PURDUE
UNIVERSITY

# Chemistry Materials Colloquium

## Thursday, January 20, 2022  4:30 PM

## Virtual Via Zoom Link:

https://purdue-edu.zoom.us/j/95851680944?pwd=dHRlTVp2Yk91TVNTd3phRmVrTVVKZz09

Meeting ID: 958 5168 0944
Passcode: 113810

## *"Turning the Physicochemical Properties of Lipid Nanoparticles for Efficient Delivery of RNA to Cells"*


## Cecilia Leal, Ph.D.
## Associate Professor
**Department of Materials Science and Engineering**
**University of Illinois at Urbana-Champaign**



## 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.

.