AMANDA E. HENKES, PH.D.

102 Giesecke Engineering Research Building | 3471 TAMU | College Station, TX 77843 | amandahenkes@tamu.edu | (979)862-5959

EDUCATION

Ph. D. Chemistry
Texas A&M University, College Station, Texas, May 2008
Dissertation: *Solution-mediated strategies for synthesizing metal oxides, borates and phosphides using nanocrystals as reactive precursors.* (Prof. Raymond E. Schaak)

B. S., Chemistry
Southern Methodist University, Dallas, Texas, May 2004 (magna cum laude)

B. A. Spanish
Southern Methodist University, Dallas, Texas, May 2004 (magna cum laude)

RESEARCH INTERESTS

- Nanomaterials synthesis and characterization, with expertise in metal phosphides
- Light spectroscopy (Raman, FTIR, fluorescence, UV-Vis-NIR)
- Broad scientific interests including materials science, chemistry, medicine, biotechnology, environmental science, astronomy, and wearable technology.

TECHNICAL SKILLS

- Fluorescence spectroscopy
- Raman spectroscopy & microscopy
- FTIR spectroscopy
- UV-Visible-Near IR spectroscopy
- Ellipsometry
- Confocal fluorescence microscopy
- Nanoindentation
- X-ray photoelectron spectroscopy
- Powder X-ray diffraction
- Transmission electron microscopy
- Thermogravimetric analysis & differential scanning calorimetry
- Nanocrystal synthesis and characterization
- Air-free Schlenk techniques for chemical synthesis
- Web design: basic WordPress, Adobe Dreamweaver, HTML, CSS
- Desktop Publishing: Adobe InDesign and Photoshop
- Microsoft Office proficiency

PROFESSIONAL EXPERIENCE

Materials Characterization Facility, Texas A&M University, College Station, Texas

Research Scientist (2015-present)
Associate Research Scientist (2010-2015)
Assistant Research Scientist (2008-2010)

- Trained users and maintained/repaired analytical instrumentation (light spectroscopy & microscopy)
- Developed standard operating and training procedures for users
- Developed and implemented safety protocol (laboratory, laser, biosafety)
- Planned and hosted spectroscopy workshops for students and researchers, including seminars and hands-on demonstrations
- Facility webpage administrator
- Created marketing material for facility

Department of Chemistry, Texas A&M University, College Station, Texas (Advisor: Raymond E. Schaak)

Graduate Research Assistant (2004-2008)

- Synthesized multi-element materials from nanocrystal precursors (oxides, phosphides, and borates)
- Funded by an NSF Graduate Research Fellowship
- Scientific instrumentation: Powder XRD, TEM, SEM, TGA, DSC, optical microscopy

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Department of Chemistry, Southern Methodist University, Dallas, Texas (Advisor: David Y. Son)

Undergraduate Research Assistant (2004)

- Synthesized multidentate aminomethlypyridal ligands
- Scientific instrumentation: NMR, FTIR, column chromatography

Teaching Assistant (2002-2006)

- Advanced Inorganic Chemistry Lab, Texas A&M University, College Station, Texas (2006)
- General Chemistry Lab, Texas A&M University, College Station, Texas (2004-2005)
- Organic Chemistry Lab, Southern Methodist University, Dallas, Texas (2002-2004)

HONORS & AWARDS

- Texas A&M University Human Resources & Organization Effectiveness: *Microsoft Office Essentials Certificate (summer 2017), Web Development Certificate (fall 2017), Desktop Publishing (in progress)*
- NSF Graduate Research Fellowship
- ACS Division of Inorganic Chemistry Travel Award (National Meeting)
- Charles T. Kennar Award in Chemistry, Southern Methodist University
- Dallas/Ft. Worth ACS Outstanding Student Award
- President's Scholar, Southern Methodist University
- Robert Stewart Hyer Honor Society, Southern Methodist University
- Western Athletic Conference Academic All-Conference Team

AFFILIATIONS

- American Chemical Society, Divisions of Inorganic and Analytical Chemistry & Nanoscience
- Phi Lambda Upsilon National Chemistry Honor Society, Beta Beta and Beta Mu chapters
- Phi Beta Kappa, Gamma of Texas Chapter

SERVICE

Search Dog Network (K-9 Search & Rescue)

- NASAR Search & Rescue Technician II
- Base operations: situational unit leader, documentation, communications

Patient Family Advisory Council

- Baylor College of Medicine (Cystic Fibrosis Center)

Brazos Runners Club

PUBLICATIONS

1. S. Verkhoturov, S. Geng, B. Czerwinski, **A. Henkes-Young**, A. Delcorte, and E. Schweikert "Single Impacts of keV Fullerene Ions on Free Standing Graphene: Emission of Ions and Electrons from Confined Volume," *J. Chem. Phys.* **2015**, *143*, 164302.
2. M.J. Eller, C.-K. Liang, S. Della-Negra, A.B. Clubb, H. Kim, **A.E. Young**, and E.A. Schweikert, "Hypervelocity nanoparticle impacts on free-standing graphene: A *sui generis* mode of sputtering," *J. Chem. Phys.* **2015**, *142*, 044308.
3. **A.E. Henkes** and R.E. Schaak, "Synthesis of Nanocrystalline $REBO_3$ (RE = Y, Nd, Sm, Eu, Gd, Ho) and YBO_3:Eu Using a Borohydride-Based Solution Precursor Route," *J. Solid State Chem.* **2008**, *181*, 3264-3268.
4. **A.E. Henkes**, R.E. Schaak, "Template-Assisted Synthesis of Shape-Controlled Rh_2P Nanocrystals," *Inorg. Chem.* **2008**, *47*, 671-677.
5. Sengupta, P.; **Henkes, A. E.**; Kumar, M. K.; Zhang, H.; Son, D. Y. "A General One-Step Synthesis of Multidentate (Pyridylalkyl)amines from Mono-, Bis-, Tris- and Tetrakis(bromomethyl)benzenes: Potential Ligands for Supramolecular Assembly," *Synthesis* **2008**, 79-86.
6. Y. Vasquez, **A.E. Henkes**, J.C. Bauer, and R.E. Schaak, "Nanocrystal Conversion Chemistry: A Unified and Materials-General Strategy for the Template Based Synthesis of Nanocrystalline Solids," *J. Solid State Chem.* **2008**, *181*, 1509-1523.

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7. **A.E. Henkes**, R.E. Schaak, "Trioctylphosphine: A General Phosphorus Source for the Low-Temperature Conversion of Metals into Metal Phosphides," *Chem. Mater*. **2007**, *19*, 4234-4242.
8. **A.E. Henkes**, Y. Vasquez, R.E. Schaak, "Converting Metals into Phosphides: A General Strategy for the Synthesis of Metal Phosphide Nanocrystals," *J. Am. Chem. Soc*. **2007**, *129*, 1896 -1897.
9. **A.E. Henkes**, J.C. Bauer, R.D. Johnson, A.K. Sra, R.E. Cable, and R.E. Schaak, "Low-Temperature Nanoparticle-Directed Solid State Synthesis of Ternary and Quaternary Transition Metal Oxides," *Chem. Mater.* **2006**, *18*, 567-571.

PRESENTATIONS & WORKSHOPS

1. MCF Spring 2018 Lunch Seminar Series "Confocal Microscopy in Materials Science," April 2, 2018, **presenter**.
2. MCF Spring 2017 Lunch Seminar Series "Photoluminescence: Theory and Applications," March 30, 2017, **presenter**.
3. MCF Fall 2016 Lunch Seminar Series "Raman Spectroscopy: Theory and Applications," November 7, 2016, **presenter**.
4. Keyence optical imaging systems demonstration at Texas A&M University Materials Characterization Facility, October 11, 2016, **organizer and host**.
5. Nanovea optical profilometer workshop at Texas A&M University Materials Characterization Facility, June 24, 2016, **organizer and host**.
6. 2016 MCF Spectroscopy Basics Workshop at Texas A&M Materials Characterization Facility, May 20, 2016, **organizer, host, and lead presenter**.
7. Renishaw Raman workshop at Texas A&M University Materials Characterization Facility, April 12, 2016, **organizer and host**.
8. Nanofilm ellipsometry workshop at Texas A&M University Materials Characterization Facility, May 11-12, 2009, **organizer and host**.
9. 234th National ACS Meeting, August 19-23, 2007, Boston, Massachusetts
   "Trioctylphosphine: A General and Mild Phosphorus Source for the Low-Temperature Conversion of Metals into Metal Phosphides."
10. North American Solid State Chemistry Conference, May 17-19, 2007, College Station, Texas
    "Converting Metals to Phosphides: A General and Versatile Solution-Mediated Strategy for Synthesizing Metal Phosphides."
11. The Best Little Nano Conference in Texas, April 4-5, 2007, Austin, Texas
    "Converting Metals into Phosphides: A General Strategy for the Synthesis of Metal Phosphide Nanocrystals."
12. 231st National ACS Meeting, March 26-30, 2006, Atlanta, Georgia
    "Low-Temperature Nanoparticle-Directed Solid-State Synthesis of Ternary and Quaternary Transition Metal Oxides."