LANGLI LUO

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EXPERIENCE

Northwestern University, NU*ANCE* Center Evanston, IL
Post-Doctoral Fellow 2012.12 – present

- Utilizing Scanning/Transmission Electron Microscopy with in situ capabilities to study dynamic processes in various fields materials science, i.e. cathode and anode materials in advanced lithium ion battery.
- Developing in situ TEM techniques (gas/heating, liquid cell and electron probing) on TEMs and collaborating with faculty groups utilizing instruments at Electron Probe Instrumentation Center.

State University of New York at Binghamton Binghamton, NY
Research Assistant, Advisor: Dr. Guangwen Zhou 2009.8 – 2012.11
University of Pittsburgh Pittsburgh, PA
Visiting Student in Dr. Judith C Yang's group 2009.8 – 2012.11

Thesis Project: Visualization and thermodynamics & kinetics studies of early stages of oxidation of Cu and Cu-Au/Pt thin film by *in situ* TEM technique

- Deposited metal and alloy thin film by e-beam evaporation system.
- Studied thermodynamic and kinetics of oxidation behaviors in nanoscale by *in situ* TEM and gas-surface study through HRTEM and STEM/EDS.

State University of New York at Binghamton Binghamton, NY
Graduate Assistant under the guidance of Dr. Junghyun Cho 2007.8 – 2009.7

- Fabricated bio-inspired Ceramic/Polymer hybrid thin films for barrier coatings and oxide thin films for flexible electronics/solar cells by low temperature solution based deposition.
- Conducted microstructural analysis and efficiency measurement of thin films by SEM and mechanical/electrical testing.
- Fabricated flagella as a biological material for nanostructured electronics devices. (patented)

Huazhong University of Science and Technology Wuhan, P. R. China
Graduate Research Assistant 2004.9 – 2007.3

- Synthesized surfactant AOT and utilized it in preparation of metal nanoparticles by reverse micelle technique.
- Conducted FT-IR characterization of AOT, UV-Vis spectrum analysis and TEM characterization of nanoparticle dispersion.
- Prepared ITO and AZO thin films by liquid phase co-deposition method & magnetron sputtering: film deposition process improvement; sheet resistance measurement of thin films.

Wuhan University of Science and Technology Wuhan, P. R. China
Research Experience for Undergraduate 2004.9 – 2007.3

- Synthesized metal oxide-supported metal clusters catalyst (e.g. MnOx-ZrO_2) by Sol-Gel/Vacuum Freeze Drying or Co-precipitation/Supercritical Fluid Drying methods for CO selective reduction of NO for auto gas exhaust treatment.
- Characterized surface area measurement (BET method) and online efficiency test of various type of catalyst.

EDUCATION

Ph.D. in Materials Sci&Eng — **State University of New York at Binghamton**, USA 2012
M.Sc. in Materials Science — **Huazhong University of Science and Technology**, China 2007
B.Eng. in Materials Engineering — **Wuhan University of Science and Technology**, China 2004

SKILLS

- Thin films processing including solution based methods and PVD(magnetron sputtering and UHV e-beam evaporation)
- Extensive experience of in situ TEM and HRTEM, STEM/EDS, SEM/EDS and familiar with surface techniques including STM, AFM and Nanoindentation
- Setup and modification vacuum system including UHV-STM and e-beam evaporator
- MATLAB, Mathematica, LABVIEW and TEM image simulation software

PEER-REVIEWED PUBLICATION

1. C. Wu, X. Qiao, L. Luo, H. Li, Synthesis of ZnO flowers and their photoluminescence properties, *Materials Research Bulletin*, Vol. 43, 1 July, 2008
2. W. R. Hesse, L. Luo, G. Zhang, R. Mulero, J. Cho, M. Kim, Mineralization of flagella for nanotube formation, *Materials Science and Engineering: C*, Vol. 29, Issue 7, 31 August, 2009
3. L. Luo, Y. Kang, Z. Liu, J. C. Yang and G. Zhou, Dependence of the degree of orientation of copper oxide nuclei on the oxygen pressure during the initial stages of copper oxidation, *Physical Review B*, Vol. 83, Issue15,5418, 2011
4. L. Luo, Y. Kang, J. C. Yang and G. Zhou, Effect of gold composition on the orientations of oxide nuclei during early stages of copper-gold alloy oxidation, *J Appl. Phys*., 111, 083533, 2012
5. L. Luo, Y. Kang, J. C. Yang and G. Zhou, Surface orientation effect on critical oxygen pressure for nucleation of randomly oriented oxides during early stages of Cu oxidation, *Surface Science*, 606, 1790-1797, 2012
6. L. Luo, Y. Kang, J. C. Yang and G. Zhou, Influence of the surface morphology on the early stages of Cu oxidation, *Applied Surface Science*, 259, 791-798, 2012
7. G. Zhou, L. Luo, L. Li, J. Ciston, E. A. Stach, J. C. Yang, Step-edge induced oxide growth during the oxidation of Cu surfaces, *Physical Review Letter*, 109, 235502, 2012