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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:

Liu, Y.; Sun, Y., Electron beam induced evolution in Au, Ag, and interfaced heterogeneous Au/Ag nanoparticles. *Nanoscale* 2015, *7* (32), 13687-13693.

Ding, Y.; Liu, Y.; Pradel, K. C.; Bando, Y.; Fukata, N.; Wang, Z. L., Quantifying mean inner potential of ZnO nanowires by off-axis electron holography. *Micron* 2015, *78*, 67-72.

Zhang, J.; Rowland, C.; Liu, Y.; Xiong, H.; Kwon, S.; Sheychenko, E.; Schaller, R. D.; Prakapenka, V. B.; Tkachev, S.; Rajh, T., Evolution of Self-Assembled ZnTe Magic-Sized Nanoclusters. *Journal of the American Chemical Society* 2015, *137* (2), 742-749.

D'Aquila, K.; Liu, Y.; Iddir, H.; Petford-Long, A. K., In situ TEM study of reversible and irreversible electroforming in Pt/Ti:NiO/Pt heterostructures. *Physica Status Solidi-Rapid Research Letters* 2015, *9* (5), 301-306.

Yuzi Liu, Xiao-Min Lin , Yugang Sun , and Tijana Rajh, In Situ Visualization of Self-Assembly of Charged Gold Nanoparticles J. Am. Chem. Soc., 2013, 135 (10), pp 3764–3767

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).