Enrique C Samano, J Material Sci Eng 2015, 4:5
http://dx.doi.org/10.4172/2169-0022.C1.028

OMICS International
conferenceseries.com

4th International Conference and Exhibition on
Materials Science & Engineering
September 14-16, 2015 Orlando, USA

Self-assembly of DNA with inorganic material

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Artificial DNA nanostructures such as DNA origami have garnered significant interest as templates for sub-20 nm assembly of materials because their design allows for the incorporation of binding sites to assemble nanocomponents with 6 nm resolution. A novel method for producing complex metallic nanostructures of programmable design is presented. DNA origami templates, modified to have DNA binding sites with a uniquely coded sequence, were adsorbed onto silicon dioxide substrates. Gold nanoparticles functionalized with the complementary DNA sequence were then attached. These seed nanoparticles were later enlarged, and even fused, by electroless deposition of silver. Using this method, a variety of metallic structures, including rings, pairs of bars, and H shapes is fabricated. Preliminary results on plasmonic applications of the metallic nanostructures are presented as well.

Biography

Enrique C Samano earned his PhD degree in Physics from Stevens Institute of Technology in Hoboken, NJ. He is currently a Research Professor at Centro de Nanociencias y Nanotecnología at UNAM in Ensenada, BC, Mexico, working on thin film growth and surface science techniques. He has been a Visiting Scholar at University of Southern California and recently at Duke University in the DNA Nanotechnology Group. He works on the fabrication of nanostructures based on DNA with applications in electronics and plasmonics. He has published more than 30 papers in reputed journals and serving as symposiums organizer.

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