

**Materials Engineering Program
Texas Center for Superconductivity at the University of Houston
Center for Integrated Bio and Nano Systems
10:00 am, Friday, Sept. 22, 2023**

This seminar will be held in online only mode!
Online: zoom link: <https://uh-edu-cougarnet.zoom.us/j/97136580701>

Meeting ID: 971 3658 0701

**Probing quantum physics in quantum dots/graphene vdW
heterojunction nanohybrids photodetectors**

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Abstract: Colloidal semiconductor quantum dots/graphene (QD/Gr) heterojunction nanohybrids have recently emerged as a promising candidate for broadband photodetection. The QD/Gr nanohybrids are quantum sensors that take advantages of the quantum confinement in QDs for spectral tunability and that in graphene for superior charge mobility, leading high photoconductive gains. Therefore, the QD/Gr nanohybrids provide a unique platform for designs of broadband photodetectors and the intrinsic high quantum efficiency enabled by the strong quantum confinements in both QDs and graphene could lead to high detectivity (D^*). This presentation

highlights recent progress made on QD/Gr nanohybrids broadband photodetection ranging from ultraviolet, to visible and infrared. The focus of the talk will be on understanding the quantum physics governing the performance of the QD/Gr nanohybrids photodetectors including noise, photoresponse and response speed.

Bio: Dr. Judy Wu is a Distinguished Professor of Physics at the University of Kansas. She is an experimental condensed matter physicist and specialized in thin films and nanostructures including synthesis, characterization and device applications. Her current research focus is on understanding and manipulating interfaces at atomic scales in nanocomposites, heterostructures, and nanohybrids for applications in photodetectors, sensors, metal-insulator-metal tunnel junctions, memristors, etc. She has authored/coauthored more than 300 scientific publications and 15 book chapters/topic reviews. She has been awarded 14 US patents, plus several pending patent applications.

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