



- ◆ ◆
- ◆ ◆ Fabrication of Complex Nanostructures by Colloidal Chemistry

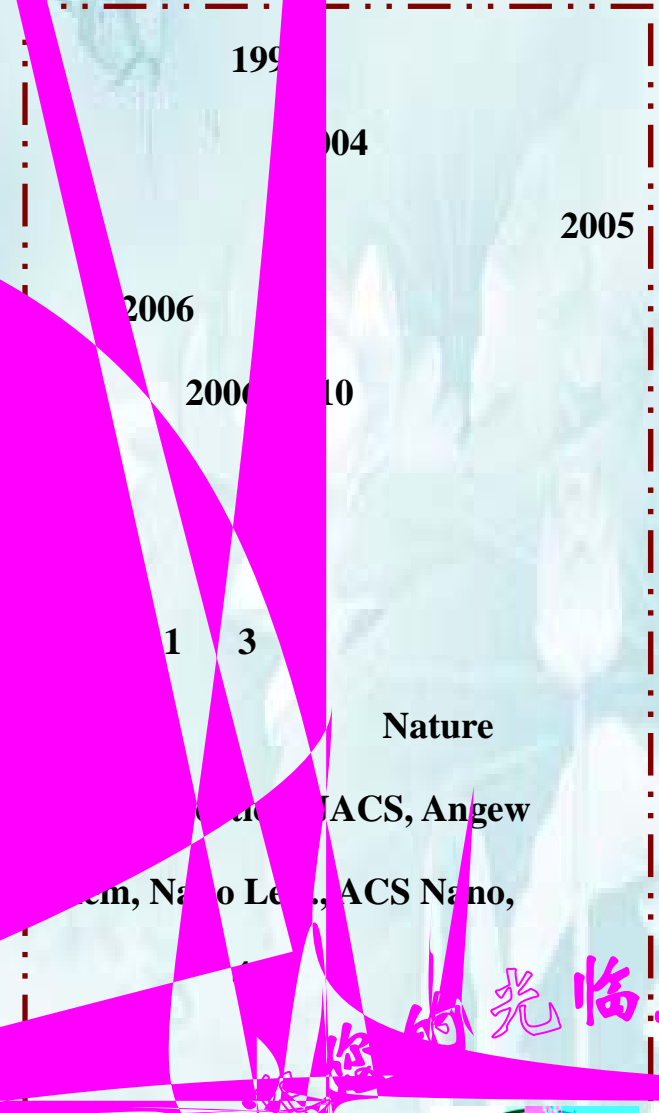
- ◆ ◆ 2011 6 3 15 00--17 30
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报告摘要:

Structural control of nanomaterials is of paramount significance for nanodevice fabrication. This talk aims to give a general introduction to the nanostructures synthesized in Prof. Chen's lab, but he will put some emphasis on multi-layer nanostructures made of silica and polymer.

Prof. Chen will highlight the concept, strategy, and scope of our recent works. They have so far demonstrated several basic concepts for the colloidal synthesis of complex nanostructures. The novel nanostructures have provided useful insights in the studies of surface-enhanced Raman scattering (SERS), drug delivery kinetics, and solid state growth. The current focus is to impart specific functionalities to a judiciously designed nanostructure, where the different components could coordinate to achieve a certain function. Their long-term goal is to emulate the synthetic methodologies of organic chemistry and fabricate nanodevices by multi-step colloidal self-assembly of nano-components.



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特邀学术报告

- ◆ Sridhar Komarneni Prof.
- The Pennsylvania State University
- ◆ Nanoscience and nanotechnology through hydrothermal/solvothermal reactions
- ◆ 2011 6 3 15 00--17 30
- ◆ \_308\_



报告摘要:

Green synthesis of several types of nanomaterials by hydrothermal/solvothermal process with and without microwave or ultrasonic fields will be presented. These nanomaterials could be useful in many nanotechnological applications such as catalysis, cosmetic pigments, electronic devices, environmental remediation etc. With several examples, I will demonstrate the value of these nanomaterials in nanotechnology. The microwave-hydrothermal/solvothermal technique has several advantages as follows:

- (a) rapid heating to temperature of treatment
- (b) increased reaction kinetics by one to two orders of magnitude
- (c) forming novel phases
- (d) eliminating metastable phases.

The first two advantages mentioned above could save energy and coupled with the closed-system condition this technique is proposed as a truly green chemical synthesis method. The combination of hydrothermal/solvothermal reactions with ultrasonic waves could lead to highly dispersed fine particles. While microwave- hydrothermal/solvothermal process has been thoroughly explored, the ultrasonic-hydrothermal/solvothermal process is in its infancy.

Sridhar Komarneni

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Materials

Research Innovations

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