Nanostructured Magnetic Materials

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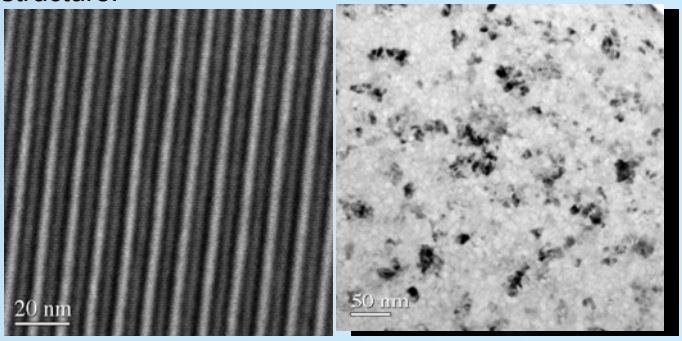
Nanostructured magnetic materials have superior magnetic properties and have novel applications in:

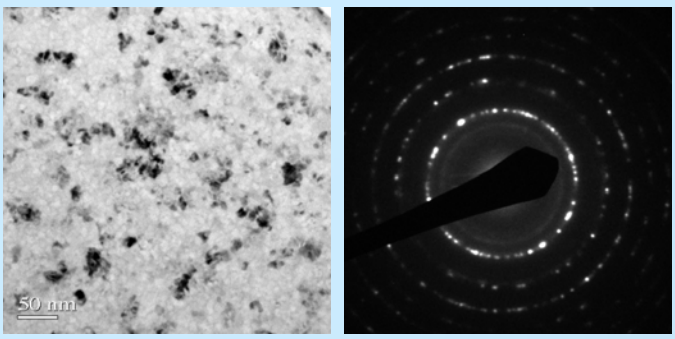
- **Energy**
- **Bioengineering**
- **Data storage**
- **Defense**
- **Water purification**

ENERGY & DEFENSE: Giant energy product, low loss, magnetocaloric, EM shielding

Interesting highly modulated nanolamellar structure in $Co_{65}Si_{15}B_{14}Fe_4Ni_2$ alloy. The novel crystal has a C base centered orthorhombic crystal structure.

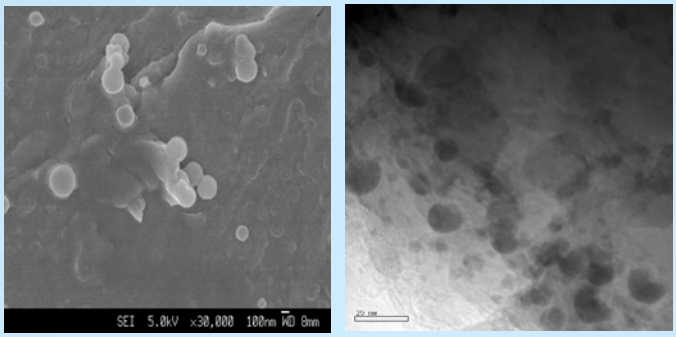


Nanocrystalline structure in Cu free HiTperm alloy $Fe_{44.5}Co_{44.5}Zr_7B_4$. This thermally stable nano-crystalline structure is useful for high temperature applications.

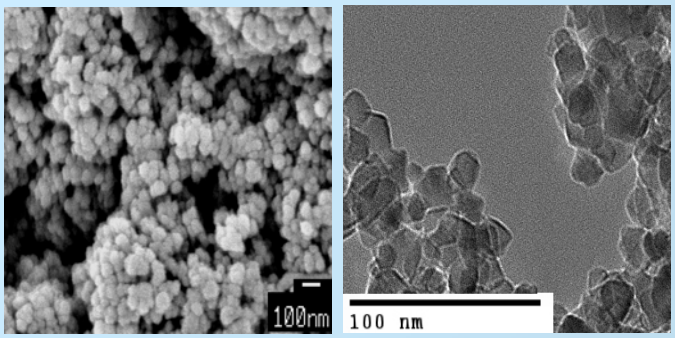


BIOMEDICAL: Drug and gene delivery, artificial muscle

Polymer coated iron oxide nanoparticles synthesized by coprecipitation technique for magnetically targeted drug delivery.

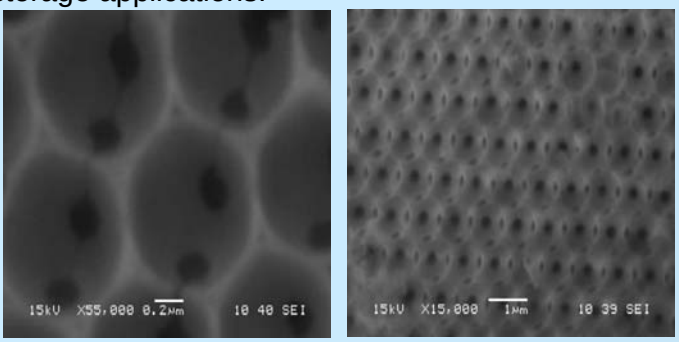


Iron oxide nanoparticles synthesized by high temperature decomposition of precursors for drug and gene delivery.

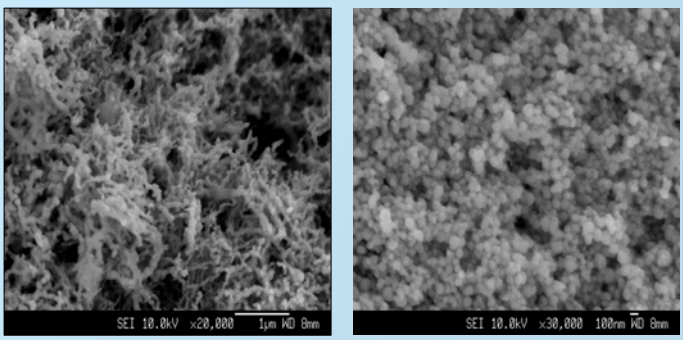


DATA STORAGE: Patterned magnetic media

Patterned nanoparticles for high density magnetic storage applications.



Nanofiber and nanoparticles with novel magnetic properties for data storage applications.



Summary: Nanostructured magnetic materials have been successfully prepared by a wide range of synthesis techniques for novel energy, bioengineering, data storage and defense applications.