Molecular encapsulation and reactivity with assembled baskets in water

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The entrapment of guest compounds with artificial hosts allows for controlling local environment and properties of a variety of analytes. In particular, one can use molecular encapsulation for stabilizing reactive intermediates, promoting chemical reactions and modulating conformational dynamics of guests. We recently developed so-called gated molecular baskets for regulating the activation energy ($\Delta G^{\ddagger}_{\text{act}}$) characterizing the ingress/egress of molecules and thereby chemical reactivity. Interestingly, molecular baskets were additionally found to assemble into stimuli-responsive vesicles in an aqueous environment. These nanostructured materials are capable of trapping nerve agents in water in an allosteric manner. The lecture will focus on presenting our recent efforts toward understanding working mechanisms baskets in controlling the recognition of various guests. I will also discuss the utility of assembled baskets for C-H activation of small hydrocarbons in water.

Biography
Jovica Badjic completed his PhD in 2001 in the area of Organic Chemistry and Post-doctoral studies from UCLA in 2003. He is currently Professor of Chemistry at the Ohio State University. He has published in the area of supramolecular chemistry and catalysis.

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