

Self-assembled gold nanoparticles

- Nanoarchitectures assisted by biomolecular Interaction -

Motivation

Patterning or ordering of nanoscale materials on solid surface is of importance for nano optoelectronic applications. We have developed the simple and controllable nanofabrication technique using a programmed assembly via biomolecular interaction.

Originality

We synthesized a novel nano-bio composite, gold nanorods coupled with phospholipids. The programmed self-assembly of the composites successfully led to the controlled formation of 1D-3D structures, and their arrangement and interparticle spacing on Si substrate.

Impact

The plasmonic coupling is induced by nanorods arranged in close proximity, which results in huge local electromagnetic field, "HOT SPOTS". Spectroscopic enhancements on the spots enable a detection of chemical reaction on nano surface, and provide a platform for highly sensitive bio sensing at a molecular scale.

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