

The Office of Technology Management

UNIVERSITY OF TEXAS  ARLINGTON

Tech ID: UTA 14:52

Nano-Wire Based Permanent Magnets

INVENTOR: J. Ping Liu

TECHNOLOGY NEED

The current permanent magnets are high energy products based on rare-earth compounds that have extraordinarily high magneto-crystalline anisotropy; however, they are relatively low in magnetization and have low thermal stability. There is also increasing concern over future rare-earth supplies with the ever expanding demand on high performance permanent magnets. A new permanent magnet with high magnetization and thermal stability would solve the problems of existing permanent magnets.

INVENTION DESCRIPTION/SOLUTION

Researchers at UTA have synthesized Ferromagnetic nanowires with high aspect ratio via a solvothermal chemical process. This technology effectively turns a 'soft' magnetic material into a 'hard' magnetic material. This magnet based on nanowires has high thermal stability as well as high magnetic performance. They also serve as ideal building blocks for future bonded, consolidated and thin film magnets with high energy density and high thermal stability.

APPLICATIONS

- Consumer Electronics
- Electric cars
- Data Storage devices

KEY BENEFITS

- Record high coercivity value of 10.6 kOe is achieved at room-temperature.
- Magnets have high thermal stability
- Low cost to scale to industrial production

STAGE OF DEVELOPMENT

Prototyped

INTELLECTUAL PROPERTY STATUS

Patent Pending

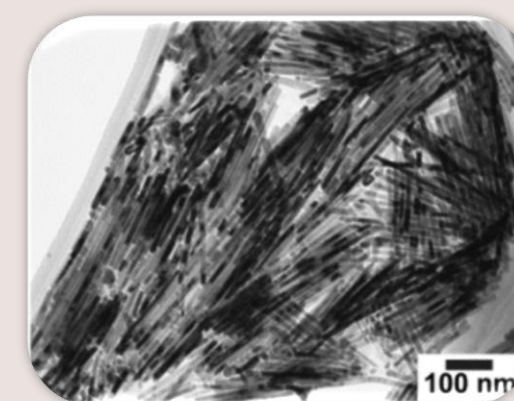
PUBLICATIONS

- [Exchange-coupled nanocomposite magnets by nanoparticle self-assembly](#)
- [High Energy Product Developed from Cobalt Nanowires](#)

RELATED TECHNOLOGY

[09-39 Nano-Wire Composite Magnets](#)

[11-42 Anisotropic Bonded Magnets](#)



More about the Inventor:
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