TECHNOLOGY

# Method for Synthesizing Asymmetric Multi-Component Nanoparticles

## OVERVIEW

Background

Multicomponent nanoparticles represent an innovative approach to manufacturing new-generation composite materials with new, synergistic and improved properties that combine the desirable properties of the individual components. The attractive aspect of these hybrid multicomponent nanostructures is not only the combination of different properties and functionalities (not found in single-component materials), but also the possibility of independently optimizing the dimensions and material parameters of the individual components. There is, however, an urgent need for a synthetic strategy capable of preparing hybrid AMNPs with fine-tuned structural and compositional complexities.

Innovative Technology

Researchers at the University of Maryland have developed a new paradigm for controllable synthesis of polymer/metal asymmetric multicomponent nanoparticles (AMNPs). This bottom-up method allows for the synthesis of a diverse range of hierarchical AMNPs with controlled morphologies (lollipop, frog-egg and dumbbell shapes). These AMNPs have multiple interaction sites that can serve as novel building blocks for directional or programmable self-assembly of new functional materials and devices.

## APPLICATIONS

1. Bioimaging
2. Drug Delivery
3. Catalysis
4. Optoelectronic devices
5. Novel building blocks for new functional materials and devices

## ADVANTAGES

1. Allows precise fine tuning and control over relative size and number of multi-component domains of individual nanoparticles.
2. Improved stability of the nanopartilces.
3. Self-assembly of materials with easily functionalizable properties
4. Synthesis is easily scalable and reproducible

## CONTACT INFO

UM Ventures
0134 Lee Building
7809 Regents Drive
College Park, MD 20742
Email: umdtechtransfer@umd.edu
Phone: (301) 405-3947 | Fax: (301) 314-9502

## Additional Information

### INSTITUTION

University of Maryland, College Park

### PATENT STATUS

Patent(s) pending

### LICENSE STATUS

Available for exclusive or non-exclusive license

### CATEGORIES

- Nanotechnology + Nanoparticles + Nanomaterials

### EXTERNAL RESOURCES

LS-2012-096