

Formation of Polymers on Nanostructures Under Xray Irradiation

Tech ID: 22908 / UC Case 2013-325-0

ABSTRACT

First time demonstration of enhanced formation of polymers on nanostructures under X-ray irradiation.

FULL DESCRIPTION

Researchers at UC Davis have developed methods of formation of a polymer from a monomer on a metal-based nanoparticle under X-ray irradiation or the dissolution of metal ions from this nanoparticle under X-ray irradiation, and more specifically methods of enhancing formation of a polyanilne polymer from an aniline monomer on a silver core - gold shell nanoparticle under Xray irradiation and release of Ag ions from this core-shell nanoparticle. X-rays are highly penetrating, and nanomaterials can pinpoint the growth of polymers down to nanometer scale. Therefore it is possible to use short wavelength X-rays and nanomaterials to create high precision polymer structures of nanometer resolution.

APPLICATIONS

▶ Use of short wavelength X-rays and nanomaterials to create high precision polymer

structures of nanometer resolution can potentially be used by drug, semiconductor and sensor industry

> X-ray triggered release of Ag ions can function as targeted antimicrobial release

FEATURES/BENEFITS

▶ Uses nanostructures and wide beam X-rays to make nanostructures of polymers

Alternative method of making photomasks

PATENT STATUS

Country	Туре	Number	Dated	Case
United States Of America	Issued Patent	9,718,922	08/01/2017	2013-325

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INVENTORS

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OTHER INFORMATION

KEYWORDS X-ray nanochemistry, chemical enhancement, physical enhancement, polymerization, nanomaterials, X-rays, lithography, semiconductors, sensors, antimicrobial, triggered release, polyaniline

CATEGORIZED AS

- Biotechnology
 - ► Industrial/ Energy
- Engineering
 - Engineering
- Materials &

Chemicals

- Nanomaterials
- Polymers

- Superconductors
- Nanotechnology
 - Materials
 - ▶ NanoBio
- Semiconductors
 - Design and
 - Fabrication
 - Materials

Sensors &

Instrumentation

- Analytical

Scientific/Research

RELATED CASES

2013-325-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Enhancement of X-Ray Radiation Using Nanomaterials
- ► X-Ray-Triggered Release of Drugs from Nanoscale Drug Carriers
- ▶ Measurement of Nanoscale Physical Enhancement by Materials under X-ray Irradiation
- Combined Individual Nanomaterial Enhancements for Total X-Ray Enhancement

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