Surfactant Langmuir monolayers as templates for alkyl-coated gold nanorodes

Yevgenia Tifbenkel and Raz Jelinek

Department of Chemistry and Ilse Katz Institute for Nanotechnology

Ben Gurion University of the Negev, Beer Sheva 84105,

Israel

Fax: (+972) 8-647-2943

E-mail: razj@bgu.ac.il

Construction of controlled, organized nanostructure assemblies has been among the most challenging aspects of nanotechnology research and development, so self-assembly methods have garnered increasing interest. Langmuir monolayers (self-assembly monolayers at the air/water interface) have been proposed as promising vehicles for surface patterning of metallic and semiconductor. These approaches have generally employed condensed monolayers of amphiphilic substances (surfactants or lipids) as templates for organization of metal nanorodes on water. It was shown that alkyl-coated gold nanorodes adopt distinct configurations when incorporated within Langmuir monolayer. In these systems, the edges of the condensed amphiphilic domains usually constitute the framework for assemblies of two dimensional monolayer structures.

[1] " Laser-Modulated Ordering of Gold Nanoparticles at the Air/Water Interface", Roman Volinsky and Raz Jelinek, Angew. Chem. Int. Ed. 2009, 48, 1 – 4
[2] " Gold Nanoparticle Self-Assembly in Saturated Phospholipid Monolayers", Alina Mogilevsky, Roman Volinsky, Yohai Dayagi, Noa Markovich, and Raz Jelinek, Langmuir 2010, 26(11), 7893–7898