Blake T. Sturtevant
Curriculum Vitae

Contact

Los Alamos National Laboratory
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Education

University of Maine

Ph.D. (Physics) **2009**

Thesis Title: Ultrasonic Characterization of Single Crystal Langatate

Advisors: Robert J. Lad (Physics) & Mauricio Pereira da Cunha (Electrical Engineering)

Bowdoin College

A.B. (Physics, minor in Economics) **2003**

Additional Education

Certificate in Sensor Science, Engineering & Informatics, University of Maine **2009**

Los Alamos Neutron Science Center (LANSCE) Summer School, Los Alamos National Laboratory **2011**

Academic Employment

Los Alamos National Laboratory **2013-Present**
Research Scientist 2

Los Alamos National Laboratory **2010-2012**
Postdoctoral Research Associate

University of Maine **2005-2009**
NSF IGERT Trainee (Sensor Science, Engineering, & Informatics)

University of Maine **2004-2005**
Teaching Assistant

Princeton University **2003-2004**
Laboratory Technician

Teaching & Mentoring Experience

Los Alamos National Laboratory

Co-Mentor for advanced undergraduate summer research project **2013**

- Helped student master basic laboratory skills, including the use of oscilloscopes, function generators, vector network analyzers and LabVIEW for data acquisition and process control
- Worked with student to prepare scientific poster for LANL Student Symposium

University of Maine

Guest Lecturer, Intro to Physics for Scientists and Engineers I & II **2007—2009**

- Prepared and delivered 6 full length (80 minute)introductory physics lectures

NSF IGERT Program Mentor **2006—2007**

- In second year of program, served as a mentor for students in their first year of the program
- Designed, led, and graded a lab section for first year IGERT students (" design and build a functional sensor")

Teaching Assistant, PHY 122, Intro to Physics for Scientists and Engineers II **2005**

Teaching Assistant, PHY 121, Intro to Physics for Scientists and Engineers I **2004**

- Led twice-weekly recitation sections
- Led weekly laboratory sections
- Graded weekly homework & exams

Bowdoin College

Teaching Assistant, PHY 081, Physics of the Environment **2002**

- Led weekly study groups and homework preparation sections

Tutor, Physics Department **2002**

- Met one-on-one with introductory physics students, as needed

Honors & Awards

- Postdoc Research Day, Outstanding Poster Award, Honorable Mention **2012**
- Los Alamos Awards Program (LAAP), Recipient **2011**
- Chase Distinguished Research Assistantship **2008-2009**
- IEEE International Frequency Control Symposium, Best Student Paper Competition, Finalist. **2009**
- NSF IGERT Traineeship **2005-2009**
- SURDNA Fellowship **2002-2003**

Service & Affiliations

- NSF Review Panelist (2014)
- Reviewer for IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control
- Los Alamos Postdoc Association (LAPA), President (5/2011- 11/2011)
- American Physical Society, Member
- IEEE, Society of Ultrasonics, Ferroelectrics, and Frequency Control, Member
- Bowdoin College Admissions, Alumni Interviewer

Journal Publications

1. **B.T. Sturtevant**, Cristian Pantea, Dipen N. Sinha, "Acoustic Nonlinearity Measurements in FC-43 Fluorocarbon up to 110°C and 2000 PSI," [To be submitted]
2. **B.T. Sturtevant**, Dipen N. Sinha, Cristian Pantea, "Sound speed and acoustic nonlinearity parameter in liquid water up to 250°C and 2000 PSI," [To be submitted]
3. **B.T. Sturtevant**, M. Pereira da Cunha, R.J. Lad, "Properties of SiAlO2N Protective Coatings on Surface Acoustic Wave Devices," *Thin Solid Films* (2013); doi: 10.1016/j.tsf.2013.02.062

4. **B.T. Sturtevant**, Cristian Pantea, Dipen N. Sinha, "Evaluating the Effectiveness of the Transmission Line Model in Pulse Echo Couplant Layer Corrections," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr*, Vol 60, No. 5, May 2013, pp. 943—953.
5. **B.T. Sturtevant**, Cristian Pantea, Dipen N. Sinha, "An Acoustic Resonance Measurement Cell for Liquid Property Determinations up to 250°C," *Rev. Sci. Instrum*. **83**, 115106 (2012); doi: 10.1063/1.4765746
6. **B.T. Sturtevant**, M. Pereira da Cunha, "Assessment of Langatate Material Constants and Temperature Coefficients Using SAW Delay Line Measurements," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr*., Vol 57, No.3, March 2010, pp. 533—539.
7. **B.T. Sturtevant**, P.M. Davulis, M. Pereira da Cunha, "Pulse Echo and Combined Resonance Techniques: a Full Set of LGT Acoustic Wave Constants and Temperature Coefficients," *IEEE Trans. Ultrason., Ferroelect., Freq. Contr*., Vol 56, No.4, April 2009, pp. 788—797.
8. Bender, M. L., D. T. Ho, M. B. Hendricks, R. Mika, M. O. Battle, P. P. Tans, T. J. Conway, **B. Sturtevant**, and N. Cassar (2005), Atmospheric O_2/N_2 changes, 1993–2002: Implications for the partitioning of fossil fuel CO_2 sequestration, *Global Biogeochem. Cycles*, *19*, GB4017, doi:10.1029/2004GB002410.

Conference Proceedings (peer-reviewed abstracts)

1. **B.T. Sturtevant**, Dipen N. Sinha, Cristian Pantea, "Determination of the parameter of nonlinearity in liquid water up to 250°C and 14 MPa," *Proc. of 2012 IEEE Int'l Ultrason. Symp.*, doi: 10.1109/ULTSYM.2012.0070.
2. **B.T. Sturtevant**, M. Pereira da Cunha, "Assessment of Langatate Material Constants and Temperature Coefficients Using SAW Delay Line Measurements," *Proc. 2009 IEEE Int'l Freq. Cont. Symp*., pp. 160—165.
3. **B.T. Sturtevant**, M. Pereira da Cunha, R.J. Lad, "Determination of the Absolute Orientation of Langatate Crystals Using X-ray Diffraction," *Proc. 2008 IEEE Int'l Ultrason. Symp*., pp. 741—744.
4. D.J. Frankel, G.P. Bernhardt, **B. Sturtevant**, T. Moonlight, M. Pereira da Cunha, R.J. Lad, "Stable Electrodes and Ultrathin Passivation Coatings for High Temperature Sensors in Harsh Environments," *Proc. IEEE Sensors 2008*, pp. 82—5.
5. P. M. Davulis, **B.T. Sturtevant**, S. L. Duy, M. Pereira da Cunha, "Revisiting LGT dielectric constants and temperature coefficients up to 120 ºC," *Proc. 2007 Int'l Ultrason. Symp*., pp 1397-1400.
6. **B.T. Sturtevant**, P.M. Davulis, M. Pereira da Cunha, "A New Set of LGT Constants and Temperature Coefficients Extracted through Resonant and Pulse Echo Techniques," *Proc. 2007 IEEE Int'l Freq. Cont. Symp*., pp 754-758.
7. **B.T. Sturtevant**, M. Pereira da Cunha, "BAW phase velocity measurements by conventional pulse echo techniques with correction for couplant effect," *Proc. 2006 IEEE Int'l Ultrason. Symp.*, pp 2261-2264.

Patents

1. "High temperature acoustic resonance measurement cell," Blake T. Sturtevant, Cristian Pantea, Dipen N. Sinha, US Patent application submitted.

Technical Presentations

1. "Sound Speed and Attenuation in highly viscous lubrication media," to be presented at the 166th Meeting of the Acoustical Society of America, December 2-6, 2013, San Francisco, CA (Oral Presentation by B. Sturtevant)
2. "High Pressure and Temperature Acoustics Capabilities," Los Alamos Neutron Science Center, Static High Pressure Science at LANL Workshop, April 24, 2013 (Invited Talk by B. Sturtevant).
3. "High Precision Ultrasonic Measurement and Characterization Capabilities for Harsh Environments," Los Alamos National Laboratory, Materials Physics and Applications Division Seminar, December 18, 2012 (Talk by B. Sturtevant)
4. "The nonlinearity parameter, B/A, in FC-43 Fluorinert up to 373 K and 13.8 MPa," 164th Meeting of the American Acoustical Society, Kansas City, MO, October 22-26, 2012 (Oral Presentation by B. Sturtevant).
5. "Determination of the acoustic nonlinearity parameter in liquid water up to 250°C and 12 MPa," 2012 IEEE International Ultrasonics Symposium, Dresden, Germany, October 7-10, 2012 (Oral Presentation by B. Sturtevant).
6. "Sound Speed Measurements in Water up to 563 K and 11.7 MPa using a Novel and Rugged Sensor," 2012 LANL Postdoc Research Day, June 6, 2012 (Poster Presentation by B. Sturtevant).
7. "Coupling Layer Corrections in Pulse Echo Time-of-Flight Measurements in Solids Revisited," 2011 LANL Postdoc Research Day, June 16, 2011 (Poster Presentation by B. Sturtevant).
8. "Coupling Layer Corrections in Pulse-Echo Time-of-Flight Measurements in Solids Revisited," 161st Meeting of the Acoustical Society of America, Seattle, WA, May 25, 2011 (Oral Presentation by B. Sturtevant).
9. "Ultrasonic Characterization of Single Crystal Langatate," University of Maine, November 19, 2009 (Oral Thesis Defense).
10. "Characterization of Single Crystal Langatate for Acoustic Wave Device Applications," Los Alamos National Laboratory, October 19, 2009 (Invited talk).
11. "Assessment of Langatate Material Constants and Temperature Coefficients Using SAW Delay Line Measurements," IEEE Int'l Freq. Cont. Symp., Besançon, France, April 20-24, 2009 (Oral and Poster Presentations by B. Sturtevant).
12. "Determination of the Absolute Orientation of Langatate Crystals Using X-ray Diffraction," IEEE Int'l Ultrason. Symp., Beijing, China, Nov. 2-5, 2008 (Oral Presentation by B. Sturtevant).
13. "A New Set of LGT Constants and Temperature Coefficients Extracted Through Resonant and Pulse Echo Techniques," IEEE Int'l Freq. Cont. Symp., Geneva, Switzerland, May 28-30, 2007 (Poster Presentation by B. Sturtevant).
14. "BAW phase velocity measurements by conventional pulse echo techniques with correction for couplant effect," IEEE Int'l Ultrason. Symp., Vancouver, BC, Oct. 4-6, 2006 (Poster Presentation by B. Sturtevant).
15. "Localization by Signal Strength (LoSSt)," NSF IGERT PI Meeting, Arlington, VA, May 15-16, 2006 (Poster Presentation by B. Sturtevant).