

Magnetic Nanocrystals for MPI

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How do nanocrystal properties - such as composition and size - affect sensitivity and resolution in Magnetic Particle Imaging (MPI)?

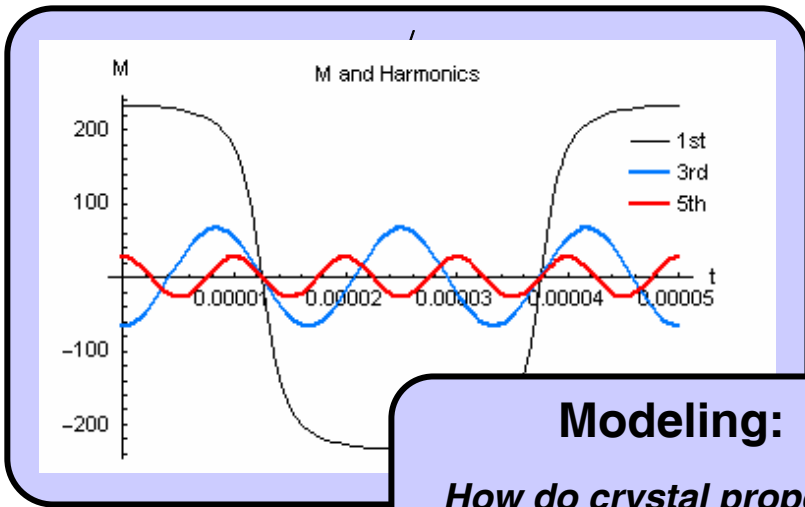
Magnetic particle imaging is a new technique, similar to MRI, whereby the location of magnetic nanocrystals is mapped by measuring their response to an external magnetic field.



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Modeling:
How do crystal properties affect performance?

Characterization:
What are the properties of our particles?

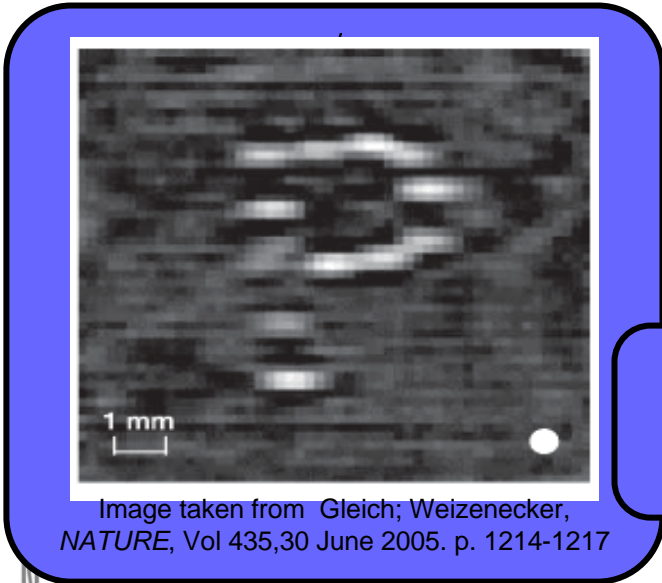
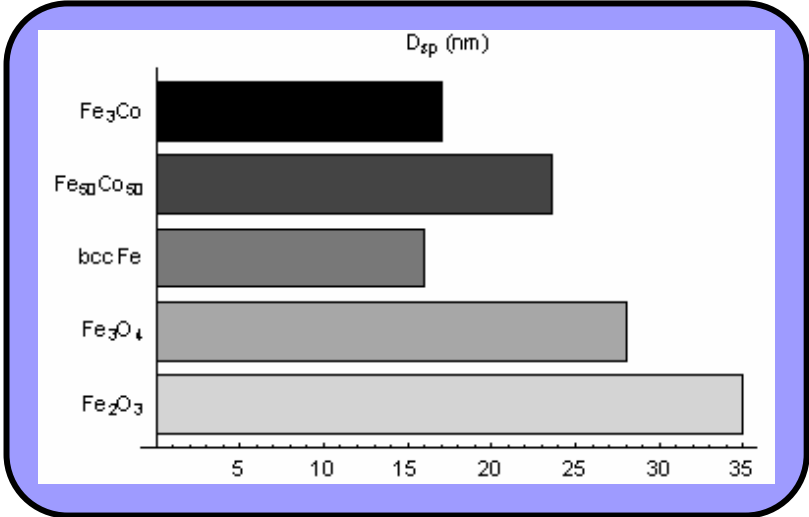


Image taken from Gleich; Weizenecker, NATURE, Vol 435,30 June 2005. p. 1214-1217

Device Testing



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- Modeling results:
- Particle properties matter!
- We want to maximize:
 - M (sensitivity)
 - dM/dH (resolution)
- Size is critical
- Material selection also has a large impact

- Next steps:
- Characterize particle properties in detail
- Analyze device performance

