

INORGANIC CHEMISTRY SEMINAR

Nanomachines on Mesoporous Silica Nanoparticles for Cargo Delivery



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Cram Conference Room, 3440 Mol Sci
4:30 pm

Refreshments will be served

Abstract

One issue associated with the use of anti-cancer drugs is their side effects. To limit these undesired consequences, drugs can be encapsulated within a nanocarrier and released on demand to the tumor site. This talk focuses on the design and synthesis of nanomachines on mesoporous silica nanoparticles for the goal of delivering useful cargo molecules to treat cancerous cells. A nanovalve was developed to store cargo until stimulated by light; irradiation can selectively activate only nanocarriers present at the tumor site to release their payload. As an alternative to using traditional anti-cancer drugs, a pH responsive nanogate was developed to store and deliver calcium ions. The role calcium plays in orchestrating cellular apoptosis is well documented. Using this nanogate, we show that a delivery of calcium ions to cells results in cancer cell death. This result offers an alternative to treating cancer without the use of hazardous chemotherapy agents.

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