

UCSD NANOENGINEERING/CHEMICAL ENGINEERING
Virtual **SEMINAR SERIES**

Wednesday, November 10, 2021

Seminar Presentation: 11:00am - 12:00pm PDT

Join Zoom Seminar:

<https://ucsd.zoom.us/j/91234830481?pwd=R2pXbnQwL3lHVjkrSEtpZk5TNDJldz09>

Meeting ID: 912 3483 0481 ~ Password: 996299

“Tuning the elastic properties of lipid nanoparticles for efficient delivery of RNA to cells”



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Abstract: Lipid materials having nanostructures that deviate from the conventional flat bilayer arrangement such as hexagonally packed lipid tubes and bicontinuous cubic phases are ubiquitous in nature. Their role remains elusive but over the years several pathologies and organelle functions have been coupled to lipid membrane structural complexity. In this talk we will discuss lipid membrane polymorphism and how it can be exploited to generate a new class of materials for the delivery of cargo to cells. We combine a number of techniques including X-ray scattering, cryo-EM, and cell culture to demonstrate that the structure of lipid nanoparticles is a powerful handle to boost the delivery of genes to cells. The simple argument that non-lamellar phases having intertwined nanoscale channels exist to increase surface-to-volume ratio might be insufficient to completely describe the experimental findings.

Biosketch: Cecilia Leal is an Associate Professor of Materials Science and Engineering at the University of Illinois at Urbana-Champaign (UIUC). Cecilia received a M.S. in Industrial Chemistry at the University of Coimbra, Portugal and a PhD in Physical Chemistry at the University of Lund, Sweden. She was a postdoctoral fellow at UC Santa Barbara before starting her appointment at UIUC in 2012. Cecilia received the 2020 & 2018 Dean's Award for Excellence in Research, the 2019 Provost Distinguished Promotion Award, and the 2016 NSF CAREER and NIH Director's New Innovator Awards.