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Academy of Sciences**Research Summary:**

- Analytical TEM/STEM: to understand the relationship between growth mechanism, properties and microstructure
- Electron tomography: to characterize the morphology and chemical distribution of nanomaterials in three dimensions
- In-situ experiments in TEM: to study the materials evolution under special circumstances (as electrical biased, liquid, heating) by combining with analytical TEM

Selected Recent Publications:

Yuzi Liu, Ann N. Chiaramonti, Daniel K. Schreiber, Hyunsoo Yang, Stuart S. P. Parkin, Olle G. Heinonen and Amanda K. Petford-Long, *Effect of annealing and applied bias on barrier shape in CoFe/MgO/CoFe tunnel junctions*, Physical Review B **83** 165413 (2011)

Goran Mihajlović, Daniel K. Schreiber, Yuzi Liu, John E. Pearson, Samuel D. Bader, Amanda K. Petford-Long, and Axel Hoffmann, *Enhanced spin signals due to native oxide formation in Ni₈₀Fe₂₀/Ag lateral spin valves*, Applied Physics Letters, 2010 **97** (11), 112502.

Y.Z. Liu, Y.Q. Wu, M.J. Kramer, Y. Choi, J.S. Jiang, Z.L. Wang, and J.P. Liu, *Microstructure analysis of a SmCo/Fe exchange spring bilayer*. Applied Physics Letters, 2008. **93** (19) 192502.

C.Y. Xu, Y.Z. Liu, L. Zhen, and Z.L. Wang, *Disket-nanorings of K₂Ti₆O₁₃ formed by self-spiraling of a nanobelt*. Journal of Physical Chemistry C, 2008. **112**(20): p. 7547-7551.

Y.Z. Liu, W.G. Wang, T. Moriyama, J.Q. Xiao, and Z. Zhang, *Direct measurement of barrier asymmetry in AlOx/ZrOy magnetic tunnel junctions using off-axis electron holography*. Physical Review B, 2007. **75** (13) 134420.

Y.Z. Liu, Q.Y. Xu, H. Schmidt, L. Hartmann, H. Hochmuth, M. Lorenz, M. Grundmann, X.D. Han, and Z. Zhang, *Co location and valence state determination in ferromagnetic ZnO : Co thin films by atom-location-by-channeling-enhanced-microanalysis electron energy-loss spectroscopy*. Applied Physics Letters, 2007. **90** (15) 154101.