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A New Methodology for 3D Nanoprinting

Tech ID: 25727 / UC Case 2016-379-0

ABSTRACT

Researchers at the University of California, Davis have discovered a novel protocol to enable 3D printing with nanometer precision in all three dimensions using polyelectrolyte (PE) inks and atomic force microscopy.

FULL DESCRIPTION

3D printing has recently experienced many revolutionary breakthroughs in the scientific community due to its capability to produce 3D objects by design. This technology shows great promise for the potential for objects of almost any shape or geometry to be synthesized on demand. The fabrication of devices in the nanoscale region is currently the next target for researchers in many industries such as biomedical and electrical engineering.

Researchers at the University of California, Davis have discovered a novel protocol to enable 3D printing with nanometer precision in all three dimensions using polyelectrolyte (PE) inks and atomic force microscopy. This work significantly advances the development of 3D nanoprinting technology, and lays a foundation for 3D nanoprinting of functional materials through choice of PE ink materials, such as proteins, nanoparticles, dyes, and DNA.

APPLICATIONS

- ▶ Fabrication of nanoscale devices
- ▶ Artificial organs
- ▶ Quantum computing devices
- ▶ New materials for controlling cellular function
- ▶ Tissue engineering
- ▶ Stem cell-based regenerative medicine and therapy

FEATURES/BENEFITS

- ▶ Nanometer precision
- ▶ Incorporation of a wide range of functional materials
- ▶ Support of 3D custom design
- ▶ Remarkably stable products
- ▶ Practical throughput for both research and industry

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,751,933	08/25/2020	2016-379

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OTHER INFORMATION

KEYWORDS

3D nanoprinting,
nanostructure, scanning
probe microscopy, atomic
force microscopy, Scanning
probe lithography

CATEGORIZED AS

- ▶ **Materials & Chemicals**
 - ▶ Nanomaterials
- ▶ **Nanotechnology**
 - ▶ Materials
 - ▶ NanoBio
 - ▶ Other
- ▶ **Research Tools**
 - ▶ Other
- ▶ **Semiconductors**
 - ▶ Design and Fabrication
 - ▶ Materials

RELATED CASES

2016-379-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Atomic Force Microscopy-based Platform for Investigating Single Cell Mechanics

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