



Micro Fabrication Using High Resolution Xerographic Printer

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Category

Engineering & Physical
Sciences/Design Specifications
Engineering & Physical
Sciences/Nanotechnology
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Micro Fabrication with a High Resolution Xerographic Printer

The high resolution xerographic printer uses electrostatic interactions to create high resolution circuits on the nano scale and operates like a laser printer for microelectronics. These devices use a stamp to produce a micro assembly based on deposition. The xerographic printer produces micropatterns on circuits.

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MicroPatterned Media and Micro Fabrication of Quantum Dot Arrays

The microelectronic xerographic printer allows for the flexible and fast deposition of charged nanoparticles, molecules, and integrated circuits onto a substrate to form a patterned micro assembly. The nanoparticles may be deposited from gas, liquid, or powder onto patterned areas up to 1 cm ² in a single simple step using a conductive flexible stamp. The stamp is produced using oxygen plasma etching. This stamp is flexible and the micropattern is transferred to a substrate using contact charging with a resolution smaller than 150 nanometers which is up to a thousand times better resolution than existing xerographic printers.

The technology has applications in patterned media (optical, magnetic, and electronic media), micro patterned materials(DNA, biological macromolecules, nanoparticles), patterned catalysts, as well as micro fabrication of quantum dot arrays.

FEATURES AND BENEFITS OF THE MICRO ASSEMBLY OF MICROELECTRONIC DEVICES AND NANOELECTRONIC DEVICES:

- Produces resolutions smaller than 150 nanometers which is up to a thousand times better resolution than existing technologies
- Improved nanoparticle distribution, dimension, and material control on the substrate compared to other xerographic printers
- Applications in micro fabrication of a quantum dot arrays/circuits or biological macromolecules

Researchers:

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