

# Department of Mechanical Engineering Seminar

2PM, 2/9/2022 Thursday

Steinman Hall Room 254 (Conference Room)

<https://ccny.zoom.us/j/81357159148?pwd=Ym1maGRUeURDeTN3Y3RZOTaNUg0dz09>



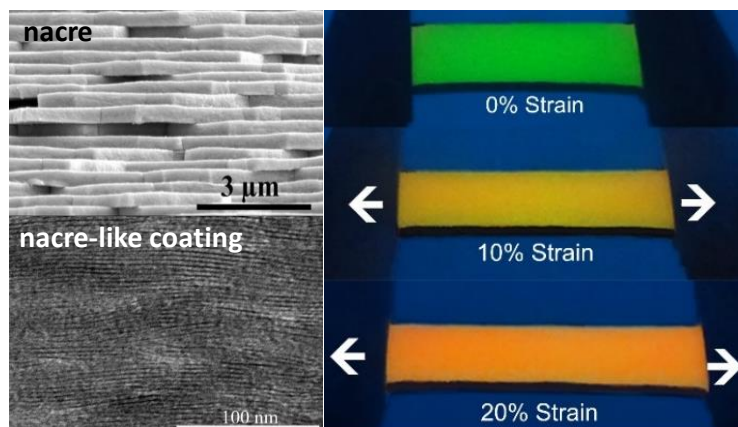
## Bioinspired Multifunctional Materials: from Coatings, Mechanochromism, to Wearable Electronics

Dr. Luyi Sun

University of Connecticut

### ABSTRACT

After millions of years, living organisms have evolved to develop well-adapted structures and compositions. Nature has been able to solve numerous biological problems such as self-healing, self-assembly, and solar energy harnessing. Humans have looked to nature for solutions to our problems throughout our existence. In this talk, several bioinspired multifunctional materials including nanostructured coatings with outstanding mechanical, barrier, and flame retardant properties (inspired by nacre) and highly sensitive and reversible/irreversible mechanochromisms (inspired by cephalopod and skin wrinkles) will be presented. The macro/nano-scale designs for these materials were all inspired by the diverse biological solutions found in nature, with the goal to potentially surpass their natural counterparts and bring new functionalities to these brilliant structures. Their broad applications in construction, packaging, biomedical engineering, and wearable electronics will also be discussed.



### BIO

Dr. Luyi Sun is a professor in the Department of Chemical and Biomolecular Engineering, as well as a member of the Polymer Program at the University of Connecticut. His research focuses on the design and synthesis of nanostructured materials for various applications. Dr. Sun has published >270 peer-reviewed journal articles. He is the inventor/co-inventor of >70 international/US patents and patent applications. Many of his patents have been licensed or commercialized. The scientific results by Dr. Sun's group have been reported by major media including *Chemical & Engineering News* of the American Chemical Society, *Plastics Engineering* magazine of the Society of Plastics Engineers (SPE), *New Scientist*, *Smithsonian Magazine*, Yahoo, MSN, etc. He is a Fellow of the Society of Plastics Engineers (SPE), the Royal Society of Chemistry (RSC), and the National Academy of Inventors (NAI), and a member of the Connecticut Academy of Science and Engineering (CASE).