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# T<sub>C</sub>SUH Bi-Weekly Seminar

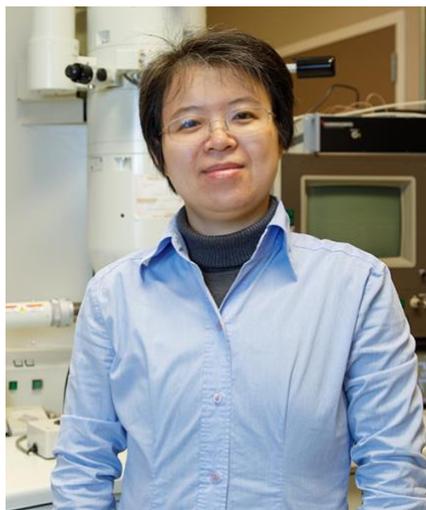
Understanding composite materials  
by transmission electron microscopy

## Prof. Shuo Chen

Department of Physics and PI, Texas Center for Superconductivity at the University of Houston

**Thursday, November 9, 2023**

**In Person** – Room 102, Houston Science Center, 12:00 p.m. – 1:00 p.m.  
**Sandwiches will be provided on a first-come, first-served basis.**



**ABSTRACT:** Composite materials consist of two or more constituent materials. Through proper design, composite materials can integrate the properties of their components and interfaces, leading to optimized performance. Particularly, nanostructured composite materials are intriguing due to their short diffusion paths and profound interfaces. However, questions arise, such as: Do the composite materials preserve the original composition of each component? Do new phases form at the interfaces? What happens to the materials during their operational conditions? To address these questions, we have applied ex-situ and in-situ transmission electron microscopy (TEM) to capture high-resolution structural and compositional information of various materials. In this presentation, I will introduce our efforts toward selective systems, such as electrocatalysts, photocatalysis, and batteries. Especially, with the aid of in-situ TEM, we are able to apply stress, heat, or an electric field to investigate the evolution of materials under these stimuli.

**BIO:** Prof. Shuo Chen is an Associate Professor in the Department of Physics at the University of Houston. She received her B.S. in Physics from Peking University in China in 2002, and then her Ph.D. in Physics from Boston College in 2006. Her research focuses on materials physics, with a particular emphasis on the synthesis and in-situ electron microscopy of nanostructured materials for energy conversion and storage, such as batteries, electrocatalysts, and thermoelectrics. She has published more than 150 papers, with an H-index of 79, and is a recipient of the Robert A. Welch Professorship in 2014.

Persons needing assistance to attend this seminar are asked to call 713-743-8214.

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