

**National Academy of Engineering – Alexander von Humboldt Foundation  
2021 German-American Frontiers of Engineering**

Virtual  
March 16-19, 2021

**Program**

**Tuesday, March 16**

1:00 PM ET/ 6:00 PM CET Help Desk / EPB Onboarding Lobby

2:00 PM ET/ 7:00 PM CET Welcome Reception Lobby

**Wednesday, March 17**

9:00 AM ET/ 2:00 PM CET Help Desk / EPB Onboarding Lobby

10:00 AM ET/ 3:00 PM CET Welcome by NAE president John Anderson, AvH secretary-general Enno Aufderheide, and symposium co-chairs M. Cynthia Hipwell and Olivier Guillon Lecture Hall

10:15 AM ET/ 3:15 PM CET **QUANTUM COMPUTING**  
Session co-chairs: Martin Kliesch, Heinrich Heine University Düsseldorf, and Sarah Sheldon, IBM

*Introduction to Quantum Computing*  
Anna Pappa, Technische Universität Berlin

*What Might a Quantum Computer be Good For?*  
Sevag Gharibian, Paderborn University

*Quantum Computing: Implementations and Experimental Challenges*  
Sydney Schreppler, Microsoft

*Quantum Technologies Beyond Computation*  
Clarice Aiello, University of California, Los Angeles

11:15 AM ET/ 4:15 PM CET Meet and Connect Networking Multipurpose Room

12:00 noon ET/ 5:00 PM CET Break

12:15 PM ET/  
5:15 PM CET      Poster Session 1      *Poster Hall*

1:00 PM ET/  
6:00 PM CET      **CARBON CAPTURE AND UTILIZATION**      *Lecture Hall*

Session co-chairs: Joshua Stolaroff, Lawrence Livermore National Laboratory, and Andreas Vorholt, Max Plank Institute for Chemical Energy Conversion

*The Refinery of Today, Tomorrow, and the Future: The Role of CO2 Capture*  
Ryan Lively, Georgia Institute of Technology

*Towards Novel, Scalable and Realizable Technologies for Carbon Capture, Utilization, and Storage: Hybrid Absorption-Crystallization Pathways for Inorganic and Organic Carbonate Synthesis and H2 Generation*  
Greeshma Gadikota, Cornell University

*Surface-sensitive Electrochemical CO2 Reduction Reaction*  
Mehtap Oezaslan, TU Braunschweig

*Brighter Use of Resources – New CO2-based Materials*  
Michael Weinkraut, Covestro AG

2:00 PM ET/  
7:00 PM CET      Mix and Mingle – Optional Networking      *Lobby*

#### **Thursday, March 18**

9:30AM/2:30  
PM CET      Help Desk / EPB Onboarding      *Lobby*

10:00AM/3:00  
PM CET      **BIOLOGIZATION**      *Lecture Hall*

Session co-chairs: Nicholas Bishop, Hamburg University of Technology, and Manu Platt, Georgia Institute of Technology

*Synthetic Genome Regulation for Cell and Tissue Engineering*  
Timothy Downing, University of California, Irvine

*Forming Functions by Microarchitectural Organization in Biological Materials*  
Shahrouz Amini, Max Planck Institute of Colloids and Interfaces

*Injectable Synthetic Building Blocks to Regenerate Soft Anisotropic Tissues*  
Laura de Laporte, University of Aachen

*Biohybrid Actuators: Engineered Neuromuscular Tissues for Medicine and Machines*  
Ritu Raman, Massachusetts Institute of Technology

11:00 AM ET/ 4:00 PM CET	AvH presentation on funding opportunities	<i>Lecture Hall</i>
11:15 AM ET/ 4:15 PM CET	Meet and Connect Networking	<i>Multipurpose Room</i>
12:00 noon ET / 5:00 PM CET	Break	
12:15 PM ET/ 5:15 PM CET	Poster Session 2	<i>Poster Hall</i>
1:00 PM ET/ 6:00 PM CET	Breakout Session 1: Next Engineering Grand Challenges	<i>Multipurpose Room</i>
2:00 PM ET/7:00 PM CET	Mix and Mingle – Optional Networking	

**Friday, March 19**

9:30AM/2:30 PM CET	Help Desk / EPB Onboarding	<i>Lobby</i>
10:00 AM ET/ 3:00 PM CET	<p><b>MANUFACTURING 4.0</b>  Session co-chairs: Amy Elliott, Oak Ridge National Laboratory and Petra Wiederkehr, TU Dortmund University</p> <p><i>Internet of Production – Digital Shadows for Production</i>  Matthias Brockmann, RWTH Aachen University</p> <p><i>Additive Manufacturing: Current and Future Opportunities</i>  Jennifer Wolk, US Office of Naval Research</p> <p><i>Digital Factory and Data Analytics Framework for Advanced Manufacturing</i>  Vincent Paquit, Oak Ridge National Laboratory</p> <p><i>Artificial Intelligence in Automotive Engineering</i>  Steven Peters, Mercedes-Benz AG</p>	<i>Lecture Hall</i>
11:00 AM ET/ 4:00 PM CET	Breakout Session 2: Session Topic & Other Topic Discussions	<i>Multipurpose Room</i>
12:00 noon ET/ 5:00 PM CET	Break	
12:15 PM ET/ 5:15 PM CET	Meet and Connect Networking	<i>Multipurpose Room</i>

12:40 PM ET/ 5:45 PM CET	Concluding Remarks by symposium co-chairs M. Cynthia Hipwell and Olivier Guillon	<i>Multipurpose Room</i>
12:45 PM ET/ 5:45 PM CET	Virtual tour of ORNL	<i>Multipurpose Room</i>
2:00 PM ET/ 7:00 PM CET	Mix and Mingle – Optional Networking	<i>Multipurpose Room</i>