



Dr. Maryam Hajfathalian

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Feb 24 (Friday)

11:30am - 1:00pm

CKB 303

Complex Metal Nanostructures in Biomedical Applications from Diagnosis to Treatment

Abstract:

Complex metal nanostructures are an extraordinary class of materials illustrating unique and novel physicochemical properties. Nanostructures with shape anisotropies, such as nanorods, nanocages and nanoprisms are particularly attractive to different applications due to the high tunability of their plasmon resonances. In recent years, these important properties have led to the development of novel structures with a variety of compositions that further allow biomedical applications such as targeted imaging, catalytic therapy, and cancer treatment. Here, I detail my research to engineer solution-based seed-mediated synthetic protocols giving rise to plasmonic nanostructures (hollow nanoshells, nanoboxes, and nanocages) to be used as sensing, imaging and anti-biofilm agent platforms. Developed nanoparticles function as a contrast agent in biomedical applications such as computed tomography (CT). Moreover, the optical properties of these structures made them an effective contrast agent for photoacoustic imaging (PA) and photothermal therapy (PTT). I will conclude my presentation by highlighting my current work on colloidal nanoparticles to develop novel photothermal agents to image virulent biofilms and treat infectious disease with precise spatial control and in a short timeframe.

About the Speaker

Dr. Maryam Hajfathalian is a Visiting Postdoctoral Scholar at the Division of Infectious Diseases at Stanford University and a Postdoctoral Research Fellow at the University of Pennsylvania, Radiology Department. Her research focuses on development, synthesis, and characterization of theranostic nanomaterials, as well as their direct applications in sensing, imaging, and therapeutic. This area of research aims to develop organic and inorganic nanostructures and investigate their optical properties for biomedical applications. Her awards include an NIH NIBIB K99/R00 Pathway to Independence Award, Stanford Woods Institute for the Environment Grant, a Science Slam Presentation Award, Women in Molecular Imaging Network Scholar Award, and First Place Poster Presentation Award in World Molecular Imaging Conferences.