

Engineered Nanostructures for Chemical Biology Research

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New and advanced methodologies, such as nanolithography and high-resolution bio-imaging, have been developed to investigate polyvalent interactions that are otherwise difficult to probe. Examples include ligands-cell interactions, and ECM mediated cellular signaling processes. This presentation will focus on the methodologies developed to produce chemical cues with designed spatial arrangements. These engineered nanostructures exhibit unanticipated impact

towards regulation of downstream signaling processes, such as, (a) nanostructures of antigens for stimulating mast cells; and (b) nanostructures of ligands for activating neuronal cells. The exquisite spatial precision enabled by nanotechnology allows new molecular level insights to be revealed. The information provides an important guide towards tissue engineering, wound healing and immuno-based therapy.

Gang-yu Liu received her Ph.D. from Princeton University in 1992. Following a two-year postdoctoral research at University of California, Berkeley, under a Miller Research Fellowship, she became an assistant professor at Wayne State University, where she received tenure in 1999. In 2001, she joined the Chemistry Department, University of California, Davis. She has received several prestigious awards, including an ACS Fellow in 2010, AAAS Fellow in 2007, Sloan Faculty Recognition Award in 2007, NSF-CAREER Award (1997), Arnold and Mable Beckman Young Investigator Award (1996-1998), and the Camille and Henry Dreyfus New Faculty Award (1994-1999). She has been a senior editor for the *J. Phys. Chem.* since 2005. She serves on editorial advisory boards for *ACS Nano* (2007-Present) and the *Annual Rev. of Phys. Chem.* (2010-present).