

## Anna Zaniewski

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### EDUCATION

**2012** Ph.D., Physics, University of California, Berkeley

Dissertation Title: "Probing Nanostructures for Photovoltaics: Using atomic force microscopy and other tools to characterize nanoscale materials for harvesting solar energy"

**2009** M.A., Physics, University of California, Berkeley

**2005** B.S., Physics, West Virginia University

Minors in English and Africana Studies

### PROFESSIONAL APPOINTMENTS

#### July 2013-present

Associate Instructional Professional, Department of Physics, Arizona State University, Tempe AZ

Faculty Affiliate, Lincoln Center for Applied Ethics, Arizona State University, Tempe AZ

Honors Faculty, Barrett the Honors College, Arizona State University, Tempe AZ

**Spring 2013** Junior Specialist- Explorations in Scientific Research Coordinator, Letters of Arts and Sciences Dean's Office, University of California, Berkeley, Berkeley, CA

### GRANTS, AWARDS AND FELLOWSHIPS

**2017** (Co-PI) National Science Foundation

**2017** LEAP S-STEM Scholars (Co-PI), National Science Foundation, \$999k scholarship and support program for transfer students

**2016** Arizona NASA Space Grant Consortium Grant (support for undergraduate intern)

**2016** Outstanding Teaching Award, Dept. of Physics, Arizona State University

**2016** Arizona NASA Space Grant Consortium Grant (support for undergraduate intern)

**2015** Supporting Retention and Representation in Physics: The Access Network (co-PI), National Science Foundation, \$330k

**2014** Physics Teacher Pipeline Project: A comprehensive PhysTEC Site (Co-PI), National Science Foundation, \$296k

**2015** Arizona NASA Space Grant Consortium Grant (support for undergraduate intern)

**2014** Arizona NASA Space Grant Consortium Grant (support for two undergraduate interns)

**2014** Outstanding Outreach Award, Dept. of Physics, Arizona State University

**2014** Distinguished Mentor Award, College of Liberal Arts and Sciences, Arizona State University

**2012** Berkeley Nanoforum Poster Award, Second Place, UC Berkeley

**2012** Award for Improving Undergraduate Physics Education

Awarded by the American Physical Society to the Compass Project, in which I served as a leader from 2008 to 2012.

**2012** Physics Student Service Award, Dept. of Physics, UC Berkeley

**2011** Physics Maachi Fellow, UC Berkeley

**2007** Bears Breaking Boundaries, Global Poverty Reduction Competition

Second Place Award for Poverty Reduction in Panama: Reducing the use of disposable batteries in a Ngobe village

**2006-2009** National Science Foundation Graduate Research Fellowship

**2005** Order of Augusta (top 8 WVU graduates out of over 3,000)

**2003-2005** Barry Goldwater Scholarship

**2001-2005** Bucklew Scholarship, West Virginia University

#### RECENT AWARD NOMINATIONS

**2015** Nominated by students for Outstanding Instruction Award, College of Liberal Arts and Sciences, Arizona State University

**2014** Nominated by colleagues for Commission on the Status of Women Outstanding Achievement and Contribution Award, Arizona State University

#### PUBLICATIONS AND PRESENTATIONS

**In Preparation and Under Review Journal Publications. Manuscripts available upon request.**

**2017** Zaniewski, A.M., Trimble, C.T., Nemanich, R.J. Patterned photo-enhanced deposition of gold nanoparticles on graphene.

#### Published and In Press Journal Articles

**2017** Trimble, C.T., Zaniewski, A.M., Kaur, M., VanEnglehoven, T., Nemanich, R.J. Towards plasma assisted atomic layer deposition of oxides on graphene, *Journal of Vacuum Science and Technology-A*, accepted.

**2017** Zaniewski, A.M., Meeks, V., Nemanich, R.J. Gold particle formation via photoenhanced deposition on lithium niobate, *Applied Surface Science*, 405, 178-182 (2017)

**2016** Zaniewski, A. M. Reinholz ,D.L. Increasing STEM success: a near-peer mentoring program in the physical sciences, *International Journal of STEM Education*, 3, 14 (2016)

**2016** Gandhi, P. R. Livezey, J. A. Zaniewski, A. M. Reinholz ,D.L. Dounas-Frazer, D.R. Attending to experimental physics practices and lifelong learning skills in an introductory laboratory course, *American Journal of Physics*, 84, 696 (2016)

**2015** Komlenok, M. S., Zaniewski, A.M., Zavedeev, E.V., Konov, V.I., Koeck, F.A.M., Nemanich, R.J. UV laser induced changes to morphological, optical and electrical properties of conductive nanocrystalline diamond films *Diamond and Related Materials*, 58, 196-199 (2015)

**2015** Zaniewski, A.M., Trimble, C.J., Nemanich, Modifying the chemistry of graphene with substrate selection: a study of gold nanoparticle formation, *Applied Physics Letters*, 106, 13, (2015)

**2013** Schriver, M. Regan, W., Gannett, W. Zaniewski, A.M., Crommie, M., Zettl, A. Graphene as a long-term metal oxidation barrier: worse than nothing, *ACS Nano*, 7 (7), 5763–5768. (2013)

**2013** Zaniewski, A.M, Lee, G., Schriver, M., Zettl, A. Electronic and Optical Properties of Metal Nanoparticle-Graphene Sandwiches, *Applied Physics Letters*, 102,23108 (2013).

**2013** Dounas-Frazer,D.R., Lynn, J., Zaniewski,A.M., and Roth, N. Learning about non-Newtonian fluids in a student-driven classroom. *The Physics Teacher*. 21, 4333 (2013)

**2012** Albanna, B.F., Corbo, J.C., Dounas-Frazer,D.R., Little, A. Zaniewski, A.M. Building Classroom and Organizational Structure Around Positive Cultural Values, Invited. 2012 *Physics Education Research Conference Proceedings*

**2010** Zaniewski, A. M., Loster, M., Sadtler, B., Alivisatos, P., Zettl, A. Direct measurement of the built in potential in a heterostructured nanorod *Physical Review B*. 82(5):155311. (2010)

**2009** Zaniewski, A. M., Loster, M., Zettl, A.. A one-step process for localized surface texturing and conductivity enhancement in organic solar cells. *Applied Physics Letters*, 95, 10,103308 (2009)

**2006** Zaniewski, A., X. Sun, A. Gripper, E. Scime, C. Pollock, J.-M. Jahn, and M. Thomsen. Evolution of remotely measured inner magnetospheric ion temperatures during a geomagnetic storm *Journal of Geophysics. Research*, 111, A10221 (2006)

**2005** Zaniewski, A., Clayton, G.C., Welch, D.L., Gordon, K.D., Minniti, D. and Cook, K.H. Discovery of Five New R Coronae Borealis Stars in the MACHO Galactic Bulge Database *Astronomical Journal*, 130, 2293 (2005)

**2005** Scime, E.E., A. M. Zaniewski, R. Skoug, M. Thomsen, and C. Pollock, Ion Temperature Imaging of Space Plasmas, *IEEE Trans. on Plasma Sci.* 33, 593-598 (2005)

### Other Publications

**2012** Zaniewski, A.M. Building BECI: Creating a climate for change. Berkeley Science Review, Spring 2012.

### Invited Presentations

**2016** Zaniewski, A.M. Modifying carbon surfaces and thin films to tune chemical and optical properties, *American Physical Society Four Corners Regional Meeting*, October 2016

**2016** Zaniewski, A.M. Mentoring for STEM student success, *Science Education Research Seminar*, Arizona State University, September 2016

**2016** Zaniewski, A.M. Promoting student ownership of university science programs: towards building a more equitable scientific educational experience, *American Physical Society April Meeting*, April 19, 2016

**2016** Zaniewski, A.M. Promoting student ownership in science classrooms, *Evidence-Based Teaching Seminar*, Arizona State University, April 8, 2016

**2016** Zaniewski, A.M., Near-peer mentoring in the physical sciences *Institute for the Science of Teaching and Learning (ISTL) at Arizona State University Learning Innovation Showcase*, January 28, 2016

**2015** Zaniewski, A.M., Adams, A., Brimhall, A. (co-presenters), The Access Network of Student Leadership Programs for Improving Inclusion in the Physical Sciences, *Committee for Campus Inclusion Conference*, Arizona State University, November 16, 2015

**2015** Zaniewski, A.M. Multiple perspectives on building a student-centered physics bridge program: Sundial at Arizona State University, *American Association of Physics Teachers*, Maryland, July 2015.

**2015** Zaniewski, A.M. Hanshaw, S. 5 Bridging educational research and practice: Supporting undergraduate research experiences in physics, *Physics Education Research Conference*, College Park Maryland, July 2015

**2013** Zaniewski, A.M. The Sundial Project at ASU, *Arizona Science Education Collaborative meeting*, Tempe, Arizona, September 11, 2013.

**2013** Zaniewski, A.M. Fostering student communities: Compass at Berkeley and Sundial at ASU, *STaR Energy Symposium*, Morgantown, West Virginia, October 15, 2013.

**2013** Zaniewski, A.M. The Sundial Project at ASU, *Arizona Section of the American Association of Physics Teachers*, Fall Meeting, Tempe, Arizona, September 21, 2013.

**2013** Zaniewski, A.M and Dounas-Frazer, D. (co-presenters) The Berkeley Compass Project: Empowering physics students as agents of change, *Arizona State University Physics Department Colloquium*, Tempe, Arizona, February 14, 2013.

**2012** Corbo, J., Dounas-Frazer, D., Zaniewski, A.M. (co-presenters), Building Classroom and Organizational Structure Around Positive Cultural Values, *Physics Education Research Conference*, Philadelphia, Pennsylvania, August 2, 2012.

### Contributed Conference Presentations

- 2015** Zaniewski, A.M., Meeks, V., Nemanich, R.J. Electroless deposition of metal nanoparticles on graphene with substrate-assisted techniques, *American Physical Society March Meeting*, Denver, Colorado, March 2015
- 2014** Zaniewski, A.M., Nemanich, R.J., Growth of metal nanoparticles on graphene, *Nano and Giga Conference*, Tempe, Arizona, March 5, 2014
- 2014** Zaniewski, A.M., Nemanich, R.J., Modification of graphene chemistry for metal nanoparticle growth: the effect of substrate selection, *American Physical Society March Meeting*, San Antonio, Texas, March 2014
- 2012** Zaniewski, A.M., Schriver, M., Lee, J., Zettl, A., Metal nanoparticle-graphene superstructures as electrodes for solar cells. *American Physical Society March Meeting*, H33, (Focus Session: Scalable Technologies for Photovoltaics), February 28, 2012
- 2012** Zaniewski, A.M., Schriver, M., Lee, J., Zettl, A. Optical and Electronic Properties of Graphene and Metal Nanoparticle Superstructures for Photovoltaic Applications *Materials Research Society Spring Meeting*, Symposium W (Nanostructured Solar Cells), April 12, 2012.
- 2012** Zaniewski, A.M., Schriver, M., Lee, J., Zettl, A. Graphene and Metal Nanoparticle Superstructures for Photovoltaic Applications *Berkeley Nanoforum*, April 16, 2012.
- 2011** Zaniewski, A.M., Loster, M., Sadtler, B., Alivisatos, A.P., Zettl, A., Direct measurement of the built-in potential in a nanoscale heterostructure. *American Physical Society March Meeting*, H36, (Photovoltaics: Compound Semiconductors and Organics), March 22, 2011.
- 2011** Zaniewski, A.M., Schriver, M. Nanostructures in Photovoltaics. *Berkeley Energy and Resources Coalition Innovation Expo*, Poster Session, October 20, 2011.

### Recent Outreach Presentations

- 2016** Sundial Outreach Conference
- 2015** Mad science, Phoenix Comicon
- 2014** The science of superheroes, Phoenix Comicon

### Recent Conference Presentations by Mentored Students

- 2016** Van Englehoven, T., Zaniewski, A.M., Nemanich, R.J., Plasma Enhanced Atomic Layer Deposition on Atomically Smooth Graphene, *ASU Sundial Outreach Conference*, April 2016
- 2016** Johnson, C, Zaniewski, A.M., Nemanich, R.J., Oxygen plasma effects on graphene, *ASU Sundial Outreach Conference*, April 2016
- 2016** Johnson, C, Zaniewski, A.M., Nemanich, R.J., Oxygen plasma effects on graphene, *Arizona NASA Space Grant Symposium*, April 2016
- 2015** Meeks, V. Zaniewski, A.M., Nemanich, R.J. Photoinduced Deposition of Gold Nanoparticles on Periodically Poled Lithium Niobate *American Physical Society Four Corners Meeting* October 2015
- 2015** Trimble, C.J., Zaniewski, A.M., VanEnglehoven, T., Kaur, M., Nemanich, R.J. Plasma enhanced atomic layer deposition of ultrathin oxides on graphene *American Physical Society Four Corners Meeting* October 2015
- 2015** VanEnglehoven, T., Zaniewski, A.M., Nemanich, R.J. Plasma Enhanced Atomic Layer Deposition Nucleation Performance on Atomically Smooth Graphene Surfaces *American Physical Society Four Corners Meeting* October 2015

**2015** Palafox, B., Zaniewski, A.M., Meeks, V., Nemanich, R.J. Photoinduced Deposition of Gold Nanoparticles on Periodically Poled Lithium Niobate *American Physical Society Four Corners Meeting* October 2015

**2015** Trimble, C.J., Zaniewski, A.M., Kaur, M., Nemanich, R.J., Plasma enhanced atomic layer deposition of ultrathin oxides on graphene, *American Physical Society March Meeting*, March 2015

**2015** Trimble, C.J., Zaniewski, A.M., Kaur, M., Nemanich, R.J., Plasma enhanced atomic layer deposition of ultrathin oxides on graphene, *Arizona NASA Space Grant Symposium*, April 2015

**2015** Meeks, V. Zaniewski, A.M., Nemanich, R.J. Photoinduced Deposition of Gold Nanoparticles on Periodically Poled Lithium Niobate *Arizona NASA Space Grant Symposium*, April 2015

### RESEARCH POSITIONS

**2013-present** Researcher in Nano Science Lab (Lab of R. Nemanich) Arizona State University, Tempe, AZ

**2007-2012** Graduate Student Researcher, University of California, Berkeley

**2007-2012** Materials Science Division Affiliate, Lawrence Berkeley National Lab

**2010-2012** Graduate Student Researcher, Center of Integrated Nanomechanical Systems

**2002-2005** Undergraduate student researcher, West Virginia University, Morgantown, WV

**2004** Research Experience for Undergraduates participant, Maria Mitchell Observatory, Nantucket, MA

**2003** Summer Intern, Los Alamos National Lab, Los Alamos, NM

### LEADERSHIP AND SERVICE

**2017** Local Organizing Committee Chair, Conference of Undergraduate Women in Physics, ASU

**2017** Local Organizing Committee, Women in Physics workshop, ASU

**2017** Reviewer, International Journal of STEM Education

**2016** Local Organizing Chair, Access Network national assembly, ASU

**2015** Local Organizing Chair, American Physical Society Four Corners Regional Conference

**2014-present** Access Network Co-Founder and Core Organizer; a national network of programs aimed at increasing persistence and diversity in the physical sciences at the undergraduate level

**2014-present** College of Letters and Sciences First Year Experience Learning Committee

**2013-present** Undergraduate Program Committee, Arizona State University Dept. of Physics

**2013-present** Sundial Project, Arizona State University. Coordinate with student leaders to implement a summer bridge program, mentoring program, community-building activities, and professional development opportunities.

**2008 -2012** The Compass Project, UC Berkeley. Served as a leader, teacher, mentor and coordinator for a program at UC Berkeley to improve undergraduate physics education and student diversity through community-building and extensive programming for undergraduate physics students.

### TEACHING EXPERIENCE

**Fall 2016** ASU Dept. of Physics, PHY 191, "The big world of nano"; introduction to physics major and the fields of research in physics

**Spring 2016** ASU Dept. of Physics, PHY 194 and 494 Class for freshmen and sophomore physics and School of Earth and Space Exploration students to explore research skills and find mentorship; develop upperclassmen/graduate students as leaders in and out of classroom; conceived and designed

**Spring 2016** ASU Dept. of Physics, PHY 151, "Physics II: electricity and magnetism"; physics majors class with student-centered active learning



**Fall 2015** ASU Dept. of Physics, PHY 191, "The big world of nano"; introduction to physics major and the fields of research in physics

**Fall 2015** ASU Dept. of Physics, PHY 194 and PHY 494 "Mentoring"; class for physics and School of Earth and Space Exploration students to aid their transition into ASU and pair them with mentors, conceived and designed

**Summer 2015** College of Liberal Arts and Sciences, LIA 194; Main instructor, director and coordinator of Sundial's two-week Early Start program for physics and School of Earth and Space Exploration majors; incorporated social activities, modeling instruction on optics with integrated math and writing components. Trained 15 student facilitators for the program implementation.

**Spring 2015** ASU Dept. of Physics, PHY 151, "Physics II: electricity and magnetism"; physics majors class with active learning

**Spring 2015** ASU Dept. of Physics, PHY 194 and 494 Class for freshmen and sophomore physics and School of Earth and Space Exploration students to explore research skills and find mentorship; develop upperclassmen/graduate students as leaders in and out of classroom; conceived and designed

**Fall 2014** ASU Dept. of Physics, PHY 194 and PHY 494 "Mentoring"; class for physics and School of Earth and Space Exploration students to aid their transition into ASU and pair them with mentors, conceived and designed

**Fall 2014** ASU Dept. of Physics, PHY 191, "The big world of nano"; reformed course to include inquiry-based projects

**Summer 2014** College of Liberal Arts and Sciences, LIA 194; Main instructor, director and coordinator of two-week early start program for physics and School of Earth and Space Exploration majors; incorporated social activities, modeling instruction on optics with integrated math and writing components. Trained 12 student facilitators for the program implementation.

**Spring 2014** ASU Dept. of Physics, PHY 151, "Physics II: electricity and magnetism"; physics majors class with active learning

**Fall 2013** ASU Dept. of Physics, PHY 191, "The big world of nano"; reformed course to include inquiry-based projects

**2011** Compass Summer Program, UC Berkeley

Co-developed and implemented curriculum for an experimental class on non-Newtonian fluids.

**2008** Compass Summer Program, UC Berkeley

Co-developed and implemented curriculum for a conceptual physics class in special relativity.

**2006-2007** Graduate Student Instructor, Calculus-based Electricity and Magnetism, UC Berkeley

#### **UNDERGRADUATE RESEARCHERS MENTORED**

UC Berkeley: Gina Quan, Gloria Lee, Will Morong

ASU: Christie Trimble, Veronica Meeks, Brandon Palafox, Trevor Van Engelhoven, Charlotte Johnson, Jonathon Barkl, Holly Johnson

#### **Awards to Mentored Undergraduates:**

Christie Trimble: NASA Space Grant Internship; Jacob Outstanding Research Presentation Award; Motil Travel Award to present research

Veronica Meeks: NASA Space Grant Internship, Outstanding Research Poster- Dept. of Physics

Charlotte Johnson: NASA Space Grant Internship

Jonathon Barkl: NASA Space Grant Internship, APS Four Corners Travel Award

### **MASTERS STUDENTS MENTORED**

Veronica Meeks: Professional Science Masters, Arizona State University

### **STUDENTS MENTORED IN TEACHING**

Via ASU Sundial Early Start Summer Program using Modeling Instruction and Inquiry techniques:

Alyssa Adams, Mateo Oremas, Jeff Lockridge, Ender Davis, Ksenia Lisovia, Dongrin Kim, Eduardo Carasco, Mahdi Sadjadi, Alex Brimhall, Brandon Palafox, Charlotte Johnson

Mentored in running mentoring programs and mentoring classes

Jeff Lockridge, Jeff Hyde, Alyssa Adams, Brianna Thorpe

Graduate Teaching Assistants for Integrated Labs in PHY 151: David Dotson (2014), Andrew Shevchuck (2015, 2016), Glenn Randall

Undergraduate Learning Assistants for Studio Style Instruction: Jesse Ruiz (2014), Sage Huseas(2015), Charlotte Johnson (2016), Kelsie Crawford (2017)

### **PROFESSIONAL MEMBERSHIPS**

American Physical Society

American Association of Physics Teachers

Materials Research Society

American Modeling Teachers Association