The Office of Technology Management

UNIVERSITY OF TEXAS ARLINGTON

Tech ID: UTA 09-39

Bulk Nanocomposite Magnets Suitable for High Energy Density Applications

INVENTOR: J. Ping Liu

TECHNOLOGY NEED

Permanent magnets are inevitable in electronics and automobile Industries. Conventional permanent magnets are based on single-phase materials, which have limited performance, lower Curie temperature and lower anisotropic properties. In addition, currently available magnets have low saturation magnetization, which restricts ability of magnets to use in high power density applications. Despite tremendous efforts, no single compound or alloy has been discovered which possess all the desired properties for an ideal permanent magnet. To increase the capabilities of permanent magnet, new types of magnets based on composite materials are desired.

INVENTION DESCRIPTION/SOLUTION

Researchers at UT Arlington have developed a novel and highly efficient way of making nanocomposite permanent magnets called as “Bulk Nanocomposite Magnets”. These magnets are made up of nanocomposite permanent magnets, fabricated by ball milling and warm compaction techniques. These composite magnets are suitable for high energy density applications at high temperature. Further, by using the proposed technology these composite magnets can be produced at low cost.

APPLICATIONS

- Automobile Industry
  - Electric Vehicles
  - Hybrid vehicles
- Industrial Automation
- Electronic storage devices
- Power generators

KEY BENEFITS

- High magnetization
- High Curie temperature
- High anisotropy properties
- High thermal stability of magnets
- Low cost for production of magnets

STAGE OF DEVELOPMENT

Prototyped & Lab tested

INTELLECTUAL PROPERTY STATUS

Patent Granted

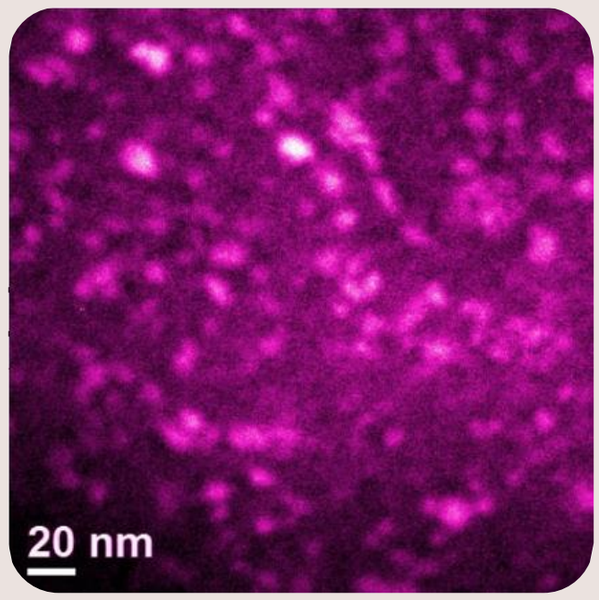
PUBLICATIONS

Synthesis and characterization of FeCo nanowires with high coercivity

RELATED TECHNOLOGY

11-42 Anisotropic Bonded Magnets

14-52 Nano-Wire based Permanent Magnets



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