

# BIOENGINEERING

PRESENTS



THURSDAY, April 30<sup>th</sup>, 2020

12:00 – 1:00 PM

Zoom Link:

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#### ABSTRACT:

Bioengineered 3D kidney tissues that emulate human responses could potentially lead a revolution in drug safety testing and ultimately solve organ donor shortage issues. Unfortunately, current kidney-on-chip models lack the 3D geometry, complexity, and functionality necessary to recapitulate in vivo renal tissue. In this talk, I will discuss how we address these engineering challenges by creating 3D vascularized kidney tubule models via multimaterial bioprinting and characterizing their reabsorption properties. In particular, I will discuss how we engineer the flow property and biocompatibility of different soft materials to construct adjacent conduits that are lined with confluent epithelium and endothelium embedded in a permeable extracellular matrix. This 3D kidney model closely mimics the native microenvironment, and thus exhibits superior cell behavior with active reabsorption of solutes including albumin uptake and glucose. Lastly, I will show a few examples of how our model enables toxicity studies and disease modeling that have been difficult to conduct using conventional in vitro systems

#### BIOGRAPHY:

Neil Lin is Assistant Professor in the Mechanical Aerospace Engineering Department at UCLA. He earned his Ph.D. in Physics from Cornell University in 2016 and conducted his postdoc training at Harvard University under Dr. Jennifer Lewis. Dr. Lin is originally from Taiwan and received his bachelor's degree in Physics from the National Tsinghua University, Taiwan. He is recipient of NIH Ruth L. Kirschstein F-32 Fellowship (2018) and F. Hoffmann-La Roche Postdoc Fellowship (2016).