



# Seattle Pacific UNIVERSITY

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## Education:

- **University of Washington**, Seattle, WA. Doctor of Philosophy degree in Physics, June 2001. Dissertation Title: *Heterogeneous Nucleation of Ice from Supercooled Water*.
- **Montana State University**, Bozeman, MT. Master of Science degree in Physics, May 1996.
- **University of Puget Sound**, Tacoma, WA. Bachelor of Arts degree in Physics, May 1994.

## Academic Positions:

- **Seattle Pacific University**, Associate Professor, Physics Dept., (*since September 2007*)
- **Seattle Pacific University**, Assistant Professor, Physics Dept., (*September 2001 – September 2007*)
- **University of Washington**, Graduate Research Assistant, Microstructural Kinetic Laboratory, (*August 1997 - June 2001*)
- **University of Washington**, Instructor, Minority Medical Student Education Program, (*July 2000 – August 2000*)
- **University of Puget Sound**, Instructor, Physics Dept., (*September 1996 - July 1997*)
- **University of Montana**, Lab and Course Instructor, Physics Dept., (*September 1994 - July 1996*)

## Peer-Reviewed Publications:

- **Assessing for shifts in learner's energy reasoning strategies**, L. Seeley, 2013 Physics Education Research Conference Proceedings, P. V. Englehardt, A. D. Churukian, and D. L. Jones (Eds.), AIP Conf. Proc. , pp. 337-340 (2014)
- **Constructing a sustainable foundation for thinking and learning about energy in the 21<sup>st</sup> century**. L. Seeley, S. Vokos, and J. Minstrell, Seattle Pacific University, Teaching and Learning of Energy in K-12 Education, R.F. Chen, A. Eisenkraft, D. Fortus, J. Krajcik, K. Neumann, J. Nordine, and A. Schef (Eds.), pp. 337-356, Springer International Publishing Switzerland 2014.
- **Seattle Pacific University: Nurturing Physics Teachers at a Small Liberal-Arts School**, E. W. Close, L.H. Seeley, A. D. Robertson, L. S. DeWater, and H.G. Close, Submitted for publication in *Effective Practices in Preservice Physics Teacher Education: Recruitment, Retention, and Preparation*. AIP (Anticipated 2015).
- **Content knowledge for teaching energy: An example from middle-school physical science**, R. E. Scherr, A. D. Robertson, L. Seeley, and S. Vokos, 2013 Physics Education Research Conference Proceedings, P. V. Englehardt, A. D. Churukian, and D. L. Jones (Eds.), AIP Conf. Proc. , pp. 321-324 (2014)
- **Negotiating energy dynamics through embodied action in a materially structured environment**. R. E. Scherr, H. G. Close, E. W. Close, V. J. Flood, S. B. McKagan, A. D. Robertson, L. Seeley, M. C. Wittmann, and S. Vokos, Physical Review - Special Topics: Physics Education Research 9 (2), 020101-020118 (2013).

- **Two-Dimensional Nucleation of Ice from Supercooled Water.** L.H. Seeley, G.T. Seidler, *Phys.Rev.Letters* **87**, 55702 (2001).
- **Pre-activation in the Nucleation of Ice by Langmuir Films of Aliphatic Alcohols.** L.H. Seeley, G.T. Seidler, *J. Chem. Phys.* **114**, 10464 (2001).
- **The Effect of Ionizing Radiation on Ice Nucleation.** L.H. Seeley, G.T. Seidler, J.G. Dash, *J. Geophys. Res.* **106**, 3033 (2001).
- **Granule-by-Granule Reconstruction of a Sandpile From X-ray Microtomography Data.** G.T. Seidler, G. Martinez, L.H. Seeley, K.H. Kim, E.A. Behne, S. Zaranek, B.D. Chapman, S.M. Heald and D.L. Brewes, *Physical Review E.* **62**, 8175 (2000).
- **Grain-by-Grain Reconstruction of a Granular Bed from X-ray Microtomography Data.** G. Martinez, L.H. Seeley, G.T. Seider, *Advance Photon Source Annual Report*, 1999.
- **An Automated Apparatus for the Study of Heterogeneous Nucleation.** L.H. Seeley, G.T. Seidler, J.G. Dash, *Review of Scientific Instruments* **70**, 3664 (1999).

Peer reviewed publications under revision or review:

- **Energy Tracking Diagrams**, R. E. Scherr, H. G. Close, A. R. Daane, L. S. DeWater, B. W. Harrer, A. D. Robertson, L. Seeley, and S. Vokos, under review for American Journal of Physics. PDF Version.

#### Invited Papers:

- **The role of physics departments in the recruitment, preparation and support of pre-college teachers of physics**, L. Seeley, S. Vokos and P. Kraus, NW APS Meeting, April 2008.
- **Creating and Sustaining a Teaching and Learning Professional Community at Seattle Pacific University.** L.H. Seeley and S. Vokos, *American Physical Society Forum on Education, Summer Newsletter (2006)*.
- **Electricity Magnetism and Light by Wayne Saslow, Book Review by L.H. Seeley**, American Journal of Physics **74**, 365 (2006).

#### Contributed Posters/Talks:

- **Assessing for shifts in learner's energy reasoning strategies**, L Seeley, Physics Education Research Conference, Portland, August 2013
- **The effect of active learning spaces and teaching philosophy on professors' instructional practices.** Kim Sawers, David Wicks, Lane Seeley, Nyaradzu Mvududzu and Raedene Copeland, 6<sup>th</sup> Annual Emerging Technologies Conference, Las Vegas, Nevada, April 2013.
- **Learners' understanding of energy: Conservation of amount, decrease of value**, A. R. Daane, L. Seeley, A. D. Robertson, S. Vokos, and R. E. Scherr, AAPT Meeting, January 2012.
- **Representing energy transfers and transformations**, R. E. Scherr, H. G. Close, L. Seeley, and S. McKagan, AAPT Meeting, January 2012.
- **Uncovering Learner Energy Narratives**, L Seeley and S Vokos, Foundations and Frontiers of Physics Education Research: Puget Sound Conference, March, 2011
- **Going rogue: In search of passionate and unencumbered talk about energy in the blogosphere**, L. H. Seeley, E. W. Close, L. S. DeWater, R. E. Scherr, AAPT Meeting, August 2010
- **Learning Assistants: Re-imagining TA's as future pre-college physics teacher**, L. Seeley, H. Close, AAPT Meeting, July 2008.

- **How a learning assistant program can transform a physics department into a dynamic learning community**, A. Vermeer, L. Seeley, E. Close and S. Vokos, AAPT Meeting, July 2007.
- **An ounce of prevention: Preparing teachers to effectively use diagnostic assessment.** L. Seeley, L. DeWater, E. Close, S. Vokos, PTEC Conference, March 2007.
- **Preparing peer instructors: The enduring legacy of a CCLI-A&I grant**, S. Vokos, L. Goodenough, J. Lindberg, and L. Seeley AAPT Meeting, July 2006.
- **Improving Student Learning of Thermodynamics: Too Much Work, Too Little Heat?** E. Close, L. Seeley, and S. Vokos, AAPT Meeting, August 2005.
- **Bridging the Gap Between the Introductory Sequence and the Intermediate Laboratory Course: A Case Study in Oscillations and Resonance**, L. Seeley, J. Lindberg, and S. Vokos, AAPT Meeting, August 2005.
- **Adapting existing research based curriculum for use in our local environment**, J. Lindberg, L. Seeley, S. Vokos and E. Close, AAPT Meeting, August 2004
- **Extending the Impact of Research-Based Curriculum Beyond the Introductory Physics Sequence**, L. Seeley, J. Lindberg, S. Vokos and E. Close, AAPT Meeting, August 2004.
- **Evidence for Two-Dimensional Ice Nucleation by Alcohol Monolayers.** March Meeting of the American Physical Society, Seattle, WA, 2001.
- **Freezing Water: A Deceptively Familiar Phenomenon.** Graduate Student Seminar, University of Washington, October 2000.
- **Statistical Studies of Heterogeneous Ice Nucleation.** Physics Seminar, Pacific Lutheran University, April 2000.
- **Ice Nucleation Studies at the University of Washington** Physics Seminar, University of Puget Sound, April 2000.
- **Laboratory Studies of Heterogeneous Ice Nucleation.** General Examination, University of Washington, March 2000.
- **Statistical Studies of Heterogeneous Nucleation in Undercooled Water.** Centennial Meeting of the American Physical Society, Atlanta, GA, March 1999.

#### Workshops:

- **Learning Assistants: Re-imagining TA's as future pre-college physics teacher.** PTEC Conference, Austin, TX, March 2008.

#### Awards:

- **Program Site Leader** - *Physics Teacher Education Coalition grant to make SPU a PhysTEC Primary Program Institution*, E. Close, L. DeWater, J. Lindberg, and S. Vokos; \$120K (2006-2009)
- **Co-principle investigator** - NSF grant DRL-141821, "*Collaborative Research: Focus on Energy: Preparing Elementary Teachers to Meet the NGSS Challenge*", S. Vokos, PI; K. Gray, L. Seeley, A. Robertson and R. Scherr, Co-PI's; \$1.0M (9/12-8/16); part of \$3.0M collaborative research project with .
- **Co-principle investigator** - NSF grant DRL-1222732, *Collaborative Research: Assessing, Validating and Developing Content Knowledge for Teaching Energy*, S. Vokos, PI; L. Seeley, A. Robertson, Co-PI's; \$820K (9/12-8/16); part of \$3.0M collaborative research project with Rutgers U.; U. of Maine, Orono; Facet Innovations, LLC; ETS; and Horizon Research Inc.
- **Co-principle investigator** - NSF grant DRL-0822342, *Honing Diagnostic Practice: Toward a New Model of Teacher Professional Preparation and Development*, S. Vokos, PI; E. Close, L. Seeley, P. Kraus, J. Minstrell, Co-PI's; \$3.6M (9/08-8/13)

- **Co-principle investigator** - NSF grant ESI-0455796, *Improving the Effectiveness of Teacher Diagnostic Skills and Tools*, S. Vokos, PI; J. Lindberg, L. Seeley, P. Kraus, J. Minstrell, Co-PI's; \$1.5M (4/05-3/10)
- **Co-principle investigator** - NSF grant DUE-0310583, *Adaptation and implementation of research-based curricula in introductory physics courses at Seattle Pacific University*, S. Vokos, PI; B. Gill, J. Lindberg, L. Seeley, Co-PI's; \$88K (9/03-8/06)
- **Principle Investigator** – *Nucleation and surface melting of ice: Investigation of a link between equilibrium and non-equilibrium phenomena*. Faculty Research Grant, Seattle Pacific University. June 2003.
- **Co-principle investigator** – *Ice Nucleation and Supercooled Water*. Sponsored by the Bosack and Kruger Charitable Foundation, June 2003.

#### Courses Taught at Seattle Pacific

- University Seminar – Encountering Energy; Personally, Locally and Globally
- University Scholars Physics (PHY 1111)
- Physics for Scientists and Engineers (PHY 1121, 1122, & 1123)
- Intermediate Physics (PHY 2321)
- Advanced Physics Lab (PHY 3311, 3312, & 3313)
- Thermodynamics (PHY 3401)
- Physics: Process of Inquiry (PHY 4501, 4502)
- Global Climate Change: Scientific, Social and Moral Implications (PHY 3011)

#### Professional Development for K-12 Educators:

- **Energy 1**, Energy Project 2-week summer workshop for secondary science teachers, (August 2011, 2012 & 2013)
- **Properties and Characteristics of Substances**, TPC Grant Funded Course for local 7<sup>th</sup> & 8<sup>th</sup> grade teachers, co-instructor w/ Lezlie DeWater (August 2006)
- **Properties of Matter**, TPC Grant Funded Course for local 7<sup>th</sup> & 8<sup>th</sup> grade teachers in Everett, WA, co-instructor w/ Lezlie DeWater & Linda Anderson (August 2006)
- **Floating and Sinking**, Workshop for ESD 105 5<sup>th</sup> grade teachers in Yakima, WA, co-instructor w/ Stamatis Vokos (Winter 2006)

#### Membership in Professional Organizations:

- **American Physical Society (APS)**
- **American Association of Physics Teachers (AAPT)**

#### University Service:

- **Men's Track and Field Cadre, Faculty, Advisor** (2005-2007)
- **SPU Men's X-country & Track and Field Programs**, Faculty Mentor (2002-2009)
- **Erickson Conference Planning Committee** (2003-2006)
- **Intercollegiate Athletic Committee** (2002-2008)
- **SPU Cycling Team, Faculty Advisor** (2007-2009)
- **SPU Active Learning Spaces Interdisciplinary Faculty Research Team** (2012-present)
- **Faculty Affairs Committee** (2014-Present)