

## COURTNEY M PAYNE

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### EDUCATION

Rice University, Houston, TX

**Expected: Ph.D. in Chemistry**

GPA: 4.01

Rice University, Houston, TX

**M.A. in Chemistry**

2011

GPA: 4.02

Rice University, Houston, TX

**B.S. in Chemical Physics**

2009

GPA: 3.55

Green Valley High School, Henderson, NV

GPA: 4.5

2005

### RESEARCH EXPERIENCE

Hafner Research Group, Rice University

**Research Assistant**

January 2007 – Present

Investigated physical and synthetic techniques to form novel nanostructures for nanophotonic applications and studied the chemical kinetics of nanoparticle formation.

Physics Summer School, Clemson University, Consortium International University

**Summer Student**

2007

Gained hands-on experimental training at the Surface Physics Laboratory of Elettra in Trieste, Italy and studied in-depth material on surface physics and related experimental technologies.

Colvin Research Group, Rice University

**REU, Center for Biological and Environmental Nanotechnology**

January 2006 – August 2006

Used alternative methods, including analytical ultracentrifugation, to characterize solution phase nanoparticle systems.

### TEACHING EXPERIENCE

Rice University

**Head Teaching Assistant – “Chem 123 and 124, General Chemistry Laboratory”**

Fall 2009 – Fall 2010

Deputy to the instructor of the course, supervised the training of new teaching assistants, and helped facilitate the execution and troubleshooting of each experiment.

**Teaching Assistant – “Chem 123 and 124, General Chemistry Laboratory”**

Fall 2008 – Spring 2009

Taught one section of mixed ability freshmen, helped develop new laboratory experiments, and was a discussion leader for help sessions.

**Mentor – “Project GRAD”**

Mentored underserved, socially disadvantaged high school students in general chemistry classroom and laboratory settings, facilitated positive interaction between students from different backgrounds, and provided counseling towards possible careers in science and engineering.

**Summer 2009 – 2011****Mentor – “Nanoscience Summer Academy, Center for Biological and Environmental Nanotechnology”**

Mentored highly motivated, college bound high school students, bridged traditional chemistry concepts with nanotechnology at a fundamental level, and provided in-depth counseling towards education and career possibilities in science and engineering.

**Summer 2009 – 2010****Mentor – “CBEN Research Experience for Teachers”**

Helped expose local high school science teachers to a research environment and assisted in creating ideas for lesson plans to bridge the classroom and research laboratory.

**Summer 2008, 2010, 2011****AWARDS**

Harry B. Weiser Teaching Award, Rice University	2010
Houston Livestock Show and Rodeo Scholarship, Rice University	2010
NSF IGERT Training Program in Nanophotonics, Rice University	2009 – 2010
Phi Lambda Upsilon (Honorary Chemical Soc.)	2009
Presidents Honor Roll, Rice University	2008 – 2009
National Merit Scholar	2005 – 2009
Robert C. Byrd Scholarship	2005 – 2009

**RESEARCH SKILLS**

Transmission electron microscopy  
 Scanning electron microscopy  
 Raman spectroscopy  
 X-Ray photoelectron spectroscopy  
 High temperature gold, silver, and magnetite nanoparticle syntheses  
 Aqueous, surfactant based gold and silver nanoparticle syntheses  
 UV-vis, IR spectroscopy  
 Phase transfer surfactant extractions  
 Nanoparticle functionalization  
 Atomic force microscopy  
 Optical dark field microscopy  
 Thermal evaporation  
 Shear rheology

## PUBLICATIONS

1. **Payne, C. M.**, Anderson, L. J. E., & Hafner, J. H. (2013). Novel Plasmonic Structures Based on Gold Nanobelts. *J. Phys. Chem. C*, (in press).
2. **Payne, C. M.**, Tsentlovich, D., Anderson, L. J. E., Guo, W., Pasquali, M., & Hafner, J. H. (2013). Exploration of the Synthesis of Gold Nanobelts and Resulting Crystal Structures. (in preparation).
3. Anderson, L. J. E., **Payne, C. M.**, & Hafner, J. H. (2013). Plasmon Propagation in Gold Nanobelts. *Nano Lett.*, (submitted).
4. Benoit, D. N., **Payne, C. M.**, Walkiewicz, K., Zhu, H., Avendano, C., Verm, R.A., Resendiz, G., Lilierose, M. H., Hafner, J. H., Shamoo, Y., Colvin, V. L. (2013) Protein Crystallization for the Mesoscopic Template of Nanoparticle Arrangements. (in preparation).
5. Anderson, L. J. E., **Payne, C. M.**, Zhen, Y.-R., Nordlander, P., & Hafner, J. H. (2011). A Tunable Plasmon Resonance in Gold Nanobelts. *Nano Lett.*, *11*(11), 5034.
6. Lee, S., Anderson, L. J. E., **Payne, C. M.**, & Hafner, J. H. (2011). Structural Transition in the Surfactant Layer that Surrounds Gold Nanorods as Observed by Analytical Surface-Enhanced Raman Spectroscopy. *Langmuir*, *27*(24), 14748.
7. Rostro-Kohanloo, B. C., Bickford, L. R., **Payne, C. M.**, Day, E. S., Anderson, L. J. E., Zhong, M., Lee, S., Mayer, K. M., Zal, T., Adam, L., Dinney, C. P. N., Drezek, R. A., West, J. L., Hafner, J. H. (2009). The stabilization and targeting of surfactant-synthesized gold nanorods. *Nanotechnology*, *20*(43).

## PRESENTATIONS

1. **Payne, C. M.**, Anderson, L. J. E., & Hafner, J. H. (2012). Gold Nanobelts: Synthesis and Applications. Rice Quantum Institute Colloquium XXVI.
2. **Payne, C. M.**, Lee, S., Mayer, K. M., & Hafner, J. H. (2009). Critical CTAB Stabilization of Gold Nanorods. Materials Research Society Spring Meeting: San Francisco, CA.
3. **Payne C. M.**, Yavuz, C. T., Mayo, J. T., Yu, W. W., Quevedo, E., Colvin, V. L. (2006) Cyanide Complexation of Magnetite Nanocrystals. Rice University Center for Biological and Environmental Nanotechnology Poster Session: Houston, TX.

## LANGUAGES

English – native language

Spanish – speak, read, and write with basic competence

## MEMBERSHIPS

Phi Lambda Upsilon