Magnetic Vortex Core Pinning by an Artificial Defect

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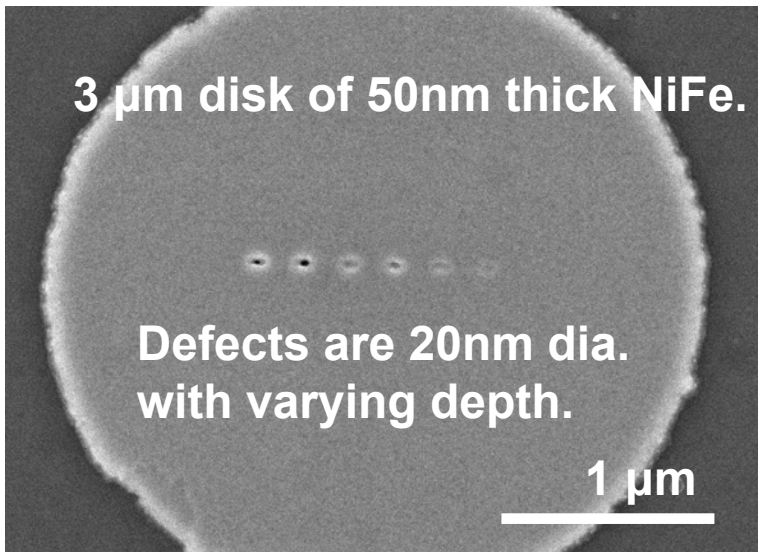
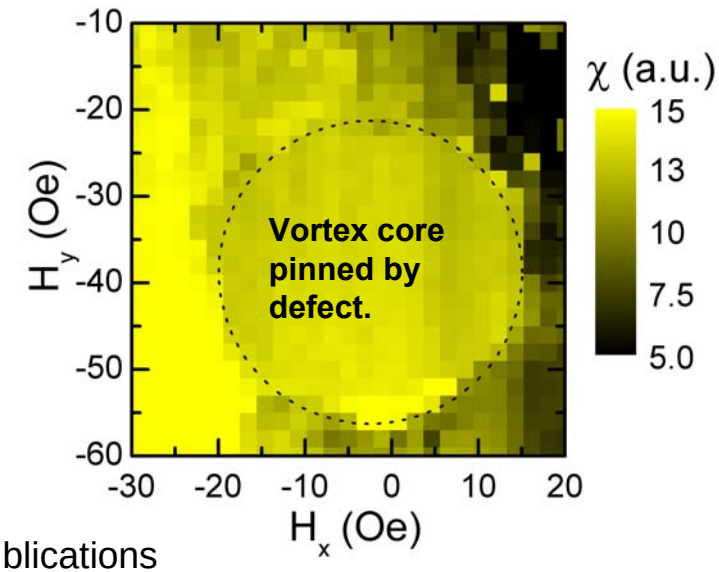
- Magnetic disk with artificial defect
  - Disk prepared by e-beam lithography and dry etching.
  - Defect incorporated by focused ion beam.
  - A magnetic vortex forms in the disk, with a core that is like the funnel of a tornado.



- MAJOR OBSERVATIONS
  - We probe the magnetic susceptibility of a single disk as a function of vortex core position which is controlled by magnetic field, H.
  - When the core is trapped by an artificial defect, the magnetic susceptibility, c, of the disk is altered.
  - The image below represents 200 nm x 200 nm displacement of the core. Changes in c indicate pinning of the core by a single artificial defect.



- Publications
  - R.L. Compton and P.A. Crowell, Phys. Rev. Lett. **97**, 137202 (2006)