



TECHNOLOGY

Controlled Room Temperature Synthesis of Transparent Ferromagnetic Co₃O₄ Nanoclusters

OVERVIEW

Magnetic nanoparticles are of great interest because they can be used in improved high-density information storage devices, in ferrofluids for biomedical applications and in magnetic sensors.

Researchers at the University of Maryland have developed a new technology that allows self-assembled magnetic metal oxides Co₃O₄ nanoparticles within a polymer matrix at room temperature.

The nanostructure polymer-Co₃O₄ consists of 5 nm Co₃O₄ nanoparticles embedded in a polymer matrix. The average separation among the particles is 5 nm and the new material is optically transparent. Due to the ferromagnetic nature of the nanoparticles an ultra high-density magnetic recording media with a capacity of 110 GB/cm can be fabricated.

Unlike traditional magnetic recording media the metals are attached to the polymer during synthesis and the magnetic ordering occurs during film formation. These advantages will significantly simplify the fabrication technology.

The optically transparent magnetic film can be also used as an invisible watermark in security papers. Due to flexibility of material a thin layer of pattern can be easily deposited on the security papers.

US patent #6,991,741 entitled, "Controlled Room Temperature Synthesis of Magnetic Metal Oxide Nanoclusters within a Diblock Copolymer Matrix" has been granted for this novel technology.

For licensing information, please contact the Office of Technology Commercialization, University of Maryland College Park, via phone at (301) 405-3947 or e-mail at otc@umd.edu.

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Additional Information

INSTITUTION

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PATENT STATUS

Patent(s) pending

CATEGORIES

- Nanotechnology + Nanoparticles + Nanomaterials

EXTERNAL RESOURCES

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