# Solvay Seminars in Macromolecular Science & Engineering

Macromolecules Innovation Institute (MII)

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# Prof. Valentin Rodionov

## "Functional Surfactants and Macromolecular Architectures for Catalysis, Encapsulation, and Transport"

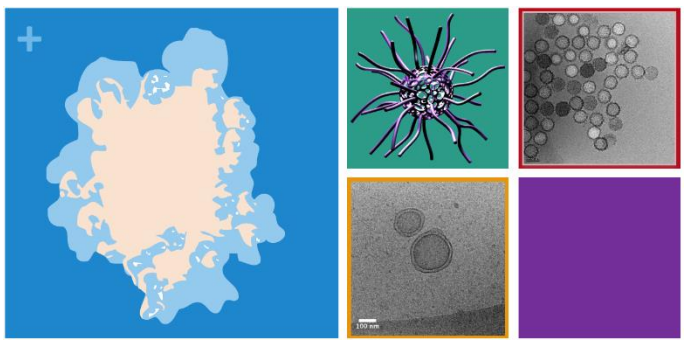

KAUST

Assistant Professor of Chemical Science
Catalysis Center and Division of Physical Sciences

Host: Tim Long



**Abstract:** Nature's enzymes are extremely efficient catalysts. Their remarkable properties result from precise preorganization of the local solvent environment and functional groups around the catalytic sites, and close participation of metal ions, prosthetic groups, and cofactors. *De novo* design of functional proteins is still out of reach of modern chemistry, to a significant extent due to the complexity of the problem of protein folding. However, the globular structures and nanoscale dimensions of natural biopolymers provide useful boundary conditions for the rational design of enzyme mimics. Micelles and emulsion droplets are some of the simplest and most versatile systems of this kind. In this presentation, I shall discuss several examples enzyme-inspired macromolecules and functional surfactants, both organocatalytic and bearing metal catalytic sites, reported recently by our group. The catalytic activities and properties of such systems are often unattainable with small-molecule versions of the same catalytic moieties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**Bio**: Valentin Rodionov began his undergraduate studies in 1997 at the Higher Chemical College of the Russian Academy of Sciences. In 2000, after moving to the United States, he was accepted to the University of Maryland and promoted directly into the graduate program without having to complete an undergraduate degree. He earned his M.S. in 2002 and enrolled in the Ph.D. program at the Scripps Research Institute in La Jolla, CA, under Profs. M.G. Finn and K.B. Sharpless.

Since late 2010, Dr. Rodionov has been an Assistant Professor of Chemical Science at King Abdullah University of Science and Technology (KAUST), Saudi Arabia. His group's research interests are broadly focused on catalysis with soft materials and nanoscale systems capable of emergent behavior.


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**DATE:** SEPTEMBER 6, 2017
**TIME:** 11:15AM-12:15PM
**LOCATION:** 310 KELLY HALL