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## NON-CONFIDENTIAL TECHNOLOGY DISCLOSURE

### A Simple Method to Generate Ultrahigh-Density Ferromagnetic Materials

Lead Inventor: Gregory N. Tew, Ph.D.

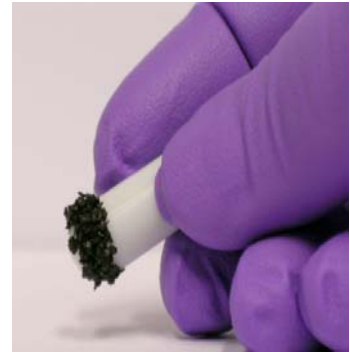
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#### TECHNOLOGY DESCRIPTION

This technology provides a simple method to generate ordered, ultrahigh-density arrays of ferromagnetic nanoparticles from novel, metal-containing block copolymers using processing steps commonly practiced in the semi-conductor industry. The novel block copolymers are designed such that upon a one-step casting and alignment process followed by a mild heat treatment, ultrahigh-density ferromagnetic media can be produced (>1 terabit per square inch). The use of these novel block copolymers eliminates the need to subsequently incorporate ferromagnetic metals or metal oxides into the copolymer matrix.

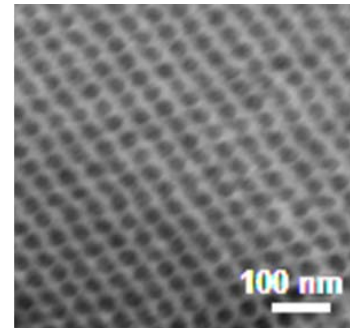
#### ADVANTAGES

- **Simplified fabrication process:** This technology uses directed assembly of novel, metal-containing block copolymers to eliminate the multiple processing steps needed otherwise to incorporate ferromagnetic metals or metal oxides into the copolymer matrix.
- **Oxidatively stable magnetic media:** The *in situ* generation densely functionalizes and stabilizes the ferromagnetic nanoparticles.
- **High versatility:** The wide choice in the metal-containing di- or multi-block copolymer structures provides high versatility to meet the unique needs of various end-use applications.



#### APPLICATIONS

- Next-generation, ultrahigh-density magnetic storage/recording media
- Giant magnetoresistive (GMR) materials for disk drive read/write heads
- Magnetic-based sensors



#### ABOUT THE LEAD INVENTOR



Dr. Gregory N. Tew, Associate Professor of Polymer Science and Engineering at the University of Massachusetts Amherst, is a highly recognized scientist and entrepreneur in the field of polymer and material sciences as well as their interfaces with other scientific disciplines. He has received numerous awards for his scientific achievements, among which are the American Chemical Society Polymer Division Mark Young Scholar Award, the IUPAC MACRO International Samsung Young Polymer Scientist Award, the Presidential Early Career Award for Scientists and Engineers, the Office of Naval Research Young Investigator, Army Research Office Young Investigator, and the National Science Foundation CAREER Award. He is also founder of PolyMedix, Inc., a cutting edge biomimetic design company.

**BUSINESS OPPORTUNITIES:** Available for Licensing or Sponsored Research

**DOCKET:** UMA 08-07

**PATENT STATUS:** Patent Pending

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