

Andrew Gerald Baruth, Ph.D.

Business Address:

Department of Physics, Creighton University
2500 California Plaza, Omaha, NE 68178
Phone: (402) 280-2644

Home Address:

2106 Savannah Dr.
Papillion, NE 68133
Phone: (402) 540-2875

E-mail: AndrewBaruth@Creighton.edu

Degrees

- Ph.D. Physics, **University of Nebraska–Lincoln** (5/09)
Dissertation Adviser: Prof. Shireen Adenwalla
Dissertation Title: *Exchange Coupling at Cobalt/ Nickel Oxide Interfaces*
- B.S. Physics, with honors (*cum laude*), **Doane College, Crete, Nebraska** (5/03)
Thesis Advisers: Profs. Christopher Wentworth and Mark Plano Clark
Thesis Title: *The Effects of Web-based Instructional Tools on Physics Education*
- M.S. Organizational Leadership, **Creighton University** (in progress)

Appointments

Affiliate Faculty of Physics, University of Nebraska – Lincoln (5/20 – present)

Associate Professor of Physics, Creighton University (7/17 – present)

Assistant Professor of Physics, Creighton University (7/12 – 7/17)

Postdoctoral Research Associate, Profs. Chris Leighton (Distinguished McKnight University Endowed Professor of Chemical Engineering and Materials Science) and Marc Hillmyer (Distinguished McKnight University Endowed Professor of Chemistry), **University of Minnesota–Twin Cities** (7/09 – 6/12)

Graduate Research Assistant, Prof. Shireen Adenwalla (Associate Professor of Physics), **University of Nebraska–Lincoln** (1/04 – 5/09)

Graduate Teaching Assistant, Physics Dept., **University of Nebraska–Lincoln** (1/03 – 5/05)

Undergraduate Research Assistant, Profs. Christopher Wentworth (Professor of Physics) and Mark Plano Clark (Associate Professor of Physics), **Doane College** (6/01 – 5/04)

Honors and Awards

- 2022 Department of Energy Solar Pitch Presentation Champion (faculty advisor)
2022 Department of Energy Solar District Cup Champion (faculty advisor)
2020 Dr. and Mrs. Haddix Research Incubator Sabbatical Fellowship
2020 Department of Energy Solar District Cup – 3rd Place (faculty advisor)
2019 Spirit of St. Francis Award in Sustainability
2018 Creighton University Office of Retention “Iggy” Award
2017 Frontiers in Nanoscience – Invited Speaker for ACS Society on Education
2017 Arthur Frechette International Award in Prosthodontics – Runner-up with Student
2017 Featured Scholar: Creighton University
2016 Delta Zeta Teacher of the Week
2015 Featured Alumnus, Nebraska Center for Materials and Nanoscience
2015 Best Poster in the Basic Sciences, Creighton University Research Day (faculty advisor)
2015 Best Poster Award Finalist, APS March Meeting (faculty advisor)
2014 Nebraska EPSCoR FIRST Award
2014 Delta Zeta Teacher of the Week

- 2011 Featured Alumnus, Doane College
- 2010 *Success Strategies for Emerging Faculty* invitation, University of Delaware
- 2010 Best Poster Award, Magnetism and Magnetic Materials Conference
- 2007 Sigma Xi Graduate Student Research Prize, University of Nebraska–Lincoln
- 2004 Graduate Teaching Assistant Award, University of Nebraska–Lincoln
- 2000 Golden Leaf Award, “On-Air Personality of the Year,” KDNE Radio

Professional Activities and Associations

- 2017+ American Association of Sustainability in Higher Education (AASHE), member
- 2017+ International Association of Dental Research, member
- 2017+ American Association of Dental Research, member
- 2017+ American Chemical Society, member
- 2016+ American Association of Physics Teachers – President (2016-2018), Nebraska Chapter
- 2014-19 Creighton University Energy Club – Faculty Sponsor
- 2013+ Advisory Board – Nebraskans for Solar (non-profit)
- 2013+ Sigma Pi Sigma (physics honor society), member
- 2012 Session Chair for the American Physical Society’s National Meeting
- 2010 Session Chair for 55th Annual Magnetism and Magnetic Materials Conference
- 2009+ Referee for the following journals: Applied Physics Letters, Journal of Applied Physics, Journal of Physics: Condensed Matter, Journal of Magnetism and Magnetic Materials, ACS Macromolecules, ACS Applied Materials & Interfaces, Journal of Vacuum Science and Technology, IEEE, Transactions on Magnetism, MPDI Materials, MPDI Dentistry, MDPI Coatings, MPDI Metals, Journal of Minerals, Metallurgy and Materials, MDPI Molecules
- 2005+ American Physical Society, member

Research Support (total direct funding to date, \$704,785 – not including ~\$700k in start-up funds)

--Pending

Fundamental Interactions Between Oscillating Strain Fields and Magnetic Textures (NURamp, \$50,000 direct, 9/1/2022 – 9/1/2023, P.I., A.G. Baruth and S. Adenwalla) Smaller budget grant, funded by NURamp, to improve the competitiveness of our unfunded NSF grant for our next submission.

--Funded

Expansion of Creighton University Energy Technology Program’s Commitment to Renewable Energies (Omaha Public Power District, \$300,000 direct, 09/01/14 – 09/01/23, P.I. A.G. Baruth). This funding is for 1) investment in new photovoltaic research and analysis equipment for A. Baruth, 2) repair and replacement/upgrading of current Windspire installations on Creighton’s campus, 3) renewable energy and energy conservation related public outreach, and 4) research stipends for Energy Technology Program students.

--Completed (funded)

Student Fellowships 2021/2022 Markuson DiPrince (NASA Nebraska Space Grant & EPSCoR, \$5000 direct, P.I. A.G. Baruth). The award provides annual stipend for one student.

Student Fellowships 2021/2022 Grace Dirks (NASA Nebraska Space Grant & EPSCoR, \$4000 direct, P.I. A.G. Baruth). The award provides annual stipend for one student.

Student Fellowships 2021/2022 Natalie Schwartzenberger (NASA Nebraska Space Grant & EPSCoR, \$5000 direct, P.I. A.G. Baruth). The award provides annual stipend for one student.

MRSEC College Science Faculty and Students Research Opportunity (NSF MRSEC, UNL, \$15,000 direct, 05/01/2021 – 08/01/2021). This is funding for a faculty-student pair for summer research at the University of Nebraska – Lincoln. The award also provides a summer stipend for 1-2 students, Grace Dirks will be joining me.

Ferlic Undergraduate Research Scholarship (Creighton, \$5000 direct, 06/01/20 – 9/1/20, P.I. A.G. Baruth). The award provides a summer stipend for one student, Grace Dirks, and advisor. Declined.

MRSEC College Science Faculty and Students Research Opportunity (NSF MRSEC, UNL, \$15,000 direct, 05/01/2020 – 08/01/2020). This is funding for a faculty-student pair for summer research at the University of Nebraska – Lincoln. The award also provides a summer stipend for 1-2 students, Grace Dirks will be joining me. This was canceled due to Covid-19.

Acquisition of a Scanning Electron Microscope for Use in Undergraduate Research (Nebraska EPSCoR Major Research Instrumentation, \$111,925 direct, 03/14/19 – 12/15/19, co-P.I. A.G. Baruth). This award provides for the acquisition of a scanning electron microscope.

Student Fellowships 2019/2020 Marcussen DiPrince (NASA Nebraska Space Grant & EPSCoR, \$4000 direct, 09/01/19 – 3/31/20, P.I. A.G. Baruth). The award provides annual stipend for one student, Max Marcussen DiPrince.

Ferlic Undergraduate Research Scholarship (Creighton, \$5000 direct, 06/01/18 – 9/1/19, P.I. A.G. Baruth). The award provides a summer stipend for one student, Son Nyugen, and advisor.

Studies of Carbon Nanodots with Atypical Morphologies (Dr. George F. Haddix President's Faculty Research Fund, Creighton University, \$5,000 direct, 02/15/18-2/15/19, co-P.I. A.G. Baruth)

Ferlic Undergraduate Research Scholarship (Creighton, \$5000 direct, 06/01/17 – 9/1/17, P.I. A.G. Baruth). The award provides a summer stipend for one student, John Sunderland, and advisor.

Dean's Undergraduate Research Scholarship (Creighton, \$5000 direct, 06/01/17 – 9/1/17, P.I. A.G. Baruth). The award provides a summer stipend for one student, Son Nyugen, and advisor.

Influence of Clinically Relevant CAD/CAM Zirconia Abutment Modification on Gingival Fibroblast Viability, Adhesion, and Normal Proliferation (Creighton University: Center for Undergraduate Research and Scholarship, \$3,196 direct, 06/01/17 – 6/1/18, P.I. A.G. Baruth). The award provides materials to study Zirconia surfaces following proprietary polishing protocols.

Student Fellowships 2017/2018 Sunderland (NASA Nebraska Space Grant & EPSCoR, \$4000 direct, 09/01/17 – 3/31/18, P.I. A.G. Baruth). The award provides annual stipend for one student, John Sunderland.

Nebraska Environmental Trust Fund: Impact 1.7 Million: Zoo Produces Solar Electricity for the Public to Experience (Nebraska Environmental Trust, \$140,614 direct, 4/1/2016 – 6/1/2017, P.I. Henry Doorly Zoo & Aquarium, A.G. Baruth, Partner). Omaha's Henry Doorly Zoo & Aquarium proposes to install a solar photovoltaic (PV) system to demonstrate renewable electricity production for its 1.7 million visitors per year. The Zoo's envisioned solar PV system will be unique because it will provide a hands-on interactive kiosk for the 1.7 million visitors to better understand its extensive environmental, health and financial benefits. We provided information and planning for kiosks, solar energy curriculum for summer camps and after school programming, as well as volunteered in educational capacities.

Influence of Clinically Relevant CAD/CAM Zirconia Abutment Modification on Gingival Fibroblast Viability, Adhesion, and Normal Proliferation (Creighton University: Center for Undergraduate Research and Scholarship, \$1000 direct, 06/01/16 – 6/1/17, P.I. A.G. Baruth). The award provides materials to study Zirconia surfaces following proprietary polishing protocols.

Student Fellowships 2016/2017 Nelson (NASA Nebraska Space Grant & EPSCoR, \$6000 direct, 09/01/16 – 3/31/17, P.I. A.G Baruth). The award provides annual stipend for one student, Gunnar Nelson.

Honors Program Undergraduate Research Scholarship (Creighton, \$5250 direct, 06/01/16 – 9/1/16, P.I. A.G Baruth). The award provides a summer stipend for one student, Nicholas Fischer, and advisor.

Student Fellowships 2015/2016 Nelson (NASA Nebraska Space Grant & EPSCoR, \$3000 direct, 09/01/15 – 3/31/16, P.I. A.G Baruth). The award provides annual stipend for one student, Gunnar Nelson.

The Material Science of Dental Restoration Materials: Forming Collaborations between the College of Arts and Sciences and the School of Dentistry (Dr. George F. Haddix President's Faculty Research Fund, Creighton University, \$15,000 direct, 02/15/14-2/15/16, P.I. A.G. Baruth). The study will focus on dental restorative materials, a class of fabricated materials specifically designed for restoring tooth form and function. Several key issues exist, primarily in the areas of biocompatibility and physical wear, which must be fully addressed to evaluate their efficacy in a clinical setting. We propose that the establishment of new collaborations between the College of Arts and Sciences and the School of Dentistry, which will enhance the study of dental materials and provide a meaningful experience for undergraduate students interested in pre-professional programming.

Ferlic Undergraduate Research Scholarship (Creighton, \$5000 direct, 06/01/15 – 9/1/15, P.I. A.G Baruth). The award provides a summer stipend for one student, Gunnar Nelson, and advisor.

Directed Self-Assembly of Block Polymer Thin Films Via Solvent Vapor Annealing (Nebraska EPSCoR, \$20,000 direct, \$20,847 indirect, 01/01/15 – 09/01/15, P.I. A.G. Baruth). This proposal focuses on the systematic investigation of the solvent-assisted self-assembly process in block polymer thin films. We plan a series of experimental investigations in order to elucidate and control the parameters most critical to the directed self-assembly of block polymer thin films.

Student Fellowships 2014/2015 Yanchilin & Gnabasik (NASA Nebraska Space Grant & EPSCoR, \$4000 direct, 09/01/14 – 3/31/15, P.I. A.G Baruth). The award provides annual stipends for two students, Ryan Gnabasik and Anton Yanchilin.

Omaha Youth's Path to Passive Solar (Nebraska Academy of Sciences and the Nebraska Environmental Trust, \$3,000 direct, 06/01/14 – 07/01/14 , P.I. A.G. Baruth). This is to help fund a three-week camp that will meet for three hours a day and focus on the design, installation and maintenance of convection and passive solar heating systems. The camp is open to all Nebraska youth and funding will help subsidize camp costs. Students are able to receive college credit through Creighton Summer Sessions under course number ERG 132 at an additional cost.

Ferlic Undergraduate Research Scholarship (Creighton, \$5000 direct, 06/01/14 – 9/1/14, P.I. A.G Baruth). The award provides a summer stipend for one student, Ryan Gnabasik, and advisor.

Collaborative Research: Understanding and Supporting Student Intrinsic Motivation in STEM Courses (NSF TUES Type 2 Grant, 10/13-10/15, P.I. Jonathon Stolk, Role: Faculty Partner). Prior and emerging educational research suggests that understanding students' motivational relationship to their learning experience could be a crucial insight necessary for a systemic shift toward high-level outcomes. This study will facilitate a deeper understanding of student motivation through analysis of motivation research data from undergraduate classroom

contexts, and by coupling context-specific research data with course design tools that enable targeted instructor action to enhance intrinsic drive.

Solvent-induced ordering of self-assembled block copolymer thin films (Creighton University Graduate School, \$4800 direct, 07/01/13-9/1/13, P.I. A.G. Baruth). The study will focus on the construction and testing of an advanced solvent vapor reaction chamber for block copolymer thin films. Such materials naturally self-assemble into a wide-range of morphologies (*i.e.*, shapes); however, without direction, this order has little periodicity at large lateral length scales. The solvent-induced, directed ordering of self-assembled block copolymer thin films will allow access to these novel periodic nanostructures with unprecedented control and precision.

--Not Funded

Fundamental Interactions Between Oscillating Strain Fields and Magnetic Textures (National Science Foundation, \$545,687 direct, 9/1/2022 – 9/1/2025, P.I., A.G. Baruth). Proposal focuses on the interaction between very high frequency *sound waves*, well above the limits of human hearing, and unique magnetic configurations – specifically ferromagnetic *textures*. The NSF panel summary stated that our proposal was "exciting and promising for a number of applications." Reviewer 1 stated that this project is "very exciting. This will definitely advance the knowledge within its own field and across different fields which includes acoustic physics, materials science, mechanical engineering, and electrical engineering" and "If the PIs are successful, then this will be a breakthrough result.". Reviewers also recognized our expertise.

Quantum Electron Technology, Imaging, and 3D-Visualization (Nebraska NSF EPSCoR RII, \$11,643,125 direct, 8/1/21 – 12/31/22, Outreach partner). This pre-proposal is a pre-cursor to a \$25 million RII award to fund a 26-member collaboration across Nebraska using Quantum electron technology to enhance imaging at the nanoscale and investigating into utilizing 3D-visualization tools.

Studies of Carbon Nanodots with Atypical Morphologies (NSF, \$387,594 direct, co-PI AG Baruth). The grant provides funding for a collaboration with Dr. Sidebottom (Creighton Physics) on the synthesis of carbon nanodots with atypical morphologies that have relevance in biological tagging and solar cell research.

REU Site: Undergraduate Research & Training in Chemical & Physical Biosciences at Creighton University (NSF, \$351,699, co-PI AG Baruth). The grant provides funding to make Creighton on REU site.

Henry Dreyfus Teacher-Scholar Award. The Camille & Henry Dreyfus Foundation, Inc. (\$60,000, 9/17 – 9/22). 5-year award to recognize teacher-scholars in Chemistry.

Creighton Global Initiative. Solar Electricity for the Sienna/Francis House of Omaha, NE (\$80,400, 2016)

Creighton Global Initiative. Creighton-Sponsored Solar Power for Mobile Clinics/Research Hospitals in Nigeria (\$9,500, 2016). Joint submission with Andrew Ekpenyong

NSF MRI: Acquisition of a Multi-Purpose X-ray Diffractometer for Structural Characterization (National Science Foundation, \$426,000 direct, 09/01/16 – 09/01/18, P.I. A. G. Baruth). Proposal to acquire a versatile, novice-friendly X-ray Diffraction (XRD) facility to provide critical information about the structural properties of materials at the atomic, molecular, and nanometer scale for a variety of disciplines, including physics and chemistry, as well as material, energy, biomedical, and pharmacy sciences. Specific measurement capabilities of the XRD system will include small and wide-angle XRD, reflectometry, microdiffraction and powder diffraction, all with the added capability of temperature control. These included XRD

capabilities will be especially valuable to our emerging research programs pertaining to (i) earth-abundant photovoltaic materials, (ii) self-assembled block polymer thin films, (iii) drug-polymer complexes for drug delivery, (iv) clustering of simple sugars in solution, and (v) structural characterization of synthetic structures.

NSF MRI: Acquisition of a Multi-Purpose X-ray Diffractometer for Structural Characterization (National Science Foundation, \$426,000 direct, 09/01/15 – 09/01/18, P.I. A. G. Baruth). Proposal to acquire a versatile, novice-friendly X-ray Diffraction (XRD) facility to provide critical information about the structural properties of materials at the atomic, molecular, and nanometer scale for a variety of disciplines, including physics and chemistry, as well as material, energy, biomedical, and pharmacy sciences. Specific measurement capabilities of the XRD system will include small and wide-angle XRD, reflectometry, microdiffraction and powder diffraction, all with the added capability of temperature control. These included XRD capabilities will be especially valuable to our emerging research programs pertaining to (i) earth-abundant photovoltaic materials, (ii) self-assembled block polymer thin films, (iii) drug-polymer complexes for drug delivery, (iv) clustering of simple sugars in solution, and (v) structural characterization of synthetic structures.

NSF CAREER: Directed Self-Assembly of Block Polymer Thin Films via Solvent Vapor Annealing (National Science Foundation, \$326,311 direct, \$137,097 indirect, 01/01/16 – 01/01/20, P.I. A. G. Baruth). The proposed research addresses a broad, long-term strategy to elucidate the key mechanisms involved in the solvent-assisted self-assembly of block polymer thin films and relating them to well-known properties of thermal annealing of single-component solids. In addition, the generality of this analogy to multiple block polymer systems with various polymer-polymer interaction parameters, surface energies and architectures is of supreme interest. Ultimately, identifying whether these analogs can be applied to highly immiscible blocks (providing the smallest potential feature size) is critical for the creation of any standardized nanolithography production scheme, which remains absent in this field.

Publications (undergraduates in blue, graduate students and former undergraduate students in red)

In preparation

1. **A. Baruth**, M. Manno, C. Leighton. Systematic Control of the Critical Temperature in Superconducting Copper Sulfide. Data is complete. Figures are complete. Final draft is circling authors in preparation for submission to Physical Review Materials.
2. **A. Baruth**, M. Erickson, M. Hillmyer, C. Leighton. Long-range Ordered Single Crystalline Nickel Nanopillars via Block Polymer Lithography. Data is complete. Figures are complete. Final draft is circling authors in preparation for submission to Applied Physics Letters.
 - These were the result of renewed connection to my postdoctoral advisors during my sabbatical during Covid.

Submitted

3. **Markuson DiPrince, Max K., Uppala, Harsh G.K., Marsh, Eric, Smith, Logan, Destino, Joel F., Sidebottom, David L., and Baruth, Andrew G.** Implementing Glucose-Derived Carbon Nanodots in Dye Sensitized Solar Cells to Increase External Quantum Efficiency. Submitted to ACS: Applied Energy.
4. **B. Marcussen** and **A. Baruth**. Compositionally Controlled Opto-electronic Behavior of Transparent Conducting Copper Sulfide Thin Films. Based on Ben Marcussen's thesis work. Submitted to MDPI Nanomaterials.
 - I am the PI and corresponding author on these undergraduate and graduate driven works, that include cross-disciplinary research.

Acknowledged Publications with Student Authors

1. Acknowledges [Ryan Gnabasi](#) and **Andrew Baruth**. Cell Attachment Following Instrumentation with Titanium and Plastic Instruments, Diode Laser, and Titanium Brush on Titanium, Titanium-Zirconium, and Zirconia Surfaces. *The International Journal of Oral & Maxillofacial Implants* **31**, 799 – 806 (2017).
 - JOMI (IF: 2.804) allows for only four authors. We provided atomic force micrographs for the publication to measure surface roughness and morphology.

Refereed Publications (h-index: 14, i10-index: 16, total citations: 580 with 341 in the past 5 years)

Submitted after starting at Creighton University in 2012

1. Jurado CA, Tsujimoto A, Watanebe H, **Fischer NG**, Hasslen JA, Tomeh H, **Baruth AG**, Barkmeier WW, Latta MA, Garcia-Godoy F. Evaluation of polishing systems for CAD/CAM polymer infiltrated ceramic network restoration. *J. Operative Dentistry* (2021) **46(2):219-225**. <https://doi.org/10.2341/20-006-L>.
 - My former student, Nick Fischer, and I took all of the surface morphology data with atomic force microscopy. Impact Factor: 2.698. Cited: 0. Journal of Operative Dentistry is a refereed, international journal published bi-monthly and distributed to subscribers in over 50 countries. Papers are submitted by authors from around the globe, in the categories of Clinical Research, Laboratory Research, Clinical Techniques/Case Presentations and Invited Papers.
2. Mark D. Markham, Akimasa Tsujimoto, Wayne W. Barkmeier, Carlos A. Jurado, **Nicholas G. Fischer**, Hidehiko Watanabe, **Andrew G. Baruth**, Mark A. Latta, Franklin Garcia-Godoy. Influence of 38% silver diamine fluoride application on bond stability to enamel and dentin using universal adhesives in self-etch mode. *European Journal of Oral Sciences* (published May 12, 2020). <https://doi.org/10.1111/eos.12701>
 - My former student, Nick Fischer, and I took all of the surface morphology data with atomic force microscopy. Impact Factor: 2.612. Cited: 8. European Journal of Oral Sciences is the official publication of N.O.F - Scandinavian Division of the International Association for Dental Research. This international journal publishes original research papers within clinical dentistry, on all basic science aspects of structure, chemistry, developmental biology, physiology, and pathology of relevant tissues, as well as on microbiology, biomaterials and the behavioral sciences as they relate to dentistry.
3. **A. Baruth**. Ignatian Pedagogy for Sustainability to Support Community-based Projects: Client-focused Sustainable Energy Solutions. *Jesuit Higher Education* **8(2):10** (submitted 8/1/2019, published 12/6/2019). <https://epublications.regis.edu/jhe/vol8/iss2/10>
 - I am the sole author of this article, found in the series “Ignatian Pedagogy for Sustainability.” It has received 289 downloads. Jesuit Higher Education is a scholarly, peer reviewed, open access, online journal focused on the development, advancement, and critique of higher education in the Jesuit tradition.
4. **Nicholas Fischer**, **Jonathon Dang**, Akimasa Tsujimoto, Toshiki Takamizawa, Wayne Barkmeier, **A. Baruth**. Comparative Analysis of Atomic Force Microscopy and Optical Profilometry for Self-Etch Adhesives on Enamel Surfaces. *Journal of Microscopy Research and Technique* **82(9):23294** (2019) (submitted 12-1-2018, accepted 1-12-2019). <https://doi.org/10.1002/jemt.23294>
 - I am the corresponding author and PI for this undergraduate-led manuscript. Impact Factor: 2.769. Cited: 2. Microscopy Research and Technique (MRT) publishes articles

on all aspects of advanced microscopy original architecture and methodologies with applications in the biological, clinical, chemical, and materials sciences.

5. [Jeffrey Wong](#), Akimasa Tsujimoto, [Nicholas Fischer](#), **Andrew Baruth**, Wayne Barkmeier, [Emily Johnson](#), [Shrestha Samuel](#), Toshiki Takamizawa, Mark Latta, Masashi Miyazaki. Enamel etching for universal adhesives: Examination of enamel etching protocols for optimization of bonding effectiveness. *J. Operative Dentistry* **45(1):80-91** (2020) (accepted 12-21-2019). <https://doi.org/10.2341/18-275-L>
 - Although not the principal author (dentistry has rules for seniority), I led the experimental work for this entire project and directly advised the 4 undergraduate students (including first author) on the publication. Impact Factor: 2.698. Cited: 18. Journal of Operative Dentistry is a refereed, international journal published bi-monthly and distributed to subscribers in over 50 countries. Papers are submitted by authors from around the globe, in the categories of Clinical Research, Laboratory Research, Clinical Techniques/Case Presentations and Invited Papers.
6. [G. Nelson](#), [C. Drapes](#), [R. Gnabasik](#), [M. Grant](#), [J. Wong](#), **A. Baruth**. High-Precision Solvent Vapor Annealing for Block Copolymer Thin Films. *Micromachines – Special Issue on Directed Assembly of Polymers* **9(6)**: 271 (May 29, 2018). <https://doi.org/10.3390/mi9060271>
 - I am the corresponding author and PI for this undergraduate-led manuscript. Impact Factor: 3.523. Cited: 20. Micromachines covers the science and technology of small structures, devices, and systems
7. Yuko Nagura, Akimasa Tsujimoto, [Nicholas Fischer](#), **Andrew Baruth**, Wayne Barkmeier, Toshiki Takamizawa, Mark Latta, Masashi Miyazaki. Effect of Reduced Universal Adhesive Application Time on Enamel Bond Fatigue and Surface Morphology. *J. of Operative Dentistry* **44(1):42-53** (June 1, 2018). <https://doi.org/10.2341/17-261-L>
 - My student, Nick Fischer and I took all of the surface morphology data with atomic force microscopy. Impact Factor: 2.698. Cited: 11. Journal of Operative Dentistry is a refereed, international journal published bi-monthly and distributed to subscribers in over 50 countries. Papers are submitted by authors from around the globe, in the categories of Clinical Research, Laboratory Research, Clinical Techniques/Case Presentations and Invited Papers.
8. [N. Fischer](#), A. Tsujimoto and **A. Baruth**. Effects of polishing bur application force and re-use on sintered zirconia surface topography. *J. of Operative Dentistry* **43(4):437-446** (Jul/Aug 2018). <https://doi.org/10.2341/17-105-lr>
 - I am the corresponding author and PI for this undergraduate-led manuscript. Impact Factor: 2.698. Cited: 7. Journal of Operative Dentistry is a refereed, international journal published bi-monthly and distributed to subscribers in over 50 countries. Papers are submitted by authors from around the globe, in the categories of Clinical Research, Laboratory Research, Clinical Techniques/Case Presentations and Invited Papers.
9. [Nicholas G Fischer](#), [Jeffrey Wong](#), D. Roselyn Cerutis, **Andrew Baruth**. Effect of clinically relevant CAD/CAM zirconia polishing on gingival fibroblast adhesion. *Materials* **27;10(12)**, E1358 (Nov 27, 2017). <https://doi.org/10.3390/ma10121358>
 - I am the corresponding author and PI for this undergraduate-led manuscript. Impact Factor: 3.748. Cited: 23. Materials is a peer-reviewed, open access journal of materials science and engineering.

10. Akimasa Tsujimoto, [Nicholas Fischer](#), Wayne Barkmeier, **Andrew Baruth**, Toshiki Takamizawa, M Latta, Masashi Miyazaki. Effect of reduced phosphoric acid pre-etching times on enamel surface characteristics and shear fatigue strength using universal adhesives. *J. of Adhesive Dentistry* **10(12)**, 1358 (2017). **Cover Article**
- My student, Nick Fischer and I took all the surface morphology data with atomic force microscopy. One of our AFM micrographs was featured on the front cover of this monthly issue. Impact Factor: 3.22. Cited: 18. Journal of Adhesive Dentistry - New materials and applications for adhesion are profoundly changing the way dentistry is delivered. The current development of adhesive techniques for soft tissues and slow-releasing agents will expand applications to include periodontics and oral surgery. Scientifically sound, peer-reviewed articles explore the latest innovations in these emerging fields.
11. D. Roselyn Cerutis, [Nicholas G. Fischer](#), [Ryan Gnabasi](#), Melissa S. Lang, and **Andrew Baruth**. The Role of Nanoscale Roughness on Cell Attachment Following Titanium-based Instrumentation of Titanium, Titanium-Zirconium, and Zirconia Surfaces. *Journal of the Federation of American Societies for Experimental Biology*, **30:1034.7** (2017).
- *The FASEB Journal*, FASEB's flagship publication, is highly cited and consistently ranked among the top biology journals globally. It features transdisciplinary original research covering all fields of biology at every level of organization: atomic, molecular, cell, tissue, organ, organismic, and population.
- Submitted prior to receiving tenure at Creighton University in 2016**
12. **A. Baruth**. Isothermal tuning of magnetic coercivity in NiFe/NiO/[Co/Pt] heterostructures with orthogonal easy axes. *J. Appl Phys.* **118,093901** (2015).
- Single author publication based on an experiment completed the summer of 2015. Impact Factor: 2.183. Cited: 2. Journal of Applied Physics is an influential international journal publishing significant new experimental and theoretical results of applied physics research.
13. [Chun-Hao Lin](#), Srinivas Polisetty, Liam O'Brien, **A. Baruth**, Marc A. Hillmyer, C. Leighton, Wayne L. Gladfelter. Size-tuned ZnO Nanocrucible Arrays for Magnetic Nanodot Synthesis via ALD-assisted Block Polymer Lithography. *ACS Nano* **9**, 1379 (2015).
- I was the supervisor, but not PI, of the first author. We came up with this research idea as I was leaving the University of Minnesota. We carried out the experiment in collaboration. Impact Factor: 12.881. Cited: 27. ACS Nano is an international forum for the communication of comprehensive articles on nanoscience and nanotechnology research at the interfaces of chemistry, biology, materials science, physics, and engineering.
14. **A. Baruth**, Myungeun Seo, [Chun Hao Lin](#), [Kern Walster](#), [Arjun Shankar](#), Marc A. Hillmyer, and C. Leighton, Optimization of long-range order in solvent vapor annealed poly(styrene)-block-poly(lactide) thin films for nanolithography. *ACS Appl. Mat. & Int.* **16**, 13770 (2014).
- These were results I obtained while a post-doc at the University of Minnesota. Impact Factor: 6.723. Cited: 78. ACS Applied Materials & Interfaces serves the interdisciplinary community of chemists, engineers, physicists and biologists focusing on how newly discovered materials and interfacial processes can be developed and used for specific applications.

15. **X. Zhang**, M. Manno, **A. Baruth**, M. Johnson, E. Aidyl and C. Leighton. Crossover from Nanoscopic Intergranular Hopping to Conventional Charge Transport in Pyrite Thin Films. *ACS Nano* **7**, 2781 (2013).

- I was the supervisor, but not PI, of the first author. We completed this experiment while I was a post-doc at the University of Minnesota. I assisted with writing the paper in collaboration from Creighton. Impact Factor: 12.881. Cited: 70. ACS Nano is an international forum for the communication of comprehensive articles on nanoscience and nanotechnology research at the interfaces of chemistry, biology, materials science, physics, and engineering.

Submitted prior to starting at Creighton University in 2012

16. **A. Baruth**, Marc D. Rodwogin, C. Leighton and Marc A. Hillmyer. Nanoscale rings from silicon-containing triblock terpolymers. *ACS Appl. Mat. & Int.* **4**, 3550 (2012).

- Experiment completed while a post-doc at the University of Minnesota, wrote paper while at Creighton. Impact Factor: 6.723. Cited: 11. ACS Applied Materials & Interfaces serves the interdisciplinary community of chemists, engineers, physicists and biologists focusing on how newly discovered materials and interfacial processes can be developed and used for specific applications.

17. **A. Baruth**, M. Manno, A. Shankar, D. Narasimhan and C. Leighton. Reactive sputtering of transition metal disulfide thin films: Structure, magnetism and transport. *J. Appl. Phys.* **112**, 054328 (2012).

- Experiment completed while a post-doc at the University of Minnesota, wrote paper while at Creighton. Impact Factor: 2.183. Cited: 23. Journal of Applied Physics is an influential international journal publishing significant new experimental and theoretical results of applied physics research.

18. **A. Baruth**, Marc D. Rodwogin, A. Shankar, M.J. Erickson, Marc A. Hillmyer and C. Leighton. Non-lift-off Block Copolymer Lithography of 25 nm Magnetic Nanodot Arrays. *ACS Appl. Mat. & Int.* **3**, 3472 (2011).

- Experiment and manuscript completed while a post-doc at the University of Minnesota. Impact Factor: 6.723. Cited: 47. ACS Applied Materials & Interfaces serves the interdisciplinary community of chemists, engineers, physicists and biologists focusing on how newly discovered materials and interfacial processes can be developed and used for specific applications.

19. **A. Baruth** and S. Adenwalla. Domain size and structure in exchange coupled [Co/Pt]/NiO/[Co/Pt] multilayers. *J. Phys. Cond. Mat.* **23**, 376002 (2011).

- Experiment and manuscript completed while a graduate student at the University of Nebraska. Impact Factor: 2.209. Cited: 1. Journal of Physics: Condensed Matter covers the whole of condensed matter physics including soft condensed matter and nanostructures. Papers may report experimental, theoretical or simulation studies.

20. S. Davis, **A. Baruth**, S. Adenwalla. Magnetization dynamics triggered by surface acoustic waves. *Appl. Phys. Lett* **97**, 232507 (2010).

- Graduate student overseer for undergraduate Sam Davis. I designed the experiment. Experiment and manuscript completed while a graduate student at the University of Nebraska. Impact Factor: 3.302. Cited: 92. Applied Physics Letters, published by the American Institute of Physics, features concise, up-to-date reports on significant new findings in applied physics.

21. A. Mardana, Mengjun Bai, **A. Baruth**, Stephen Ducharme, S. Adenwalla. Magneto-Electric Effects in Ferromagnetic Cobalt / Ferroelectric Copolymer Multilayer Films. *Appl. Phys. Lett.* **97**, 112904 (2010).
 - I assisted with the experiment. Experiment and manuscript completed while a graduate student at the University of Nebraska. Impact Factor: 3.302. Cited: 16. Applied Physics Letters, published by the American Institute of Physics, features concise, up-to-date reports on significant new findings in applied physics.
22. **A. Baruth** and S. Adenwalla. Temperature and set field dependence of exchange bias training effects in Co/NiO/[Co/Pt] heterostructures with orthogonal easy axes. *J. Magn. Magn. Mater.* **322**, 2051 (2010).
 - Experiment and manuscript completed while a graduate student at the University of Nebraska. Impact Factor: 2.357. Cited: 7. The Journal of Magnetism and Magnetic Materials provides an important forum for the disclosure and discussion of original contributions covering the whole spectrum of topics, from basic magnetism to the technology and applications of magnetic materials and magnetic recording.
23. **A. Baruth** and S. Adenwalla. Enhanced blocking temperature and isothermal control of hysteresis loop shifts in Co/NiO/[Co/Pt] heterostructures with orthogonal easy axes. *Phys. Rev. B* **78**, 174407 (2008).
 - Experiment and manuscript completed while a graduate student at the University of Nebraska. Impact Factor: 3.718. Cited: 27. Physical Review B is the largest and most comprehensive international journal specializing in condensed matter and materials physics, publishing important papers on a wide range of topics.
24. **A. Baruth**, L. Yuan, J. D. Burton, K. Janicka, E.Y. Tsymbal, S.H. Liou and S. Adenwalla. Domain overlap in antiferromagnetically coupled [Co/Pt]/NiO/[Co/Pt] multilayers. *Appl. Phys. Lett.* **89**, 202505 (2006).
 - Experiment and manuscript completed while a graduate student at the University of Nebraska. Impact Factor: 3.302. Cited: 34. Applied Physics Letters, published by the American Institute of Physics, features concise, up-to-date reports on significant new findings in applied physics.
25. **A. Baruth**, D.J. Keavney, J. D. Burton, K. Janicka, E.Y. Tsymbal, L. Yuan, S.H. Liou and S. Adenwalla. Origin of the interlayer exchange coupling in [Co/Pt]/NiO/[Co/Pt] multilayers studied with XAS, XMCD, and micromagnetic modeling. *Phys. Rev. B* **74**, 054419 (2006).
 - Experiment and manuscript completed while a graduate student at the University of Nebraska. Impact Factor: 3.718. Cited 37. Physical Review B is the largest and most comprehensive international journal specializing in condensed matter and materials physics, publishing important papers on a wide range of topics.

Books

1. Omaha Henry Doorly Zoo, The Nebraska Environmental Trust, and Creighton University. (2017) Under the Sun.
 - This project was a partnership between the Zoo's Facilities and Education teams and Creighton's Energy Technology Program (funded by the Nebraska Environmental Trust), where I was lead on the collaboration. We came up with the idea to show the Zoo's over 2 million visitors how accessible solar energy can be in Nebraska. Creighton students supported the Zoo's Education Team in the development of K-6th lessons for the Zoo After-School Program (ZAP) about this solar installation, helping

to teach hundreds of students about the benefits of solar electricity. We also regularly facilitate 1-2 events each year to “kick off” the solar curriculum in the ZAP program.

2. Dmitry Volodkin and Anna Vikulina (Eds.). (2020) Self-Assembly of Polymers. *Micromachines (MDPI Publishing)*. ISBN 978-3-03928-506-8. April 2020. Chapter Author. <https://doi.org/10.3390/books978-3-03928-507-5>
 - I am the author of a book chapter on the Self-Assembly of Polymers. The chapter is based on my work Development of a High-Precision Solvent Vapor Annealing Chamber for Polymer Thin Films. *Micromachines – Special Issue on Directed Assembly of Polymers* **9(6)**: 271 (May 29, 2018).

Conference Proceedings

1. **A. Baruth** and C.D. Wentworth. Creating Interactive Physics Media with Flash and Video. *127th Meeting of the American Association of Physics Teachers (2003)*.
2. **A. Baruth** and C.D. Wentworth. Developing a Web-based Tutorial System for Physics Education. *35th Annual Midwest Instruction and Computing Symposium (2002)*.
 - Based on my senior thesis at Doane College.

Selected Presentations

Given since starting at Creighton University in 2012 (students in blue)

1. [Max Markuson DiPrince](#), [Alex Webert](#), [Emma Goldsmith](#), [Ashley Nelson](#), **A. Baruth**. Cheyney University: District Use Case. Invited Talk. Solar and Energy Storage Southeast Conference as part of the DOE District Solar Cup Challenge (1st place). Moved to virtual meeting. April 24-25, 2022. <https://www.energy.gov/eere/solar/solar-district-cup>
2. [Natalie Schwartzenberger](#), **A. Baruth**. Virtual Reality for Physics Education: Getting Started. Invited, Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (2022).
3. [Max Marcussen DiPrince](#), **A. Baruth**. Observing the Hydrothermal Degradation Synthesis of D-Glucose Derived Carbon Nanodots and their Fluorescent Properties. Invited, Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (2022).
4. **A. Baruth**. Putting a New Spin on Magnetic Topology. Invited, Creighton University. Omaha, NE (2022).
5. [Grace Dirks](#), **A. Baruth**. Creating, Detecting, and Analyzing Magnetic Skyrmions. Invited, Nebraska Materials Research Science and Engineering Center. Lincoln, NE (2021).
6. **A. Baruth**. Virtual Solar Farm Tour – Creighton University. Invited, Conservation Nebraska. Omaha, NE (2021).
7. **A. Baruth**. Directed self-assembly: A new frontier for nanolithography. Invited, Omaha Central High School. Omaha, NE (2021).
8. **A. Baruth**. Directed self-assembly: A new frontier for nanolithography. Invited, Creighton University Physics Department Seminar. Omaha, NE (2021).
9. [Max Marcussen DiPrince](#), **A. Baruth**. Implementing Glucose-Derived Carbon Nanodots in Dye-Sensitized Solar Cells to Increase External Quantum Efficiency. Contributed, Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (2021).
10. [Max Marcussen DiPrince](#), [Harsh Uppala](#), [Grace Dirks](#), [Logan Smith](#), [John Vosicky](#), **A. Baruth**. Glucose-Derived Carbon Nanodots in Dye-Sensitized Solar Cells to Increase External Quantum Efficiency. March Meeting of the American Physical Society, Virtual (2021).

11. Isaac Lamppa, Bridget Slavin, Nathan Adams, Logan Smith, Nick Dinaro, Jimmy Connors, **Andrew Baruth**. Ball State University: District Use Case. Invited Talk. Solar and Energy Storage Southeast Conference as part of the DOE District Solar Cup Challenge (3rd place). Originally in Atlanta (moved to virtual meeting) April 19-20, 2020. <https://www.energy.gov/eere/solar/solar-district-cup>
12. Max Marcussen DiPrince, **A. Baruth**. Implementing Glucose-Derived Carbon Nanodots in Dye-Sensitized Solar Cells to Improve Efficiency. Contributed, Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (2020). Invited. CANCELLED.
13. Max Marcussen DiPrince, **A. Baruth**. Implementing Glucose-Derived Carbon Nanodots in Dye-Sensitized Solar Cells to Improve Efficiency. CURAS “3 Minutes to Win It” Competition (2020). <https://youtu.be/vHv-t4xz7oU?list=PLUorRzvCSXPhqKRb5ZCA24U6CKTGsS1ie>
14. Max Marcussen DiPrince, Harsh Uppala, Grace Dirks, Logan Smith, John Vosicky, **A. Baruth**. Glucose-Derived Carbon Nanodots in Dye-Sensitized Solar Cells to Increase Efficiency. March Meeting of the American Physical Society, Denver, CO. (2020). In person meeting canceled due to Covid-19. Talks moved online.
15. **A. Baruth**. Directed self-assembly: A new frontier for nanolithography. Invited, Omaha Central High School. Omaha, NE (2020).
16. Kaity Szymborski and **Andrew Baruth**. Using Data Science for Sustainability Metrics: Demystifying physical science for social science with data science. Invited Talk. WoPhyS (Women in Physical Science). Lincoln, NE (2019).
17. Colin Thomas and **Andrew Baruth**. Making the Case for Campus-Wide Energy Monitoring and Student-Led Initiatives for Implementation. The Association for the Advancement of Sustainable in Higher Education (AASHE) National Conference, Spokane, WA (2019).
18. **A. Baruth**. All Thing Ignatian Poster Presenter. Sept 12, 2019. Omaha, NE
19. **A. Baruth**. Lunch Talk for CURAS Summer Series. Invited. July 2, 2019. Omaha, NE
20. **A. Baruth**. Energy Education and Outreach at Creighton University. SEPA Luncheon. Invited (June 29, 2019). Omaha, NE
21. **Andrew Baruth**, Akimasa Tsujimoto, Nicholas Fischer, Wayne Barkmeier, Mark Latta. Effect of Surface Pre-treatment on CAD/CAM Resin Composites for Bonding. International Association of Dental Research, Vancouver, British Columbia, CA (2019).
22. Akimasa Tsujimoto, Wayne Barkmeier, Nicholas Fischer, **Andrew Baruth**, Toshiki Takamizawa, Mark Latta, Masashi Miyazaki. Influence of Reduced Application Time of Universal Adhesives on Enamel Bond Fatigue Strength and Surface Morphology. International Association of Dental Research, Vancouver, British Columbia, CA (2019).
23. Mitchel Pham and **Andrew Baruth**. Influence of Hand-Polished CAD/CAM Zirconia on Gingival Fibroblast Adhesion. Creighton University Honors Day (2019).
24. Shrestha Samuel (Optical and Surface Characterization of Hybrid Resin CAD/CAM Compounds for Dental Crown Restoration) and Emily Johnson (Enamel etching for universal adhesives: Examination of enamel etching protocols for optimization of bonding effectiveness) both present posters with advisor **A. Baruth** at St. Albert’s Day. Creighton University (2019).
25. **A. Baruth**. Directed self-assembly: A new frontier for nanolithography. Invited, Omaha Central High School. Omaha, NE (2019).
26. Mitchel Pham and **A. Baruth**. Influence of Hand-Polished CAD/CAM Zirconia on Gingival Fibroblast Adhesion. Creighton Honors Day. Creighton University (2018).

27. [Shrestha Samuel](#), [Emily Johnson](#) and **Andrew Baruth**. Enamel etching for universal adhesives: Examination of enamel etching protocols for optimization of bonding effectiveness. Contributed. WoPhys (Women in Physics). Lincoln, NE (2018).
28. [Son Nguyen](#) and **Andrew Baruth**. Detection of the order-disorder transition via birefringence during solvent vapor annealing of poly(styrene)-block-poly(lactide) thin films. Invited. 2018 Dr. Randolph M. and Teresa Kolars Ferlic Research Scholar Symposium, Creighton University (2018).
29. [John Sunderland](#) and **Andrew Baruth**. Optimization of ex situ Sulfidation of Cu₂ZnSnS₄ (CZTS) Thin Films for use as Counter Electrodes in Dye-Sensitized Solar Cells. Contributed. St. Albert's Day – Creighton University. Omaha, NE (2018).
30. [Jeffrey Wong](#), **Andrew Baruth**, [Nicholas Fischer](#), Akimasa Tsujimoto, Wayne Barkmeier. Effect of Pre-Etching Agents for universal Adhesives on Enamel Bonding. American Association of Dental Research, Ft. Lauderdale, FL (2018).
31. [Nicholas Fischer](#), [Jeffrey Wong](#), [Mitchel Pham](#), D. Roselyn Cerutis, **Andrew Baruth**. Influence of Hand-Polished CAD/CAM Zirconia on Gingival Fibroblast Adhesion. American Association of Dental Research, Ft. Lauderdale, FL (2018).
32. [John Sunderland](#) and [Son Nguyen](#) presented at the 2018 Nebraska Academy of Sciences Annual Meeting. Lincoln, NE (2018).
33. **A. Baruth**. Directed self-assembly: A new frontier for nanolithography. Invited, University of Nebraska-Kearney Chemistry Seminar. Kearney, NE (2017).
34. **A. Baruth**. Directed self-assembly: A new frontier for nanolithography. Invited, April Meeting of the American Chemical Society. San Francisco, CA (2017).
35. [Teresa Kooima](#), [Sierra Brown](#) and **Andrew Baruth**. Solar Energy 101. Smart Energy Talks. Omaha, NE (2017).
36. [Meagan Grant](#), [William Jakubowski](#), [Gunnar Nelson](#), Chloe Drapes, **A. Baruth**. Effects of solvent evaporation conditions on solvent vapor annealed cylinder-forming block polymer thin films. March Meeting of the American Physical Society, New Orleans, LA. (2017).
37. [Nick Fischer](#) and [Jack Widmer](#) present research at Creighton University Honor's Day, Omaha, NE (2017) ****Nick receives Honor's Award for Research****
38. [Nick Fischer](#), Ben Marcussen, [Gunnar Nelson](#), [Meagan Grant](#) and [John Sunderland](#) present at the 2017 Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (2017).
39. [Nicholas Fischer](#), [Jonathan Dang](#), **A. Baruth**. Polishing Head Force and Re-Use Dependence on Zirconia Surface Roughness. International Association of Dental Research Meeting. San Francisco, CA (2017). ****Frechette Awards Session** (Runner-up)**
40. [Nick Fischer](#) (oral), [Son Nguyen](#), [John Sunderland](#), [Isaac Lamppa](#), [Jack Widmer](#), [Meagan Grant](#) and [Gunnar Nelson](#) each present posters on their research at Creighton University Research Day. Omaha, NE (2017)
41. **A. Baruth**. Directed self-assembly: A new frontier for nanolithography. Invited, Benedictine College, Atchison, KS (2016).
42. Stephanie Heuttner, Julie Anderson, [Meagan Grant](#), [Teresa Kooima](#), **A. Baruth**. Sustainability Efforts at the Omaha Henry Doorly Zoo: A Panel Discussion. Invited, St. Francis Celebration, Creighton University, Omaha, NE (2016).

43. **A. Baruth**. How to be an academic: storing and maintaining bibliographic data. Invited, Undergraduate Research Summer Seminar Luncheons (hosted by CURAS and myself), Creighton University, Omaha, NE (2016). Also had three student posters at the final symposium of this luncheon series.
44. Five student presentations (oral and posters) at Creighton University St. Albert's Day/ Research Fair. (2016).

[Nicholas Fischer](#) Awarded "Best Oral Presentation" in the Clinical Sciences Category.
45. [Nicholas Fischer](#), Toshiki Takamizawa, Wayne Barkmeier, **Andrew Baruth**. Comparison of Self-Etch Adhesives with Atomic Force Microscopy and Optical Profilometry. Contributed, Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (2016).

**Awarded "Outstanding Undergraduate Research in Biomedical Sciences Award" from the Nebraska Medical Center.
46. [Meagan Grant](#) and **Andrew Baruth**. Solvent Vapor Annealing. Contributed, Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (2016)
47. [Chloe Drapes](#), [Gunnar Nelson](#), [Meagan Grant](#), [Jeffrey Wong](#), and **A. Baruth**. The Role of Ultra-Fast Solvent Evaporation on the Directed Self Assembly of Block Polymer Thin Films. Contributed, Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (2016)
48. [G. Nelson](#), [C. Drapes](#), [M. Grant](#), [J. Wong](#), **A. Baruth**. Towards ultra-fast solvent evaporation, the development of a computer controlled solvent vapor annealing chamber. Contributed, Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (2016)
49. [Nicholas Fischer](#), **Andrew Baruth**, Toshiki Takamizawa, Wayne Barkmeier. Comparing Self-Etch Adhesives with Atomic Force Microscopy and Optical Profilometry. Contributed, American Association of Dental Research Annual Meeting, Los Angeles, CA. (2016)
50. **A. Baruth**, [G. Nelson](#), [C. Drapes](#), [J. Wong](#), [M. Grant](#). Effects of ultra-fast solvent evaporation in solvent vapor annealed cylinder-forming block polymer thin films. Contributed, March Meeting of the American Physical Society, Baltimore, MD. (2016)
51. [G. Nelson](#), [J. Wong](#), [C. Drapes](#), [M. Grant](#), **A. Baruth**. Towards ultra-fast solvent evaporation, the development of a computer controlled solvent vapor annealing chamber. Contributed, March Meeting of the American Physical Society, Baltimore, MD. (2016)
52. [C. Drapes](#), [G. Nelson](#), [M. Grant](#), [J. Wong](#), **A. Baruth**. The role of ultra-fast solvent evaporation on the directed self-assembly of block polymer thin films. Contributed, March Meeting of the American Physical Society, Baltimore, MD. (2016)
53. **Andrew Baruth**. States of Matter: How Solid is a Solid?. Invited, Jesuit Academy, Omaha, NE (2015) – eventually repeated over a dozen times for various audiences
54. **Andrew Baruth**. An Engineer, a Material Scientist or a Physicist? How I got here. Invited. Doane College, Crete, NE (2015)
55. [Gunnar Nelson](#) and **Andrew Baruth**. Time Dependence of Self-Assembly in Block Polymer Thin Films. Invited. 2015 Dr. Randolph M. and Teresa Kolars Ferlic Research Scholar Symposium, Creighton University (2015)
56. [Ryan Gnabasiq](#), [Gunnar Nelson](#), [Chloe Drapes](#), and **Andrew Baruth**. Reproducibility Characterization of a Climate-Controlled Solvent Vapor Annealing Chamber in Directed Self-Assembly of Block Polymer Thin Films for Use in Long-Range Human Spaceflight. Contributed, Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (2015)

57. [Anton G. Yanchilin](#), [Erin Cheese](#), and **Andrew G. Baruth**. Synthesis of Copper Sulfide Thin Films for Photovoltaic Applications. Contributed, Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (2015)
58. [Gunnar Nelson](#), [Ryan Gnabasiik](#), and **Andrew Baruth**. Linking Solvent Vapor and Thermal Annealing by Analyzing Time-dependent Crystallization Rates of Polystyrene-block-Polylactide Thin Films. Contributed, Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (2015)
59. **A. Baruth**. Isothermal tuning of magnetic coercivity in NiFe/NiO/[Co/Pt] heterostructures with orthogonal easy axes. Contributed, March Meeting of the American Physical Society (2015)
60. [R. Gnabasiik](#), [G. Nelson](#), [C. Drapes](#), **A. Baruth**. Investigation of solvent annealing time dependence on morphology formation in polystyrene-block-poly lactide thin films. Contributed, March Meeting of the American Physical Society (2015) **Finalist for Best Poster**
61. **A. Baruth**. The Hitchhiker's Guide to Nanotechnology and Superparamagnetism: Potential Relevance in Neuroscience Research. Invited, Creighton University Neuroscience Journal Club (Sept 12, 2014)
62. **A. Baruth**. Optimization of Long-Range Order in Solvent-Annealed Polystyrene-Block-Polylactide Block Polymer Thin Films for Nanolithography. Contributed, Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (April 11, 2014)
63. [Erin Cheese](#), [Brianna Baca](#), [Anton Yanchilin](#), and **Andrew Baruth**. Synthesis of Copper Monosulfide Thin Films by Ex-Situ Sulfidation. Contributed, Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (April 11, 2014)
64. [Ryan Gnabasiik](#) and **Andrew Baruth**. Design, Construction, and Testing a Purpose-Built Climate-controlled Solvent Vapor Annealing Chamber for Guided Self-assembly of Block Polymer Thin Films. Contributed, Nebraska Academy of Sciences Annual Meeting, Lincoln, NE (April 11, 2014)
65. Wayne L. Gladfelter, [Chun-Hao Lin](#), Srinivas Polisetty, **Andrew G. Baruth**, Marc A. Hillmyer, Christopher Leighton. Using Zinc Oxide ALD to Control Pore Diameter on Poly(styrene) Templates. Contributed, The AVS Topical Conference on Atomic Layer Deposition 2014 (ALD 2014). Kyoto, Japan.
66. **A. Baruth**, M.Seo, [C.H. Lin](#), [K. Walster](#), [A. Shankar](#), M.A. Hillmyer and C. Leighton. Optimization of long-range order in solvent-annealed polystyrene-b-poly lactide block polymer thin films for nanolithography. Contributed, March Meeting of the American Physical Society (2014)
67. [Ryan Gnabasiik](#), Rustin Haase, and **A. Baruth**. Design, construction, and testing a purpose-built climate-controlled solvent vapor annealing chamber for guided self-assembly of block polymer thin films. Contributed, March Meeting of the American Physical Society (2014)
68. **A. Baruth**, Directed self-assembly: A new frontier for nanolithography. Invited, University of Nebraska, Physics Department (2013). Omaha, NE
69. **A. Baruth**, The Creighton Energy Technology Program: Case Study on Solar Energy Education and Urban Installation. Invited, Sixth Annual Nebraska Wind Conference (2013). Lincoln, NE

Prior to starting at Creighton University in 2012

70. **Andrew Baruth**, Xin Zhang, Michael Manno, B. Selin Tosun, Rebekah Feist, Melissa Johnson, Chris Leighton, Uwe Kortshagen, Steve Campbell, Andre Mkhoyan, and Eray S. Aydil, Plasma Synthesis of Photovoltaic Materials.
Invited, presented by my colleague Eray S. Aydil, I was the first author. 2013 MRS Spring Meeting & Exhibit. April 1-5, 2013. San Francisco, CA
71. **A. Baruth**, M. Manno, A. Shankar, D. Narasimhan and C. Leighton. Reactive sputtering of transition metal disulfide thin films: Structure, magnetism and electronic transport.
Contributed, March Meeting of the American Physical Society (2012)
72. **A. Baruth**, Marc D. Rodwogin, A. Shankar, M.J. Erickson, Marc A. Hillmyer and C. Leighton. Non-lift-off Block Copolymer Lithography of 25 nm Magnetic Nanodot Arrays.
Contributed, March Meeting of the American Physical Society (2012)
73. **A. Baruth**, M.D. Rodwogin, A. Shankar, M.A. Torija, M.J. Erickson, M.A. Hillmyer and C. Leighton. Non-liftoff block copolymer nanolithography of magnetic nanodot arrays.
Contributed, March Meeting of the American Physical Society (2011)
74. **A. Baruth**. Application of block copolymer patterning to magnetic materials. (2010-12)
Invited, IEEE Magnetics Society
Invited, Seagate Technology
Invited, Otterbein University, Physics Dept. Colloquia
Invited, Augustana College, Physics Dept. Colloquia
Invited, Creighton University, Physics Dept. Colloquia
Invited, 7th Annual Minnesota Nanotechnology Workshop
Invited, University of Minnesota, ECE Dept. Magnetics Seminar
Invited, Augsburg College, Physics Dept. Colloquia
Invited, North Dakota State University–Fargo, Physics Dept. Colloquia
Invited, Nebraska Center for Materials and Nanoscience Seminar Series
Invited, Fifth Upper Midwest MRSEC Symposium
Invited, *Success Strategies for Emerging Faculty*, University of Delaware
Invited, Minnesota State University–Mankato, Physics Dept. Colloquia
75. **A. Baruth**, M.D. Rodwogin, A. Shankar, M.J. Erickson, M.A. Hillmyer and C. Leighton. A novel non-liftoff approach to block copolymer patterning of magnetic materials.
Contributed, 55th Conference on Magnetism and Magnetic Materials (2010)
76. **A. Baruth**, S.K. Davis and S. Adenwalla. Excitation and Study of Magnetization Dynamics in Patterned Thin Films Using Surface Acoustic Waves.
Contributed, March Meeting of the American Physical Society (2009)
77. **A. Baruth**. Exchange Coupling at Co/NiO Interfaces: The Origin of Interlayer Exchange Coupling.
Invited, University of Minnesota–Twin Cities, MRSEC Seminar (2009)
78. **A. Baruth**, L. Yuan, J. D. Burton, K. Janicka, E.Y. Tsymbal, S.H. Liou, and S. Adenwalla. Domain overlap in antiferromagnetically coupled [Co/Pt]/NiO/[Co/Pt] multilayers.
Contributed, 52nd Conference on Magnetism and Magnetic Materials (2007)
Contributed, March Meeting of the American Physical Society (2007)
79. **A. Baruth** and S. Adenwalla. Magnetic coupling and training effects in Co/NiO/[Co/Pt] structures with orthogonal easy axes.

Contributed, March Meeting of the American Physical Society (2007)

80. **A. Baruth**, S.H. Liou, D.J. Keavney, and S. Adenwalla. Effects of coupling on domain structure of [Pt(6Å)/Co(4Å)]₃/NiO(t_{NiO})/[Co(4Å)/Pt(6 Å)]₃ multilayers with oscillatory coupling.
Contributed, March Meeting of the American Physical Society (2006)
81. **A. Baruth**, D.J. Keavney, and S. Adenwalla. Oscillatory Coupled Multilayers with a NiO interlayer.
Invited Guest, Advanced Photon Source, Argonne National Laboratory (2005)
82. **A. Baruth**, S. Adenwalla, and D.J. Keavney. XMCD studies of antiferromagnetically coupled Co/Pt Multilayers.
Contributed, March Meeting of the American Physical Society (2005)
Contributed, 49th Conference on Magnetism and Magnetic Materials (2004)
83. C. Wentworth and **A. Baruth**. Creating Interactive Physics Media with Flash and Video.
Contributed, 127th American Association of Physics Teachers Meeting (2004)
84. C. Wentworth, M.W. Plano Clark, **A. Baruth**, and B. Fulton. Using Ultrasound Imaging to Motivate Physics Learning as Part of the Humanized Physics Project.
Contributed, 126th American Association of Physics Teachers Meeting (2003)
85. **A. Baruth**. Flash-VidDat: A Macromedia Flash Application for Physics Video Analysis on the Web.
Contributed, 126th American Association of Physics Teachers Meeting (2003)
86. **A. Baruth** and C. Wentworth. Developing a Web-based Tutorial System for Physics Education.
Contributed, 35th Midwest Instruction and Computing Symposium (2002)

Media Contributions

1. Creighton University seniors win national solar energy design contest
 - a. <https://www.creighton.edu/news/creighton-university-seniors-win-national-solar-energy-design-contest>
 - b. Numerous Creighton social media outlets
2. Sugar Powers Solar Technology Research (2021)
 - a. <https://ccas.creighton.edu/news/sugar-powers-solar-technology-research>
 - b. Numerous Creighton social media outlets
3. The (Online) Heartland Jesuit Physics Retreat. AJCU Connections (November 18, 2020)
 - a. <https://www.ajcunet.edu/november-2020-connections/2020/11/10/heartland-delta-thematic>
4. Energy competition saves metric tons (Fall 2019)
 - a. https://www.creightonian.com/news/article_6c13adc4-f8f2-11e9-8c49-830873eae6a3.html
5. Residence halls compete to save energy (Fall 2019)
 - a. https://www.creightonian.com/news/article_5fa81a8e-e079-11e9-9d37-2f24a6032480.html
6. Energy Innovations Course (Spring 2019) – OPPD Community Solar
 - a. <https://fox42kptm.com/news/local/oppd-community-solar-to-offer-renewable-energy-options>

7. Media contributions for involvement with Henry Doorly Zoo and their renewable energy initiatives with the Nebraska Environmental Trust
 - a. <https://www.omahazoofoundation.org/news/detail/the-zoo-positive-energy>
 - b. <http://www.omahazoo.com/meet-the-green-team>
 - c. <https://www.swtenergy.com/single-post/2017/05/17/Powering-Omahas-Henry-Doorly-Zoo>
 - d. <http://www.nebraskansforsolar.org/event/sustainability-initiatives-at-the-omaha-henry-doorly-zoo/>
8. Wait... What?. The Creighton Magazine (Fall 2017)
 - a. <https://www.creighton.edu/creightonmagazine/2017fallnews/waitwhat/>
9. Media contributions for EnergiPlant 2.0
 - a. http://www.omaha.com/sponsored/creighton/solar-wind-power-at-work-second-energiplant-sprouts-from-creighton/article_4701f6c8-ca21-11e7-97bd-5f075a018542.html
 - b. <https://opdthewire.com/creighton-solar-charging-station/>
 - c. <http://www.creighton.edu/publicrelations/newscenter/news/2017/november2017/november32017/energiplantnr110617/>
 - d. <https://www.tun.com/blog/creighton-university-energiplant/>
10. Beauty and the Holy See. The Creighton Magazine (Spring 2017)
<http://www.creighton.edu/creightonmagazine/2017smrunewsbeautyandholyysee/>
11. Media contributions for EnergiPlant 1.0
 - a. <https://ccas.creighton.edu/news/solar-structure-home-quad>
 - b. <https://www.creighton.edu/sustainability/energy/>
 - c. <https://www.creighton.edu/office-president/messages-campus/spring-2017/april-21-2017>
 - d. http://www.creightonian.com/scene/article_9b24bef8-d395-11e6-98c4-b3af9bf212b8.html
 - e. <https://opdthewire.com/creighton-oppd-students-solar-plant/>
 - f. http://www.oppd.com/media/247760/2017_mar_outlets_web.pdf
 - g. <http://viewer.zmags.com/publication/b1f3bd6a?&csid=595247#/b1f3bd6a/1>
12. Alumna Energized by SunShot Experience. Kristine Rohwer, The Creighton Magazine (Fall 2016)
<https://www.creighton.edu/creightonmagazine/2016fallnews/scheesesunshot/>
13. Lighting the Way: Today's Technology, Tomorrow's Leaders. Cheril Lee, The Reader (August 1, 2016)
14. Old landfill eyed as solar farm. Eugene Curtin, Bellevue Leader (December 28, 2015)
http://www.omaha.com/sarpy/bellevue/old-landfill-eyed-as-solar-farm/article_686a3294-01c6-5f5d-9afb-bf9a0dfa8ad2.html
15. For capstone class, Creighton students analyze energy efficiency of Omaha Archdiocese schools. Alia Conley, Omaha World Herald (November 11, 2015).
http://www.omaha.com/news/education/for-capstone-class-creighton-students-analyze-energy-efficiency-of-omaha/article_67b78682-a71a-5511-87f6-54b80d13f675.html?mode=jqm

16. Pope would already be proud of us, utilities say. Russell Hubbard, Omaha World Herald (June 20, 2015)
https://www.omaha.com/eedition/sunrise/articles/pope-would-already-be-proud-of-us-utilities-say/article_c0c7feff-b3bf-57a9-946d-40fee26e668c.html
17. Wind, solar power could supply 75 percent of Nebraska's needs, advocates say. Russell Hubbard, Omaha World Herald (February 19, 2015)
http://www.omaha.com/money/wind-solar-power-could-supply-percent-of-nebraska-s-needs/article_00ad268b-718d-545c-a745-40b0949382ac.html
http://www.omaha.com/eedition/sunrise/articles/pope-would-already-be-proud-of-us-utilities-say/article_c0c7feff-b3bf-57a9-946d-40fee26e668c.html?mode=jqm
18. CU, UNO offer right climate for sustainability. Leslie Reed, Omaha World Herald (May 6, 2013). <http://www.omaha.com/article/20130506/NEWS/705069926/1687>
Course (ERG 251) was featured on the front page of the Omaha World Herald.

Courses Taught

Semester	Course Number	Course Title
Spring 22	ERG 582	Energy Innovation Project II*
Spring 22	PHY 202	General Physics for the Life Sciences II
Spring 22	PHY 491/791	Physics Seminar
Fall 22	ERG 581	Energy Innovation Project I*
Fall 22	PHY 621	Graduate Electricity and Magnetism
Fall 22	PHY 201	General Physics for the Life Sciences I
Fall 20 – Spring 21	Sabbatical	
Spring 20	ERG 213	Three-dimensional Design*
Spring 20	ERG 582	Energy Innovation Project II*
Spring 20	ERG 521	Introduction to Photovoltaic Materials*
Fall 19	ERG 581	Energy Innovation Project I*
Fall 19	ERG 520	Introduction to Solar Energy*
Fall 19	PHY 195	Installation and Maintenance of Photovoltaic Systems*
Spring 19	ERG 582	Energy Innovation Project II*
Spring 19	ERG 361	Energy Internships*
Spring 19	ERG 591	Seminar in Engineering
Fall 18	ERG 213	Three-dimensional Design*
Fall 18	ERG 595B	Intro to Material Science*
Fall 18	ERG 581	Energy Innovation Project I*
Spring 18	PHY 201	General Physics for the Life Sciences I
Spring 18	ERG 520	Introduction to Solar Energy*
Spring 18	PHY 571	Condensed Matter Physics
Fall 17	PHY 621	Graduate Electricity and Magnetism
Fall 17	ERG 131	Installation and Maintenance of Photovoltaic Systems*
Fall 17	PHY 202	General Physics for the Life Sciences II
Spring 17	ERG 521	Introduction to Photovoltaic Materials*
Spring 17	ERG 251	History and Material Science of the Modern World*
Spring 17	PHY 202	General Physics for the Life Sciences II
Fall 16	PHY 201	General Physics for the Life Sciences I
Fall 16	ERG 131	Installation and Maintenance of Photovoltaic Systems*

Fall 16	ERG 520	Introduction to Solar Energy*
Spring 16	ERG 521	Introduction to Photovoltaic Materials*
Fall 15	PHY 201	General Physics for the Life Sciences I
Fall 15	ERG 131	Installation and Maintenance of Photovoltaic Systems*
Fall 15	ERG 520	Introduction to Solar Energy*
Fall 15	RSP 101	Introduction to the Culture of Collegiate Life
Spring 15	PHY 491	Physics Seminar
Spring 15	PHY 595	Introduction to Material Science*
Spring 15	ERG 521	Introduction to Photovoltaic Materials*
Fall 14	PHY 201	General Physics for the Life Sciences I
Fall 14	ERG 131	Installation and Maintenance of Photovoltaic Systems*
Fall 14	ERG 520	Introduction to Solar Energy*
Spring 14	PHY 491	Physics Seminar
Spring 14	ERG 251	History and Material Science of the Modern World*
Spring 14	ERG 521	Introduction to Photovoltaic Materials*
Fall 13	PHY 591	Seminar in Engineering
Fall 13	ERG 131	Installation and Maintenance of Photovoltaic Systems*
Fall 13	ERG 321	Introduction to Solar Energy*
Fall 13	RSP 101	Introduction to the Culture of Collegiate Life
Summer 13	ERG 132	Convection and Passive Solar Energy Systems*
Spring 13	PHY 211	General Physics I
Spring 13	ERG 251	History and Material Science of the Modern World*
Fall 2012	PHY 212	General Physics II
Fall 2012	PHY 212 LM	General Physics: Honor's Lab*
Fall 2012	PHY 591	Seminar in Engineering

*Indicates courses of my own creation

Mentoring of Undergraduate and Graduate Research Students

Since arriving at Creighton in 2012, I have personally mentored high school, undergraduate and graduate students through my research program (see table below). These students have worked with me in all aspects of equipment design, data collection and analysis. A few select students have been invited to aid in manuscript preparation or public presentations.

Dr. Baruth's Materials Research Laboratory Research Students

Undergraduate (UG) Students

	Name	Major	Years	Project	Last Known Institution
1	Hannah Mullally	BIO	2012	Cryostat Mount	University of Tennessee
2	Molly Berringer	H.S.	2012	Cryostat Mount	MIT, Mechanical Engineering
3	Daniel Dean	ERG/BIO	2012	Cryostat Mount and X-ray Fluorescence	Montana Conservation Corps
4	Erin Cheese	ERG/PHY	2013-15	Ex-situ Sulfidation	Special Assistant to Gina McCarthy (Climate Advisor to President Biden), White House,

					OMB, White House, Program Examiner, Energy M.P.A.: Woodrow Wilson School, Princeton REU: K-State
5	Brianna Baca	ERG	2013-14	Ex-situ Sulfidation	Asst. Developer, Tradewind Energy
6	Ryan Gnabasik, PhD	ERG/ PHY	2013-15	Solvent Annealing/ Dental Materials	Post-Doc: University of California, Santa Barbara Ph.D., University of Minnesota – Material Science REU: UC-Davis, Olin
7	Sam Rosol	ERG/ PHY	2013	Polymer Characterization	Project Manager, SITE Construction Engineer 1, Kiewit
8	Katherine Ostermann	PHY	2014	Dental Materials	LEED and WELL Certification Reviewer, Catalyst Partners Analyst, BranchPattern Kiewit Building Group Services – Sustainability Engineer
9	Anton Yanchillin	ERG	2014-16	Ex-situ Sulfidation	Launch Operations Strategy, SpaceX Lockheed Martin Data Analyst
10	Jason Rogers	PHY	2014	Hall Effect Instrument	United States Space Force, Officer
11	Gunnar Nelson	PHY	2014-18	Solvent Annealing	PhD, University of Minnesota – Material Science
12	Caroline Ladley	CHEM. E	2014	Ex-situ Sulfidation	Scientist, Uniliver Cornell University
13	Nick Fischer, PhD	BIO/ EVS	2014-17	Dental Materials	DDS-PhD Fellow – University of Minnesota
14	Rachel Pham	CHM	2014	Dental Materials	CU Medical School
15	Koy Matthews	ERG	2014	Hall Effect Instrument	Follet
16	Jake Yager	ERG	2014	External Quantum Efficiency Apparatus	Inspector at Alfred Benesch & Company AMI Environmental Systems, Project Manager
17	Ala'a Rayyan	ERG	2015-16	Ex-situ Sulfidation	Electrical Engineer at CMTA, Inc. PhD Program in Architectural Engineering

18	Karen (Sass) Hardy	PHY	2015-16	Ex-situ Sulfidation	User Experience Analyst, University of Nebraska Foundation Associate Project Manager, Siemens Intern: Kiewit, Berkshire Hathaway, Omtimized Systems
19	Keelan Okazaki	ERG	2015-16	Dental Materials and Outreach	Project Manager at PhotonWorks Engineering LLP
20	Meagan Grant	ERG	2015-17	Solvent Annealing and Outreach	MSE, Polymer Science and Engineering, University of Akron Coatings and Materials Approval Engineer at PACCAR Technical Center
21	Jeffery Wong	PHY	2015-18	Solvent Annealing	CU Medical Physics MS
22	Sierra Brown	ERG	2015	Outreach and LED efficiency	Designer, Gensler U. Virginia Architecture
23	Colin Thomas	ERG	2015	Outreach and LED efficiency	Optimized Systems Creighton University Verdis Group
24	Michael Watras	ERG	2015	Dental Materials, Solar Array, Outreach and LED efficiency	Kiewit Building Analyst Data Presentation Engineer, Spreetail
25	John Sunderland	PHY	2016-18	Ex-Situ Sulfidation	U. Wisconsin Material Science PhD
26	Christopher Landis	PHY	2016	LabView Control for Quantum Efficiency Testing	Sales Consultant, Mauer Chevrolet
27	Teresa Kooima	ERG	2016-17	Ex-Situ Sulfidation	Development Strategist Bluestem Energy Solutions Project Manager Branch Pattern
28	Will Jakubowski	ERG	2016-17	Solvent Annealing	Retail Trader Junior Financial Analyst, Garrett Consulting
29	Isaac Lamppa	ERG	2016-18	Ex-Situ Sulfidation	Senior Analyst, Renewable Project Development at Invenergy LLC
30	Joseph Gray	ERG	2016	Quantum Efficiency Testing	Left Creighton
31	Son Nguyen	PHY	2016-18	Solvent Annealing	Deported
32	Jack Arkfeld	ERG	2016-17	Designing a four-terminal probe station	Habitat for Humanity Solar Energy Consultant at LGCY Power
33	Jimmy Connors	ERG	2016-17	Solvent Annealing	

34	Hannah Okelberry	BIO/EVS	2016	Solvent Annealing	Research Study Coordinator, Institute for Human Neuroscience at Boys Town National Research Hospital
35	Jon Dang	BIO	2016-17	Dental Materials	Creighton Dental School
36	Mitchel Pham	BIO	2016-18	Dental Materials	Creighton Medical School
37	Yidedia Bekele	ERG	2017	Solvent Annealing	Risk and Financial Advisory Analyst at Deloitte
38	Shrestha Samuel	CHM	2017-18	Dental Materials	Creighton Medical School
39	Emily Johnson	CHM	2017-18	Dental Materials	Creighton Dental School
40	Sam Ruiz	PHY	2017-18	Ex-Situ Sulfidation	U. Nebraska – Lincoln Materials Engineering, PhD
41	Jack Widmer	PHY	2017	Ex-Situ Sulfidation	National Energy Technology Laboratory Oregon Graduate Research Assistant at University of Colorado Boulder
42	Max Marcussen DiPrince	ERG/PHY	2019-2021	Dye-sensitized Solar Cells	MS Creighton University
43	Grace Dirks	PHY	2019-2021	Dye-Sensitized Solar Cells, Magnetic Skyrmions and Virtual Reality	BS Creighton University
44	Vikram Venkataraman	H.S.	2019	Dental Materials	BS U. of Miami, FL
45	Logan Smith	ERG	2019 - 20	Dye-Sensitized Solar Cells	Energy Analyst at Taitem Engineering
46	John Vosicky	PHY	2019	Glucose-Derived Carbon Dots	Runner at Locher Pavelka Dostal Braddy & Hammes, LLC
47	Emily Engel	H.S.	2019	Copper Sulfide	
48	Noor Himdan	H.S.	2019	Copper Sulfide	
49	Keren Lopez	H.S.	2019	Copper Sulfide	
50	Natalie Schwartzenberger	CS	2021	Virtual Reality	Software Engineer Telcoin
51	Aaron Musson	H.S. Teacher	2022	Dye-sensitized Solar Cells	Chem teacher – Omaha North
52	Davis Reed	PHY	2022	Dye-sensitized Solar Cells	Active

Graduate (M.S.) Students

	Name	Major	Years	Project	Last Known Institution
1	Rustin Haase	PHY	2012-2014	Solvent Annealing	1Staff Training and Development, Network Manager

2	Mark Akubo, S.J.	PHY	2013-2015	Solvent Annealing	PhD Candidate, Learning Systems Institute, Florida State University Post-doc: Cornell
3	Chloe Drapes	PHY	2015-17	Solvent Annealing	
4	Ben Marcussen	PHY	2016-18	Ex-Situ Sulfidation	Midwest Labs
5	Ikenna Odeluzigbo	PHY	2021-	Magnetic Skyrmions	Active
6	Max Markuson DiPrince	PHY	2021 -	Dye-Sensitized Solar Cells	Active

Service

University

Apr. 4, 2013	Brownell-Talbot Creighton Career Day, Assistant
May 2, 2013	Gave a tour to 40 Brazilian High School Students, International Admissions
Aug. 26, 2013	Lecture and Tour for visiting students from Tohoku University, Japan
July 31, 2013	Acquired 17 solar thermal panels (donated) from OPPD and facilitated their move to Creighton University
Nov 9, 2013	Completed solar siting for the Creighton Retreat Center in Griswold, IA – inspecting feasibility of an installation for summer 2014
Nov 9, 2013	Monitored the annual cleaning of the Burt Street solar panel array. This had been contracted out in the past, but this year I utilized students and campus facilities to perform the costly task.
Jan 28, 2014	Presented to High School Guidance Counselors on Energy Technology Program
Apr. 2, 2014	Brownell-Talbot Creighton Career Day, Assistant
Apr. 7, 2014	Breakfast for Admitted Students, Assistant
Mar. 2014	Participated in the Creighton Calling initiative
2014	Maintenance of Solar Installation was passed from University facilities to Energy Technology, I am taking the lead
Aug 20, 2014	Monitored the annual cleaning of the Burt Street solar panel array. This had been contracted out in the past, but this year I utilized students and campus facilities to perform the costly task.
Aug 22, 2014	Monitored electrical inspection of the Burt Street solar panel array.
Aug 26, 2014	Lecture and Tour for visiting students from Tohoku University, Japan
Oct 18, 2014	Acquired 40 high efficiency passive solar windows from a private donor (Dick Eurich), utilizing donated time from a local solar installer and Omaha North students, and facilitated their move to Creighton University
Oct 31, 2014	Goldwater Application Reviewer
2014-2015	Assisted with CU Sunday events
Jan. 15, 2015	Meeting with Omaha Economic Development Corporation to discuss renewable energy strategies and energy auditing for North Omaha.
Feb. 18, 2015	Press Teleconference for Renewable America
April 14, 2015	Judge for Creighton Research Day (St. Albert's Day)
April 28, 2015	Participated in the “CU Involvement in North Omaha Meeting,” presented by Mission and Ministry, CCSJ and Government and Community Relations.
Sept. 15, 2015	Meeting with Dean Mueller, OPPD Sustainability Director, to renew sponsorship
Sept. 18, 2015	Met with Dan Smith (President of Electric Company of Omaha) and John Bourne (International Representative in the 11 th District for IBEW) to discuss in-kind donations for work on solar installations. **Increased production on the 85 kW

array on Burt street from 10-15 kW to FULL capacity, and made advancements on improving array communications**

Oct. 14, 2015 Meeting with Tim Burke, OPPD President and CEO, to discuss partnership opportunities with Creighton

Jan. 21, 2016 Met with Michael Howard of World-Cal to discuss the possible donation of more than \$800,000 worth of solar testing equipment from his company to Creighton.

April 12, 2016 Judge for Creighton Research Day (St. Albert's Day)

May 19, 2016 MAGIS Core Assessment Day, Participant

June 6, 2016 Presented a demo show for the grant "Building Bridges: Health Science Education in Native American Communities." This is part of the Science Education Partnership Award of the NIH.

July 18, 2016 Joined the Advisory Committee for the CGI Award: Environmental Global Citizenship: A Fundamental Component of Sustainability, Energy and Environmental Study.

Sept 21, 2016 Hosted Dr. Joshua Kneifel, Applied Economist from NIST Gaithersburg, to present a guest lecture "Measuring Sustainability in Buildings" as part of Creighton's annual Spirit of St. Francis celebration.

Sept 30, 2016 Hosted Stephanie Huettner and Julie Anderson, Omaha Henry Doorly Zoo, as part of a panel discussion, including Creighton faculty and students, to present on sustainability initiatives at the Zoo.

Nov 6, 2016 Students and myself completed the EnergiPlant, a wind and solar powered charging station for Creighton's campus.

Oct 2017 Students and myself completed the EnergiPlant, a wind and solar powered charging station for Creighton's campus.

June 2017 Went to Sydney Australia to evaluate and generate student opportunities (study abroad, research, etc) for the Creighton Global Initiative. Follow-up Meetings.

2018 Sent 2 students to ILAC in the DR with Fr. Hendrickson to complete Energy Audit and review of solar installation.

2018-19 Working with Facilities and Optimized Systems to get a campus-wide energy dashboard system and campus energy reduction competition.

2018-19 Working with CU legal and development to facilitate solar testing facility transfer to U. of Arizona

July 2, 2019 Lunch Talk for CURAS Summer Series

Sept 12, 2019 All Thing Ignatian Poster Presenter

2019 Campus Energy Master Plan committee, member

2019-21 Engaged Learning Committee Member – Academic Service Learning (GEO)

2019 Campus Energy Reduction Competition (9/16/19 – 10/4/19), Lead

2020 Seeking Hope Forum (1/29/2020), Panelist

2020 Dominican Republic Academic Strategic Planning Group, Presidential Appointment

2021 Creighton University Climate Change Task Force – Climate and Buildings Committee Chair

2022 Ad hoc working group on CU Solar Array Decommission and Recommission

Ongoing CU Sundays, Research Days, Letter writing and calling campaigns, campus tours, interview Dean's Fellows

College

2012-2013 New Faculty Workshop, Attendee

July 2013 Summer Energy Technology Camp (3 weeks), Organizer

August 2013 Energy Technology Retreat for Incoming Freshman (1 week), Organizer

2013-2014 RSP Advisor
 August 2014 Energy Technology Retreat for Incoming Freshman (1 week), Organizer
 2014 Honors Advisor, Katherine Osterman
 2015 Honors Advisor, Anton Yanchilin and Nicholas Fisher
 2015-2016 RSP Advisor
 May 14, 2015 Presents "States of Matter: How Solid is a Solid?" to the Jesuit Academy
 August 2015 Energy Technology Retreat for Incoming Freshman (1 week), Organizer
 May 4, 2016 Presents "How Tall can a LEGO Tower be Before it Crushes Itself?" to the Jesuit Academy
 August 2016 Energy Technology Retreat for Incoming Freshman (1 week), Organizer
 August 2017 Energy Technology Retreat for Incoming Freshman (1 week), Organizer
 May 2017 Magis Core Assessment (Understanding Natural Science)
 May 2018 Magis Core Assessment (Doing Natural Science)
 May 2019 Magis Core Assessment (Designated Writing)
 December 2019 Guest Instructor at Omaha Central High. Promoted 24th Street STEM corridor.
 2019-present Faculty Senate
 2019-2020 CCAS Curriculum committee
 2019 Research Advisor to 3 Central High IB Physics students
 December 2020 Guest Instructor at Omaha Central High. Promoted 24th Street STEM corridor.
 2020 Research Advisor to 3 Central High IB students
 December 2021 Guest Instructor at Omaha Central High. Promoted 24th Street STEM corridor.
 2021-present CCAS Sabbatical Committee
 Ongoing Calling initiatives, tours, collaboration between Energy, Sustainability and EVS
 2022 RSP Advisor

Department

July 25, 2013 Tour with Chinese visiting students interested in Creighton graduate school
 2012-2013 Upper division laboratory revision committee, Attendee, Co-author, Co-contributor
 2012-present Physics Department Meetings, Attendee, Time Czar and Minutes-taker du jour
 2012-2017 Energy Technology Program Staff Meetings, Attendee (weekly)
 2013-2014 Physics Advanced Lab Modules, Creator
 2013-2019 Department/Program Liaison to Library for Physics and Energy Technology
 2013-2019 Writer and grader for Qualification Exams for master's students
 2013-2019 Thesis Committee member
 2014-2015 Applied Physical Analysis Major Revision
 2014-2015 Designated Core Course Proposal – Physics Seminar
 2014+ Compile "Good News" for the Physics Department
 2014+ Faculty Sponsor for Creighton University Energy Club
 April 28, 2014 Omaha Chamber of Commerce Meeting, Represented CU
 May 2, 2014 Energy Technology Industrial Advisory Meeting, Assistant
 Oct 17, 2014 Energy Technology Industrial Advisory Meeting, Assistant
 Nov 8, 2014 Jesuit Retreat for Physics Faculty
 Nov 12-16, 2014 AAPT New Faculty Workshop in College Park, MD
 2014+ Faculty Liaison to Radiation Safety
 April 10, 2015 Energy Technology Industrial Advisory Meeting, Assistant
 March 23, 2015 Led a public panel discussion on the Creighton University Energy Technology Program, sponsored by Nebraskans for Solar.
 Oct. 7, 2015 Energy Technology Industrial Advisory Meeting, Assistant
 Oct 8, 2015 CURAS Undergraduate Research Fair, Presenter

Oct. 9, 2015 Presented on Physics Graduate Program to Doane College, Crete, NE.
 Oct. 13, 2015 Provided a job shadow for Nolan Roth
 Apr. 26, 2016 Judge for Project Physics Lab Robotics Competition
 May 8, 2016 Energy Technology Industrial Advisory Meeting, Assistant
 Oct 28, 2016 Energy Technology Industrial Advisory Meeting, Assistant
 2017 Meetings to combine “green” programs
 April 8, 2017 Energy Technology Industrial Advisory Meeting, Assistant
 Nov 19, 2017 Energy Technology Industrial Advisory Meeting, Assistant (repeated bi-annually continually)
 April 30, 2019 Energy Technology Industry Advisory Meeting, Organizer
 2019 Program Review of Physics, contributor
 2019 Jesuit Retreat for Physics Faculty, setting schedule and agenda
 Nov 18, 2019 Assisted with Rhodes Scholar Mock Interviews
 2020 Devin (Norris High School) shadowed me.
 2019 - 2020 NREL Solar District Cup national competition. Faculty coach/advisor. 3rd Place.
 2019-2021 Ahn Mai Thesis Committee
 2020-2022 Yohan Walter Thesis Committee
 2020-2022 Jeff Brozek Thesis Committee
 2021-present Max Markuson DiPrince Thesis Committee
 2021-present Ikenna Odeluzigbo Thesis Committee
 2022 Designed new major “Applied Physics and Pre-Engineering”
 2021 - 2022 DOE Solar District Cup national competition. Faculty coach/advisor. 1st Place.
 Ongoing Departmental outreach, including digital signage to advertise research, good news, updates, and “why you should be a physics major!”

Public

Dec. 15, 2012 First Lego League of Nebraska, LEGO Robot Design and Mechanical Judge
 Feb. 16, 2013 Science in Scouting Day, Organizer, taught 10-year-old boys the scientific method through a material science experiment, on the Creighton Campus, involving the testing of LEGO towers. They earned the Cub Scout science belt loop and pin.
 2013-2015 Advisory Council, Nebraskans for Solar (non-profit)
 July 8, 2014 Green CU Tour, Organizer
 Oct 28, 2014 Nebraska Wind and Solar Conference Tour of Creighton, Organizer
 Dec 11, 2014 Finalized a feasibility study for a 25 kW solar electric installation at the Siena/Francis House, presented to Siena/Francis, Nebraskans for Solar and Omaha Public Power District.
 2014-2015 Participated in the AAPT Faculty Online Learning Community with weekly WebEx meetings amongst the cohort
 2014-2015 Tiger Cub Leader and Cubmaster for Pack 266, Papillion, NE
 2014-2015 Worship Committee, Technology Committee, 20/20 Strategic Planning Committee, Bell Choir, First Presbyterian Church of Bellevue
 February 2015 Science Demo show for Boy Scouts of America Pack 266
 March 23, 2015 Led public panel discussion on the Creighton University Energy Technology Program for Nebraskans for Solar
 July - Aug, 2015 LED lighting project for Minden, NE in preparation for Christmas season, they are the “Christmas City” of Nebraska, but suffer from excessive late fees on electricity.
 July 13, 2015 Hosted a Boy Scouts of America merit badge clinic for the Energy and Engineering merit badges. 25 youth attended.

- Nov. 19, 2015 Led a crash course in solar energy to Omaha Central High's Engineering Club. The short course ended with a hands-on look at Creighton's 85 kW solar array. Students went on to place in most categories and receiving 5th place overall in an engineering competition based on this and continued interaction.
- Dec. 9, 2015 Finalized feasibility studies for a solar array and presented to the new director and campus coordinator of the MICAH house.
- Dec. 15, 2015 Won the Sarpy County Board's support for an effort to study the costs and obstacles associated with building a utility scale solar farm on an old Sarpy County Landfill along Cedar Island Road in Bellevue. The project was recently featured in the Bellevue Leader.
- Dec. 18, 2015 First-year students Sierra Brown, Mafer Correa and Teresa Kooima, under the guidance of Dr. Baruth and senior Energy Technology Students, designed a solar powered mobile hospital unit for Afua, Nigeria in consultation with Dr. Ekpenyong.
- Jan. 18, 2016 Meeting with Dean Mueller, OPPD Sustainability Director, and the OPPD "solar feasibility team" to discuss the possibility of a solar farm in Sarpy County (eventually because the seed for their community solar project).
- Mar. 5, 2016 Assisted with the Nuclear Science Merit Badge Clinic at Creighton University
2016 – 2019 Cubmaster (Pack 266)
- May 9, 16, 2016 Scouting for Food – Food Drive
- June 6, 2016 Presents a demo show for the grant "Building Bridges: Health Science Education in Native American Communities." This is part of the Science Education Partnership Award of the NIH.
- May 6, 13, 2017 Scouting for Food – Food Drive
2016-2017 Developing after-school curriculum dealing with energy for the Omaha Henry Doorly Zoo, includes multiple on-site meetings with Education Director and Curriculum Specialists with the zoo.
- 2017 Did solar curriculum "kick-off" events at Castellar and Bancroft Elementary Schools.
- 2017 Did a West vs South-facing comparative analysis for solar installations. Presented to OPPD's solar team.
- 2017-2018 Advisory Board, member, for OPPD's Community Solar Group
2018 Completed feasibility studies for No More Empty Pots and St. Paul's Methodist Church
- 2019 – 2021 Scoutmaster (Troop 60)
- 2019 – 2022 OPPD Community Solar Stakeholder. Prepped presentations for OPPD Board members concerning proposed OPPD Solar Infrastructure.
- 2019 Produced a Marketing Campaign for OPPD's Community Solar project
- 2019 Presented a renewable energy solution for No More Empty Pots and installed energy monitoring throughout their Food Hub
- 2019 Did solar curriculum "kick-off" events at Castellar and Bancroft Elementary Schools.
- 2019 Presents on Sustainable Energy Education for the grant "Building Bridges: Health Science Education in Native American Communities." This is part of the Science Education Partnership Award of the NIH.
- 2019 Ran a science day with Northeast Elementary in Glenwood, IA
- Nov 6, 2019 EPSCoR FIRST Award Reviewer
- 2020 Merit Badge University. Directed Engineering Merit Badge
- Nov 2020 EPSCoR FIRST Award Reviewer
- 2020 – present Sustainability Merit Badge Counselor for the Mid-American Council of the BSA

Ongoing

Scoutmaster (Troop 888), Bell Ringer, Percussion, and Worship Committee (First Presbyterian Church of Bellevue), Watch D.O.G.S. (volunteer in public schools as a positive male role model)

Professional References

Prof. Chris Leighton (Distinguished McKnight University Professor, Materials Science)
Dept. of Chemical Engineering and Materials Science, University of Minnesota
421 Washington Ave SE, Minneapolis, MN 55455, USA
Tel: 612 625 4018
Email: leighton@umn.edu

Prof. Marc A. Hillmyer (Distinguished McKnight University Professor, Chemistry)
Dept. of Chemistry, University of Minnesota
207 Pleasant St. SE, Minneapolis, MN 55455, USA
Tel: 612-625-7834
Email: hillmyer@umn.edu

Prof. Shireen Adenwalla (Professor, Physics)
Dept. of Physics and Astronomy, University of Nebraska
310E T. Jorgensen Hall, Lincoln, NE 68588, USA
Tel: 402-472-2709
Email: sadenwalla1@unl.edu

Prof. Christopher D. Wentworth (Professor, Physics)
Dept. of Physics, Doane College
Tel: 402- 826-8257
Email: chris.wentworth@doane.edu

Mr. Nick McCreary
Former Director of Sustainability, Creighton University
Tel: 214-934-6873
Email: Nickmccreary93@gmail.com

Prof. Michael Cherney (Professor Emeritus, Physics)
Former Director of the Energy Technology Program, Creighton University
Tel: 402-445-8675
Email: mcherney@creighton.edu