Kristin Myers, Columbia University, and Melissa Skala, Morgidge Institute and University of Wisconsin-Madison	<i>Lecture Hall</i>
	<i>A Woman-centered Approach for Cervical Cancer Prevention</i> Mercy Asiedu, Massachusetts Institute of Technology	

*Growth and Remodeling of the Female Reproductive System*  
Kristin Miller, Tulane University

*Functional and Tunable Biomimetics for Reproductive Tissue Engineering*  
Ariella Shikanov, University of Michigan

*Menstruation as a Natural Biopsy—Building a Database to Fuel Early Diagnosis of Reproductive Disorders*  
Ridhi Tariyal, NextGen Jane

12:05      Meet and Connect: Open Room Networking      *Multipurpose Room*

12:30      Breakout Session: *Disciplinary Focus Groups*      *Multipurpose Room*

1:30      Break

1:40      **PLASTICS: POLLUTION CHALLENGES AND INNOVATIONS**      *Lecture Hall*  
Anela Choy, Scripps Institution of Oceanography, and Jenna Jambeck,  
University of Georgia

*Plastics and Transforming Ecosystems Science into Accountability*  
Jeremy Conkle, Texas A&M University, Corpus Christi

*Challenges in Plastics Circularity: The Necessity for Environmental Degradability as a Design Metric*  
Desiree Plata, Massachusetts Institute of Technology

*Empowering Businesses to Restore Nature's Balance*  
Svanika Balasubramian, rePurpose

2:40      Break

2:50      Breakout Session: *Session Topic Discussions and Topics Suggested by Attendees*      *Multipurpose Room*

3:50      Concluding Remarks

4:00-5:00      "Happy Hour" (Optional Networking)      *Multipurpose Room*