

METHOD OF FABRICATING PATTERNED SURFACES WITH NANOPARTICLES AND NANOWIRES

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ABSTRACT

The capability to pattern closely spaced gold or other nanoparticles has significant potential in nano- electronics and photonics applications such as electrically conducting wires, and as plasmon wave guides.

To address this opportunity, researchers at UC Berkeley have developed an innovative method for fabricating nanoscale patterned surfaces with nanoparticles and nanowires. Using this approach, the researchers were able to fabricate lines of closely spaced 10 nm gold nanoparticles that are a single nanoparticle in width. Furthermore, standard plating techniques can be used to transform an assembly of these nanoparticles into nanowires or other continuous patterned features.

In comparison to existing methods for depositing arbitrary patterns of nanoparticles such as e-beam lithography, dip-pen nanolithography and several other atomic force microscopy-based methods, this new Berkeley method is simple and direct.

APPLICATIONS

This method can form the basis for fabricating electronically conducting features, waveguides, and other devices for nano- electronic and photonic applications.

ADVANTAGES

Simple and direct method for selective deposition of metallic nanoparticles with nanometer-scale precision.

PATENT STATUS

| Country | Type | Number | Dated | Case |
|--------------------------|---------------|-----------|------------|----------|
| United States Of America | Issued Patent | 7,687,145 | 03/30/2010 | 2005-010 |

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OTHER INFORMATION

KEYWORDS

optics

CATEGORIZED AS

- » **Nanotechnology**
- » Electronics
- » **Sensors & Instrumentation**
- » Other

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