



# CAES

The Connecticut Agricultural Experiment Station

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## CAES SEMINAR SERIES

# “Surface Functionalization of Nanoparticles for Applications from Drug Delivery to Nanoproteomics”



**Dr. Tania Maria Guardado Alvarez**

**TGA Scientific Consulting and Co-Owner of Xotramorphic LLC**

**Friday, April 26, 2019**

12:00 noon to 1:00 p.m.

Food and coffee will be available at 11:45 a.m.

**Jones Auditorium**

**The Connecticut Agricultural Experiment Station**

**123 Huntington Street, New Haven, CT**

Surface modification of nanoparticles (NPs) allows for the development of complex nanostructures with specific functionalities. Their applications range from drug delivery to proteomics to advanced materials. The use of surface functionalized NPs can be tailored to release cargo on command, protect cargo or selectively interact with biomolecules. For example, photoactivation (by UV or near-IR radiation) can induce conformational changes in surface-bound ligands of mesoporous silica nanoparticles (Si NPs). This renders the Si NPs' pores open to release its cargo. These systems trap molecules without the necessity of chemical modification and may have applications in photo-stimulated drug delivery. Moreover, nanoparticles functionalized with a range of cTnI affinity ligands target various epitopes of cTnI to enable the enrichment of the low abundance cTnI proteins from complex mixtures for more accurate detection, effective separation, and subsequent quantitative analysis. Tania Guardado completed a double major in chemistry and microbiology from The University of Texas at El Paso. She attained her Ph.D. at UC-Los Angeles under Dr. Jeffrey Zink and received the Ruth L. Kirschstein NIH Fellowship. She then attended UW-Madison as an NIH fellow and conducted research under Dr. Song Jin and Dr. Ying Ge. Besides academia, she was at UCS as a senior chemical safety officer and then transition to industry developing materials for electronic soldering and special effects. Tania is currently starting as a scientific consultant for several companies.

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