

2019 NSE Grantees Conference
Panel 3. Cell Nanocomponents and synthetic biology
Keynote

Semiconductor Synthetic Biology (SemiSynBio) and Selected Applications

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Abstract: The success of the internet of things and “big data” requires novel approaches to how we collect, share, analyze and store data and information. This presentation examines one such approach, the new field of Semiconductor Synthetic Biology (SemiSynBio). It builds on the 2018 SemiSynBio Roadmap, which identifies key challenges and technology targets in five strategic areas, i.e., 1. DNA-based Massive Information Storage; 2. Energy Efficient, Small Scale Cell-Based and Cell-inspired Information Systems; 3. Intelligent Sensor Systems and Cell/Semiconductor Interfaces; 4. Electronic-Biological System Design Automation and 5. Biological pathways for semiconductor fabrication and integration. It also describes recent advances in selected SemiSynBio applications.



Brief Biography:

Daniel J.C. Herr joined the University of North Carolina at Greensboro in 2011 as Professor and founding Chair of the Nanoscience Department at the Joint School of Nanoscience and Nanoengineering. His team’s research uses a combination of nanoscale synthesis, spectroscopy and modeling techniques to design, fabricate and understand the kinetics and dynamic behavior of functional low-dimensional nanomaterials and nanoenhanced photosynthetic systems. He earned his Ph.D. from the University of California at Santa Cruz, served as the Semiconductor Research Corporation’s Director of Nanomanufacturing Sciences and co-founded the International Technology Roadmap for Semiconductor’s (ITRS) Emerging Research Materials (ERM) International Technology Working group (ITWG). Professor Herr also is a Fellow of the International Society for Optics and Photonics (SPIE).