



MSE SEMINAR

Materials Science and Engineering
Michigan Technological University

Friday, October 26, 2012

10:30 am – 11:30 am

Room 610, M&M Building



Shed Light on Nanomaterials for Solar Energy Conversion and Cancer Therapy

John & Virginia Towers Distinguished Lecture Series

Prof. Jin Zhang

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Abstract

Nanomaterials are of strong interest for both fundamental and technological purposes. At the fundamental level, nanomaterials possess novel physical and chemical properties that differ from those of bulk matter due to quantum confinement effects and exceedingly larger surface-to-volume ratio. These novel properties are highly promising for applications in emerging technologies such as solar cells and biomedicine. Our lab has been actively engaged in the study of optical and dynamic properties of nanomaterials for solar energy conversion and biomedical applications. One example is hydrogen generation from water splitting based on novel semiconductor nanostructures with improved properties. We also design and characterize metal nanostructures for chemical sensing based on surface enhanced Raman scattering and biomedical imaging and therapy. An example is hollow gold nanospheres that have demonstrated outstanding photophysical properties for photothermal ablation therapy of cancer both *in vitro* and *in vivo*, due to their unique structural and optical characteristics.



Biography: Jin Zhang received his B.Sc. degree in Chemistry from Fudan University, Shanghai, China, in 1983 and his Ph.D. in physical chemistry from University of Washington, Seattle in 1989. He was a postdoctoral research fellow at University of California Berkeley from 1989 to 1992. In 1992, he joined the faculty at UC Santa Cruz, where he is currently full professor of chemistry and biochemistry. Zhang's recent research interests focus on design, synthesis, characterization, and exploration of applications of advanced materials including semiconductor, metal, and metal oxide nanomaterials, particularly in the areas of solar energy

conversion and biomedical detection/therapy. He has authored over 220 publications and two books. Zhang has been serving as a senior editor for JPC published by ACS since 2004. He is a Fellow of AAAS, APS, and ACS.

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