CHEMISTRY & BIOCHEMISTRY COLLOQUIUM: Designing Plasmonic Nanostructures for Smart Materials

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Date:
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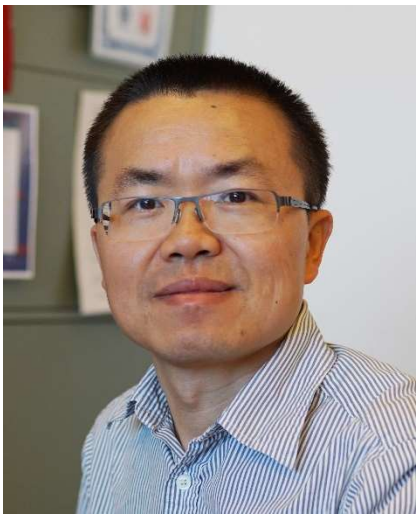
Time:
1:30 PM-2:50 PM

Link:
COB1 267

About the Speaker:



Prof. Yadong Yin received his Ph.D. in 2002 from the University of Washington, Seattle, by working with Prof. Younan Xia. In 2003 he became a postdoctoral fellow at the University of California, Berkeley, under the supervision of Prof. A. Paul Alivisatos, and then a staff scientist at Lawrence Berkeley National Laboratory in 2005. He joined the Department of Chemistry, University of California, Riverside in 2006, and became a Full Professor in 2014. He is a recipient of the Cottrell Scholar Award (2009), DuPont Young Professor Grant (2010), 3M Nontenured Faculty Grant (2010), NSF CAREER award (2010), NML Researcher Award (2016), and MRS Fellow (2020).

Being recognized as one of the world's most highly cited researchers by Clarivate Analytics from 2014 to 2021, he is currently an associate editor of the Journal of Materials Chemistry C and serves on the editorial board of many journals, including Advanced Functional Materials, Science China Materials, Research, Nano Letters, and Chemical Reviews.

Abstract:

Smart materials hold great promises for many intriguing applications as they exhibit chemical and physical responses to the applied external stimuli. This presentation will focus on the synthesis and assembly of nanostructured plasmonic materials with responsive optical and mechanical properties that can find applications in printing, sensing, signage, security documents, and robotics. We will discuss our recent progress on the development of novel surface-functionalized plasmonic nanostructures and their assembly into superstructures with tunable plasmonic coupling. Responses to external stimuli can be induced by manipulating the interparticle separation, which changes the plasmonic coupling of the assemblies. Further, we demonstrate a novel space-confined synthesis method for the production of magnetic/plasmonic hybrid nanostructures. The shape-dependent plasmonic and magnetic properties can be integrated into anisotropic hybrid nanostructures such as nanorods to enable the design of smart materials with colorimetric and mechanical responses.

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