Sarah C. Petitto

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Objective: To study the surface structure and reactivity of transition metals and metal oxides for the continued development of the technological performance and efficiency of materials based applications using surface sensitive techniques in ultra-high vacuum.

Education:

1999-2005	University of Nebraska–Lincoln, Lincoln, Nebraska Classified Ph.D. Nominee 12/99, Ph.D. Candidate 11/02; GPA = 3.95
1995-1999	Rochester Institute of Technology, Rochester, New York B.S. with Major in Chemistry with High Honors Studies; GPA = 3.71; GPA in Math and Science = 3.69

Honors and Societies:

2005	Received University of Nebraska, College of Arts and Sciences Graduate Research Assistant Award
2005	Received Sigma XI, University of Nebraska, Outstanding Graduate Award
2005	Received Sigma XI and University of Nebraska Research and Graduate Studies, Best Student Research Poster in Physical and Material sciences
2004	Received the University of Nebraska, Department of Chemistry, Korean Alumni Research Assistant Award
2003	Received 1st Place for Best Student Poster at the Rocky Mountain Chapter AVS in Golden, CO
2002-2005	Received PLU Travel Award
2002-2004	Received AVS Dorothy & Earl S. Hoffman Travel Award
2002-	Member of the American Vacuum Society (AVS)
2002-	Member of the American Chemical Society (ACS)
2001-	Member of Nebraska Academy of Sciences (NAS)
2000-2002	Secretary of Phi Lambda Upsilon (PLU)–Rho Chapter
2000-	Member of Phi Lambda Upsilon (PLU)–Rho Chapter
2000	Received the University of Nebraska Student Assistantship in Research Scholarship (STARS)
1998	Received the Rochester Institute of Technology Department of Chemistry Undergraduate Analytical Chemistry Award

Professional Experience:

2005-	Research Staff Scientist II, University of Alaska-Fairbanks, Fairbanks, AK
2000-2005	Graduate Research Assistant, University of Nebraska–Lincoln, Lincoln, NE
1999-2000	Graduate Teaching Assistant, University of Nebraska–Lincoln, Lincoln, NE
1998	Energy Research Undergraduate Laboratory Fellowship (ERULF),

	Research Assistant, National Renewable Energy Laboratory (NREL), Golden, CO
1997–1999	Research Assistant, Rochester Institute of Technology, Rochester, NY
1997	National Science Foundation-Research Experiences for Undergraduates (NSF-REU) Research Assistant, Rochester Institute of Technology, Rochester, NY

Teaching Experience:

Spring 2000	General Chemistry Lab, University of Nebraska, Department of Chemistry
Fall 1999	General Chemistry Lab, University of Nebraska, Department of Chemistry

Presentations at Conferences:

Mar. 2006	Talk given at ACS 231st National Meeting in Atlanta, GA *"Surface Structure of Hydrated Magnetite (111) Surface Using Crystal Truncation Rod (CTR) Diffraction"*
Mar. 2005	Poster presented ACS 229th National Meeting in San Diego, CA *"Bromobenzene Adsorption on NiO(100) and Vicinally Stepped NiO(100) Single Crystal Surfaces"*
Nov. 2004	Talk given at AVS 51st International Symposium in Anaheim, CA *"The Adsorption of Bromobenzene on Periodically-Stepped and Flat NiO(100) Surfaces"*
Nov. 2003	Talk given at AVS 50th International Symposium in Baltimore, MD *"Surface Composition and Structure of Co_3O_4(110) and the Effect of Impurity Segregation"*
Jun. 2003	Poster presented Rocky Mountain Chapter AVS in Golden, CO *"Surface Composition and Structure of Co_3O_4 Single Crystal Surface and the Effect of Impurity Segregation"*
Nov. 2002	Poster presented AVS 49th International Symposium in Denver, CO *"The Periodically-Stepped NiO(100) Surface and the Adsorption of Bromobenzene"*
Apr. 2002	Talk given at NAS 122nd Annual Meeting in Lincoln, NE *"A Study of Stepped NiO(100) Surfaces Using LEED"*
Oct. 2001	Talk given at ACS 36th Midwest Regional Meeting in Lincoln, NE *"A Study of Stepped NiO(100) Surfaces Using LEED"*
Apr. 2001	Talk given at NAS 121st Annual Meeting in Lincoln, NE *"Analysis of Surface and Bulk Composition of Cobalt Containing Spinels"*
Nov. 1998	Poster presented at DOE-ERULF Conference in Washington, DC *"Acid Hydrolysis Process for Converting Softwood Residues to Ethanol"*
Jul. 1998	Talk given at NREL's DOE-ERULF Symposium in Golden, CO *"Acid Hydrolysis Process for Converting Softwood Residues to Ethanol"*
Aug. 1997	Talk given at RIT's NSF-REU Symposium in Rochester, NY *"Motions of Water, Decane, and Bis(2-ethylhexyl)sulfosuccinate Sodium Salt in Reverse Micelle Solutions"*

Research Experience:

- Surface Science Techniques
  - Crystal Truncation Rod (CTR) Diffraction
  - Auger Electron Spectroscopy (AES)
  - X-ray Photoelectron Spectroscopy (XPS)
  - Low Energy Electron Diffraction (LEED)
  - Temperature Programmed Desorption (TPD)
  - High Resolution Electron Energy Loss Spectroscopy (HREELS)
  - Atomic Force Microscopy (AFM)

- Powder X-ray Diffraction (PXRD), Back Laue Diffraction, Nuclear Magnetic Resonance (NMR), Fourier Transform Infrared Spectroscopy (FTIR), High Performance Liquid Chromatography (HPLC), Gas Chromatography (GC), and UV/Vis Spectroscopy

- Used the following techniques: Fluorescence Spectroscopy, Gas Chromatography/Mass Spectrometry (GC/MS), Atomic Absorption/Atomic Emission (AA/AE), and Inductively Coupled Plasma Spectroscopy (ICP)

Publications:

1. **S.C. Petitto**, C. L. Berrie, and M.A. Langell, "Novel Mesoscale Defect Structure on NiO(100) Surfaces by Atomic Force Microscopy." *Submitted.*

2. E.M. Malone, **S.C. Petitto**, and M.A. Langell, "Fuchs-Kliewer Phonon Spectrum of Co_3O_4(110) by High Resolution Electron Energy Loss Spectroscopy." *Surf. Sci. Spectra* **11**, 43-51 (2006).

3. **S.C. Petitto**, E. M. Marsh, and M.A. Langell, "Bromobenzene Adsorption on Periodically-Stepped NiO(100) Surfaces." *J. Phys. Chem. B* **110(3)**, 1309-1318 (2006).

4. **S.C. Petitto** and M.A. Langell, "Cu_2O(110) Formation on Co_3O_4(110) Induced by Copper Impurity Segregation." *Surf. Sci.* **599**, 27-40 (2005).

5. E.M. Malone, **S.C. Petitto**, G.S. Harbison, K.W. Wulser, and M.A. Langell, "Deconvolution of the Co_3O_4(110) Fuchs-Kliewer Phonon Spectrum." *J. Vac. Sci. Technol. A* **23(4),** 1061-1066 (2005).

6. E.M. Malone, **S.C. Petitto**, and M.A. Langell, "Fuchs-Kliewer Phonon Spectrum of Co_3O_4(110) Single Crystal Surfaces by High Resolution Electron Energy Loss Spectroscopy." *Solid State Comm*. **130(9)**, 571-575 (2004).

7. **S.C. Petitto** and M.A. Langell, "Surface Composition and Structure of Co_3O_4(110) and the Effect of Impurity Segregation" *J. Vac. Sci. Technol. A* **22(4),** 1690-1696 (2004).

8. L.J. Schwartz, C.L. DeCiantis, **S. Chapman,** B.K. Kelley, and J.P. Hornak, "Motions of Water, Decane, and Bis(2-ethylhexyl)sulfosuccinate Sodium Salt in Reverse Micelle Solutions**.**" *Langmuir* **15(17),** 5461-5466 (1999).