CURRICULUM VITAE

William Karstens

Fall 2017

Personal

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Education

University of Vermont	Ph.D., Materials Science	1990
Brandeis University	M.A., Physics	1983
University of Vermont	B.S., Physics	1981

Academic Honors:
B.S., *cum laude*
Physics Departmental Award
Honors Thesis
Phi Beta Kappa

Most Recent Employment:

2014 – present	Professor Physics Department, St. Michael's College
2006 – 2014	Associate Professor Physics Department, St. Michael's College
2000 – 2005	Assistant Professor Physics Department, St. Michael's College

Professional and Honor Societies

American Physical Society
American Association of Physics Teachers
Phi Beta Kappa
Sigma Pi Sigma

Sigma Xi, The Scientific Research Society
Society of Physics Students

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Committees

Library
Curriculum & Educational Policy
Educational Technology
Technology Steering
Lounge
Curriculum Review
Assessment
Faculty Welfare

Recent Appointed/Elected Positions

Councilor, Zone 1: National Society of Physics Students (2017 –)
Secretary: Gamma Chapter (SMC) of Phi Beta Kappa (2015 – present)
Secretary: Vermont Chapter of Sigma Xi (2008 – present)
Department Chair: SMC Department of Chemistry and Physics (2006 – 2012)
President: Gamma Chapter (SMC) of Phi Beta Kappa (2008 – 2010)
President: Vermont Chapter of Sigma Xi (2005 – 2008)

Board of Directors: Challenger Learning Center of Vermont (2010 - 2015)
Board of Directors: Collegium (2006 – 2010); Board Chair (2011 – 2012)
Chair: Northeast Region Nominating Committee of Sigma Xi (2005 – 2006)

Courses Taught

Astronomy, Meteorology, Acoustical Foundations of Music, General Physics 1&2, College Physics 1&2, Modern Physics, Classical Mechanics, Electricity & Magnetism, Optics, Advanced Lab, Thermal Physics, Quantum Mechanics, Solid State Physics, Particle Physics, Mathematical Physics, Junior & Senior Seminar.

Grants Received

2001 – Vermont EPSCoR ($5,900; part funded a student)
2002 – Vermont Genetics Network ($10,000)
2005 – Vermont EPSCoR ($9,680; part funded a student)

Other Activites

2013-2017 – FIRST Competition judge; University of Vermont

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Conference Proceedings

W. Karstens and L.M. Scarfone, *Effect of Order-Disorder Transitions on the Density-of States and DC Conductivity for a Ternary Alloy in the Coherent Potential Approximation*, Bull. Am. Phys. Soc. **35**, 100 (1990).

W. Karstens, D.Y. Smith and J.H. Barkyoumb, *The Forward X-Ray Scattering Factor of Silicon Determined Using a Self-Consistent Kramers-Kronig Procedure*, Bull. Am. Phys. **36**, 467 (1991).

L.M. Scarfone and W. Karstens, *Electronic Properties of an Order-Disorder Ternary Alloy in a Generalized Coherent Potential Approximation*, Bull. Am. Phys. Soc. **36**, 577 (1991).

W. Karstens, D.Y. Smith and J.H. Barkyoumb, *A Self-Cosistent Optical and X-Ray Optical Constant Data Base for Silicon*, Bull. Am. Phys. Soc. **37**, 545 (1992).

W. Karstens and D.Y. Smith, *Analysis of the Absorption Coefficient for Silicon in the UV/soft x-ray Transition Region*, Bull. Am. Phys. Soc. **41**, 420 (1996).

D.Y. Smith and W. Karstens, *The Spatial Extent of X-Ray Core States*, Bull. Am. Phys. Soc. **44**, 308 (1999).

W. Karstens, D.Y. Smith and Mitio Inokuti, *Optical Properties of Silicon Revisited*, Bull. Am. Phys. Soc. **45**, 742 (2000).

D.Y. Smith and W. Karstens, *Infrared Optical Properties of Diamond*, Bull. Am. Phys. Soc. **46**, 690 (2001).

W. Karstens, D. Bobela and D.Y. Smith, *Effect of Impurities on the Far-Infrared Dispersion Spectra in Silicon*, Bull. Am. Phys. Soc. **47**, 992 (2002)

D.Y. Smith and W. Karstens, *Dispersion Theory of Optical Glass*, Bull. Am. Phys. Soc. **47**, 293 (2002)

E.J. Shiles, Mitio Inokuti, W. Karstens and D.Y. Smith, *Surface Effects and UV Optical Properties of Silicon*, Bull. Am. Phys. Soc. **48** (2003)

W. Karstens and D. Y. Smith, *Optical Properties of Graphite*, Bull. Am. Phys. Soc. **49**, 67 (2004).

M. Inokuti, W. Karstens, and E. Shiles, and D.Y. Smith, *Mean Excitation Energy for the Stopping Power of Silicon From Oscillator-strength Spectra*, Bull. Am. Soc. **50**, (2005).

C.E. Black, W. Karstens, and D.Y. Smith, *Refractive-index Dispersion Formulas, Old and New*, Bull. Am. Soc. **50**, (2005).

D.Y. Smith, W. Karstens, and S. Malghani, *Optical Constants Determined by Genetic Algorithms*, Bull. Am. Soc. **50**, (2005).

W. Karstens and D.Y. Smith, *Analysis of Reflectivity Measurements*, Bull. Am. Soc. **51**, (2006).

D.Y. Smith and W. Karstens, *Moments Formulation of Optical-Pulse Propagation in Insulators*, Bull. Am. Soc. **52**, (2007).

W. Karstens and D.Y. Smith, *Newton, Abbe, and the Relation between Refractive Index and Dispersion*, Bull. Am. Soc. **53**, (2008).

D.Y. Smith and W. Karstens, *Energy Loss by Photons and Charged Particles Passing Through Matter*, Bull. Am. Soc. **55**, (2010).

W. Karstens, M. Inokuti, and D.Y. Smith, *Infrared Refractive Index of Intrinsic Silicon: Parity & Sum Rule Tests*, Bull. Am. Soc. **57**, (2012).

W. Karstens and D.Y. Smith, *Statistics of Data Fitting: Flaws & Fixes of Polynomial Analysis of Channeled Spectra*, Bull. Am. Soc. **58**, (2013).

D. Y. Smith and W. Karstens, *Electrical Analogues of Optical & Electron Energy-Loss Spectra*, Bull. Am. Soc. **59**, (2014).

W. Karstens and D.Y. Smith, *Sum Rules, Classical and Quantum – A Pedagogical Approach*, Bull. Am. Soc. **59**, (2014).

W. Karstens and D.Y. Smith, *Inertial and Interference Effects in Optical Spectroscopy*, EURODIM, (2014).

W. Karstens and D.Y. Smith, *Lyddane-Sachs-Teller Analysis of Electronic Transitions*, Bull. Am. Soc. **60**, (2015).

W. Karstens, E. Shiles, and D.Y. Smith, *Reconciling Particle-Beam and Optical Stopping-Power Measurements in Silicon*, Bull. Am. Soc. **61**, (2016).

W. Karstens and D.Y. Smith, *Critical Dispersion-Theory Tests of Silicon's IR Refractive Index*, Bull. Am. Soc. **62**, (2017).

Publications

W. Karstens and L.M. Scarfone, *Density of States and DC Conductivity in an Order-Disorder Ternary Alloy in a Generalized Coherent Potential Approximation*, Phys. Rev. B **44**, 4135 (1991).

W.E. Bell, W. Karstens, Y. Sun and J.L. Van Houten, *Biotin Chemoresponse in Paramecium*, J. Comp. Phys. A **183**, 361 (1998).

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W. Karstens, "Weather Forecasting" in *Making Meaning: Integrating Science Through the Case Study Approach to Teaching and Learning*, S.W. Kuntz, G.A. Bauer and A.C. Hessler, Eds., McGraw Hill (1999).

D.Y. Smith and W. Karstens, *X-Ray Core States, Atomic Size and Mosely's Law*, Nucl. Instr. and Meth. in Phys. Res. B **166-167**, 51 (2000).

D.Y. Smith, Mitio Inokuti, and W. Karstens, *Photoresponse of Condensed Matter Over the Entire Range of Excitation Energies: Analysis of Silicon*, Physics Essays **13**, 465 (2000)

D.Y. Smith, Mitio Inokuti and W. Karstens, *A Generalized Cauchy Dispersion Formula and the Refractivity of Elemental Semiconductors*, J. Phys.: Condens. Matter **13**, 3883 (2001)

William Karstens and D.Y. Smith, *Defect Signatures in Dispersion Spectra*, Nucl. Instr. and Meth. in Phys. Res. B **191**, 44 (2002)

D.Y. Smith, Mitio Inokuti, and W. Karstens, *Cauchy's Dispersion Equation Reconsidered: Dispersion in Silicate Glasses*, Rad. Effects & Defects in Solids **157**, 823 (2002).

William Karstens, David C. Bobela, and D.Y. Smith, *Impurity and Free-carrier Effects on the Far-infrared dispersion Spectrum of Silicon*, J. Opt. Soc. Am. A **33,** 723 (2006).

D.Y. Smith, M. Inokuti, W. Karstens, and E. Shiles, *Mean Excitation Energy for the Stopping Power of Light Elements*, Nucl. Instr. and Meth. in Phys. Res. B **250**, 1 (2006).

W. Karstens and Art Hessler, *Trends in Environment and Climate*, Ch.2, in Vermont in Transition: A Summary of Social, Economic, and Environmental Trends, V. Bolduc and H. Kessel, eds., for the Council on the Future of Vermont (2008).

D.Y. Smith and W. Karstens, *Refractive Index of Glass and its Dispersion for Visible Light*, Journal of Physics: Conference Series **249**, 012034 (2010)

W. Karstens and D.Y. Smith, *Collective Excitations and the Stopping Power of Materials*, Nucl. Instr. and Meth. in Phys. Res. B **272**, 37 (2012)

D.Y. Smith, W. Karstens, E. Shiles, and Mitio Inokuti, *Defect and Analysis Effects in the Infrared Optical Properties of Silicon*, Phys. Stat. Sol. B **250**, 271 (2013)

W. Karstens and D.Y. Smith, *Inertial and Interference Effects in Optical Spectroscopy*, IOP Conf. Series: Materials Science and Engineering 80, 012012 (2015)