

Physics Colloquium

UNIVERSITY OF MISSOURI-KANSAS CITY
DEPARTMENT OF PHYSICS

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Functional Nanostructures: Challenges and Opportunities

The central goal of nanoscale science and technology is to understand how nanoscale phenomena can be utilized to provide unique or improved macroscopic functional properties. The fundamental understanding of structure-synthesis-performance relationships of nanomaterials allows us to tailor their functions. Precise control of the synthesis processes and reproducibly fabricating the desired nanostructures are the prerequisites to provide desired functions of nanomaterials. For example, the conductivity of conducting polymers can be significantly enhanced by the formation of interpenetrating conducting nanowires. The fabrication of porous gold with appropriate pores provides a new platform for anchoring biological molecules that can be used as high-sensitivity sensors/detectors. Surface engineering of metal or alloy nanoparticles can provide nanostructured catalysts with significantly improved catalytic performance. In this presentation, I will focus on the study of nanoscale surface and interface properties and discuss the challenges in understanding and synthesizing desirable nanostructures.

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Coffee at 3:10, Colloquium at 3:30 in Room 310