

# SEMINAR SERIES

Supported by The Department of Biomechanics and  
The Center for Research in Human Movement Variability (MOVCENTR)



## **HYDROGEL AS A VERSATILE PLATFORM FOR MATERIALS DESIGN AND ENGINEERING**

Featuring Dr. Li Tan

University of Nebraska-Lincoln

January 29, 2021 | 12:00 - 1:00 pm

Zoom Link: <https://unomaha.zoom.us/j/94316335519>

### **ABOUT DR. TAN**

Dr. Li Tan received his Ph.D. degree from the University of Michigan-Ann Arbor (Macromolecular science & engineering). Dr. Tan's postdoctoral training includes working in a clean room on lithography (UM) and operating scanning tunneling microscope/atomic force microscope (U. California-Davis). From these experiences he found the importance of surfaces and interfaces and it quickly became the focus of his academic career at UNL. Over the years, Dr. Tan has been working with experimentalists and theorists to provide materials/devices that are unusual and exciting. Recent examples include an ultra-fast charging device for energy storage (Nature Communications, 2021), a stealthy microphone for underwater listening (Nature Communications, 2016), and a biomimetic platform that responds to external light by morphing (ACS Applied Materials & Interfaces, 2013; ACS Editor's Choice).

### **PRESENTATION ABSTRACT**

Hydrogels are complex materials that are receiving increasing attentions from both the materials science and biomedical fields. This presentation will provide two examples where the soft material is enriched either by implanting silver nano-trees or by molecularly controlled hydrogen-bonding among polymer domains. These examples all involved a basic understanding of the molecular structures inside the soft gel as well as a fine-tuning of these structures via simple chemistry or physics. When these modified structures are further coupled with mechanics or electronics, they show disruptive behaviors beyond current state-of-the-art. While we cannot expect these strategies be applicable to all hydrogels, complexity of the soft gel definitely promises even more and versatile designs in the future.

more info at [cobre.unomaha.edu](http://cobre.unomaha.edu)

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