

Engineering biology for human and environmental health

Prof Ariel L. Furst

Chemical Engineering at MIT, USA.

11:00am, 18/12/2024

At the Boardroom, Melbourne Centre for Nanofabrication

151 Wellington Road, Clayton, 3168

Zoom link: [click here](#)

Meeting ID: 846 8564 5925 and passcode: 622184



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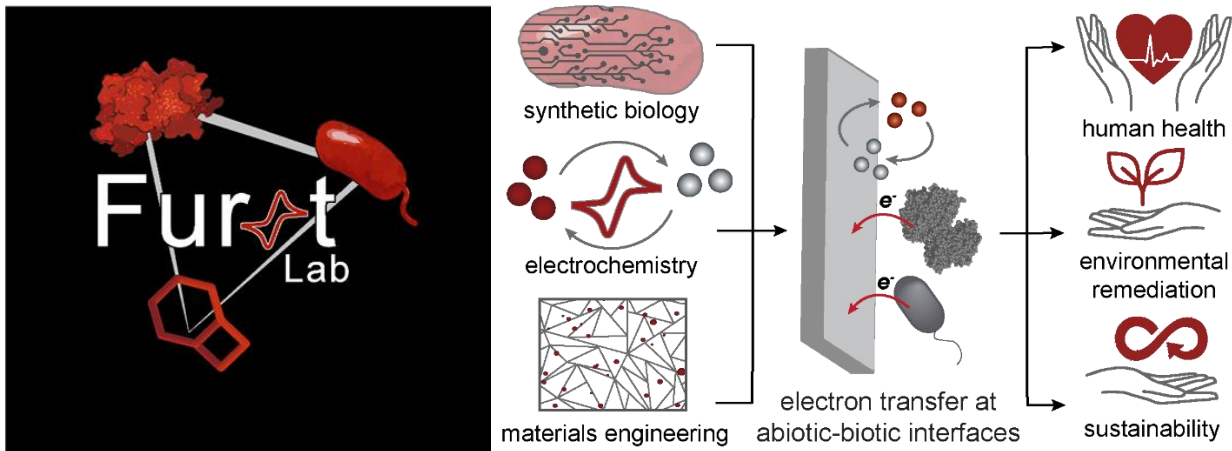
Chemical Engineering at MIT

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Abstract: For decades, researchers have worked to replicate the efficiency of biological processes for applications ranging from carbon sequestration to resource recovery. Yet engineered methods are generally less efficient and selective than their native counterparts. We have found that the integration of nanomaterials with microbial engineering enables us to create novel technologies that outperform conventional cleantech. We have generated an inexpensive platform for rare earth element recovery, toxic pesticide remediation, and carcinogenic pollutant degradation. We have also improved electrochemical conversion of CO₂ to valuable products, decreasing the energy required. We have also developed inexpensive, point-of-use diagnostics for infectious disease. In all of our work, we consistently find that the combination of chemistry and biomolecular engineering affords advantages beyond the capabilities of either technology alone.



About the speaker:

Ariel L. Furst is the Cook Career Development Professor of Chemical Engineering at MIT. Her lab combines biological, chemical, and materials engineering to solve challenges in human health and environmental sustainability. They develop technologies for implementation in low-resource settings to ensure equitable access to technology. She completed her Ph.D. in the lab of Prof. Jacqueline K. Barton at the California Institute of Technology developing new cancer diagnostic strategies based on DNA charge transport. She was an A. O. Beckman Postdoctoral Fellow in the lab of Prof. Matthew Francis at UC, Berkeley developing sensors to monitor environmental pollutants. She is the recipient of the NIH New Innovator Award, the NSF CAREER Award, and the Dreyfus Teacher-Scholar Award. She is passionate about STEM outreach and increasing participation of underrepresented groups in engineering.