

Curriculum vita for Steven Neshyba

- Currently** Distinguished Professor
Chemistry Dept., University of Puget Sound, Tacoma, WA 98416.
Phone: 253-879-3379
- Degrees**
- Ph.D., Chemistry (Physical), Yale University (1990)
 - B.A., Chemistry, Reed College (1981)
- Appointments**
- Assistant/Associate/Full Professor*, UPS (1994 to present).
- Theory of cloud radiative processes and ice crystal growth
 - Low-temperature scanning electron microscopy of ice crystals
 - Field studies of black carbon in snow
 - Computational Guided Inquiry
- Visiting Research Professor*, Institute of Organic Chemistry and Biochemistry, Academy of Sciences of the Czech Republic (2008).
- Molecular dynamics of ice surfaces
- Postdoctoral Fellow*, UMass. Lowell Center for Atmospheric Research (1991 to 1994). Advisor: R.R. Gamache.
- Semiclassical theory of pressure broadening
 - Spherical tensor formulation of site-site intermolecular potentials
- NATO/NSF Postdoctoral Fellow*, Oxford University, U.K. (1990-91). Advisor: Mark Child.
- Classical dynamics of H+H₂ collisions using Poincare maps
 - Spectral features of H₃⁺ associated with periodic orbits
- Graduate Student*, Yale University (1985-90). Advisor: N. De Leon.
- Nonlinear semiclassical dynamics of three coupled oscillators
 - NMR-detected exchange coupling in Ruthenium hydrides
- Teaching**
- Professor (UPS). Courses include:
 - Modeling Earth's Climate (CONN 350)
 - Chemistry in a Changing Climate (CHEM 105)
 - Environmental Science/Studies (ENVR 253, 202, 203)
 - SEM+VR Experiential Learning project (with Lincoln HS)
 - Global Environmental Politics (PG 382)
 - Science and Economics of Climate Change (CONN 410)
 - Chemistry and Physics of Atmospheres (CHEM 345)
 - Physical Chemistry I: Thermodynamics (CHEM 340)
 - Physical Chemistry II: Quantum Mechanics (CHEM 341)
 - Fundamental Chemistry (CHEM 110, 111, 115, 120)
 - Analytical and Quantitative Chemistry (CHEM 230)
 - Freshman Seminar: The Great Flood (CHEM 150)
 - Freshman Seminar: Science and Sustainability (CHEM 151)

- Instructor (UMass, 1993). Course:
- Air Pollution Phenomenology

- Teaching teachers** *Designed and presented workshops in student-centered pedagogy*
- “Educational modules for teaching topics in Computer Science, Earth or Environmental Science, Economics, Physics, or Physical Chemistry using polar research and data”, with Penny Rowe and Lea Fortmann (Webinar, April 2020). See serc.carleton.edu/penguin/webinar_spring2020/index.html.
 - “Designing a flipped classroom for Engineers”, Universidad Catolica de Valparaiso, Valparaiso, Chile, with Javiera Espinoza, Dominique Muller, and Izaskun Alvarez (two workshops, April 2016).
 - “Baby steps toward a college-level curriculum in Problem Based Learning”, with Lisa Neshyba, Universidad Catolica de Valparaiso, Valparaiso, Chile (April 2016).
 - “Designing a flipped classroom for college freshmen,” Universidad Catolica de Valparaiso, with Dominique Muller and Izaskun Alvarez, Valparaiso, Chile (May 2016).
 - “Designing a flipped classroom for freshmen”, Universidad Mayor, Santiago, Chile (June 2016).
 - “Flipped for the sciences course design”, with Maha Zewail-Foote (two online workshops in 2013-2014).

- University Service**
- Search Committee, Faculty Provost (2023)
 - Wayfinding core revision Senate subgroup (2022-2023)
 - Issues That Matter Senate subgroup (2022)
 - Faculty Advancement Committee (2017-2020)
 - Faculty Parliamentarian (2018-present)
 - Faculty Representative to ASUPS (2016-2017)
 - Search Committee, University President (2016)
 - Sustainability Advisory Committee (2015)
 - Faculty Secretary (2014)
 - Budget Task Force (2012, 2013)
 - Faculty Senate (Chair) (2010-2012)
 - Enterprise Risk Management Committee (2010)
 - Benefits Task Force (2009-2011)
 - African American Studies Committee (2009-2011)
 - Faculty Senate (Vice Chair) (2009-2010)
 - Sustainability Advisory Committee (Chair) (2006-2007)
 - Fundraising Subcommittee of the Race and Pedagogy Steering Committee (2005)
 - Chemistry Department (Chair) (2002-2004)
 - Curriculum Committee (Chair) (2001)

- Board Service**
- Puget Sound Revels (inc. VP, Secretary, & President) (2015-2023)
 - University of Puget Sound University Club Trustee (2017-present)
 - University of Puget Sound Board of Trustees (Ex. Off.) (2010-2012)
 - South Sound Center, GLBTQ support center (2002-2003)

Community Engagement

- Organizer/mentor, SEM+VR Experiential Learning Project (2018/19)
- Organizer/speaker, Tacoma March for Science (April 2017)
- Reviewer, UPS summer research proposals (1994-present).
- Judge, Bryant Middle School Science Fair (multiple times)
- Extracurricular instructor, Sherman Elementary School, Tacoma
- Curriculum developer, UPS Summer Academic Challenge
- NSF Proposal Panelist (multiple times, recently Spring 2023)

Honors

- Reed College
 - Undergraduate thesis completed with Honors
 - Commendation for Excellence in Academic Achievement
- Yale University - Flint Scholar (1987), Bushnell Scholar (1988)
- Fulbright Scholar (2015)
- University of Puget Sound 43rd Register Lecturer (2015)
- University of Puget Sound Distinguished Professor (2015-2023)
- University of Puget Sound Albertson Professor (2018-2023)

Grants and Fellowships

- NATO/NSF Postdoctoral Fellow, \$24,000 (1990)
- ACS-PRF Principal Investigator, \$20,000 (1995)
- Murdock Charitable Trust Equipment grant, \$20,000 (1996)
- Burlington Northern Curriculum Development, \$2160 (1996)
- UPS Martin Nelson Jr. Sabbatical Fellowship (Fall 1997)
- NSF - SGER, Office of Polar Programs \$14,400 (1997)
- NSF - SGER supplement, \$4500 (1997)
- UPS University Enrichment #R97-309, \$37 (1997)
- International Arctic Research Center, \$5000 (1998)
- UPS University Enrichment #R97-322 \$1503 (1998)
- Murdock Faculty Research Award, \$3200 (1998)
- Burlington Northern Curriculum Development, \$1350 (1999)
- Murdock Faculty Research Award, \$1500 (1999)
- International Arctic Research Center, \$49,500 (2001)
- NSF subcontract, \$44,000 over two years (2002)
- UPS University Enrichment #R02405 \$1000 (2003)
- UPS University Enrichment #CP0627 \$1209 (2006)
- NSF travel grant to Antarctic New Investigator Workshop (2006)
- UPS Lantz Senior Sabbatical Fellow (2008)
- UPS Lantz Senior Sabbatical Enhancement #LE0753 \$2390 (2008)
- UPS University Enrichment #CP0950 \$1211 (2008)
- UPS University Enrichment #CP1002 \$1111 (2009)
- UPS University Enrichment #CP1115 \$1155 (2010)
- UPS University Enrichment #CP1204 \$1464 (2011)
- UPS University Enrichment #CP1350 \$1350 (2012)
- NSF-RUI (research) \$197k (2013-2016)
- UPS Lantz Senior Sabbatical Fellow (2014)
- UPS Lantz Senior Sabbatical Enhancement #LE1402 \$2500 (2014)
- NSF-RUI (supplement for Chile field campaign) \$34k (2015)
- Fulbright Researcher/Scholar (2016)

- NSF-RUI (research collaboration w/NWRA) \$300k (2017-2020)
- NSF-RUI (research) \$270k, 2018-2022
- NSF-RUI (supplement for REU mentoring) \$68k, 2020-2021
- NSF-RUI (research collaboration w/NWRA) \$300k (2021-2023)
- NSF-RUI (Polar STEAM Fellow) (2023)

Research Mentoring

Tia Böttger (2023)

- Research at UPS: SEM investigation of ice surface roughness, and 3d parallax rendering of cirrus clouds. Poster presentation at Summer Quest, University of Puget Sound, September 2023.

Rohan Crossland (2023)

- Research at UPS: SEM investigation of ice surface roughness. Poster presentation at Summer Quest, University of Puget Sound, September 2023.

Spencer Racca-Gwozdzik (2023)

- Research at UPS: Theoretical investigation into relationships between steady-state growth of faceted ice crystals according to a quasiliquid model, and Turing pattern formation. Poster presentation at Summer Quest, University of Puget Sound, September 2023.

Ella Slattery (2023)

- Research at UPS: Recasting the spatial part of a quasiliquid model for ice growth and ablation to its Fourier counterpart. Poster presentation at Summer Quest, University of Puget Sound, September 2023.

Beatrice Bridge (2023)

- Research at UPS: Molecular dynamics investigation of a dinucleotide single-strand RNA on ice.

Max Bloom (2021-2023)

- Research at UPS: Molecular dynamics investigation of a dinucleotide single-strand RNA on ice, and investigations into a continuum model for quasi-liquid-mediated ice surface morphology. University of Puget Sound Senior Thesis (2023).

Cas Almond (2021-2023)

- Research at UPS: Molecular dynamics investigation of a dinucleotide double-strand RNA on ice. University of Puget Sound Senior Thesis (2023).

Jesus Deloya Garcia (2021)

- Research at UPS: Integrating polar research into undergraduate curricula using computational guided inquiry.

Bella Dunn Dias Ferreira (2021-2022)

- Research at UPS: Field sampling and laboratory analysis of black carbon in snow on Mt. Rainier and Snoqualmie, Washington.

Miranda Roland (2021-2022)

- Research at UPS: Feasibility of SFG/SHG detection of RNA on ice. University of Puget Sound Senior Thesis (2022).

Nick Wolff-Gee (2021-2022)

- Research at UPS: Molecular dynamics investigation of a dinucleotide single-strand RNA on ice. University of Puget Sound Senior Thesis (2022).

Charlie Henning (2020-2022)

- Research at UPS: Field sampling and laboratory analysis of black carbon in snow on Mt. Rainier. University of Puget Sound Senior Thesis (2022).

Vaughn Christensen (2020-2021)

- Research at UPS: Differences in how undergraduates learn as a function of sequence of presentation: VSEPR vs Electrostatic Potential Mappings.

Jodie McLennan (2020)

- Remote-mentored research (NSF-REU): Modeling the heating rate of black carbon from snow using LAHM (Light-Absorbing Heating Method).

Cameron Markovsky (2020)

- Remote-mentored research (NSF-REU): Exploring GIS technology for tracking deposition of black carbon from snow.

Augustin Kalytiak-Davis (2020)

- Remote-mentored research (NSF-REU): Using Excel to Teach Polar Data to High School Students.

Isabella Hedly (2020)

- Remote-mentored research (NSF-REU): Using Excel to Teach Polar Data to High School Students.

Kayden Lynch (2020)

- Research at UPS: SEM investigation of the influence of salt on ice surface roughness.

Vanessa Schultz (2020)

- Remote-mentored research (UPS): Field sampling and laboratory analysis of black carbon in snow in the Grand Junction, Colorado area.

Douglas Craig (2020-2021)

- Research at UPS: Field sampling and laboratory analysis of black carbon in snow on Mt. Rainier.

Natalie Reszka (2018-2019)

- SEM+VR Experiential Learning Project: Teaching virtual reality and scanning electron microscopy to high school students at Lincoln HS.

Ivana Hayes (2018)

- SEM+VR Experiential Learning Project: Virtual reality representation of SEM-grown cirrus ice analogs.

Hernan Bautista-Herrera (2018)

- SEM+VR Experiential Learning Project: Virtual reality representation of SEM-grown cirrus ice analogs.

Precious Omwari (2018)

- SEM+VR Experiential Learning Project: Virtual reality representation of SEM-grown cirrus ice analogs.

Emma Sevier (2018)

- Research at UPS: Creating a Computational Guided Inquiry module for ice core analysis.

Katie Gray (2018)

- Experiential learning at UPS: Mentoring Lincoln High School students in the use of a scanning electron microscope
- Research at UPS: Assessment strategies for Computational Guided Inquiry.

Hannah Eshelman (2018)

- Research at UPS: Molecular dynamics of basal facets of ice.
- Post baccalaureate: Staff Scientist at LLNL.

Maggie Berrens (2018-2020)

- Research at UPS: Constructing a stochastic continuum model of ice dynamics, resulting in presentations at the American Geophysical Union (2019) and European Geophysical Union (2020), and a University of Puget Sound Senior Thesis (2020).
- Post baccalaureate: PhD program at UC Davis.

Shreeti Patel (2018)

- Research at UPS: Scanning electron microscopy of ice roughness.

Haley Gray (2018)

- Research at UPS: Large eddy simulations of cirrus ice clouds.

Connor Krill (2017)

- Research at UPS: Scanning electron microscopy of ice roughness.

Aedin Wright (2016-2018)

- Research at UPS: Assessment strategies for Computational Guided Inquiry.

Emily Stewart (2016-2018)

- Research in Chile regarding sampling and filtering black carbon from snow, resulting in a peer-reviewed publication (JGR, 2016) and a University of Puget Sound Senior Thesis (2018).
- Post baccalaureate: Production Supervisor at Snyder's-Lance, Seattle

Pablo Venezian (2016)

- Research in Chile regarding laboratory filtering black carbon from snow.

Edgardo Caco Sepulveda (2016)

- Research in Chile regarding spectroscopy and sampling of black carbon from snow.

Kathryn Peneyra (2016)

- Research in Chile regarding black carbon in snow.

Matt Fergoda (2016-2017)

- Research at UPS: Complex index of refraction of supercooled liquid water, resulting in a peer-reviewed publication in presentations at the American Meteorological Society (2018) and the European Geophysical Union (2020), and a publication in the Journal of Geophysical Research – Atmospheres (2020).
- Post baccalaureate: consultant at Hitachi Consulting

Kelsey Reed (2015-2016)

- Research at UPS: Conducted research on molecular dynamics of faceted ice surfaces, and on ice as a possible substrate for hypothesized pre-biotic (RNA-world) reactions, resulting in a peer-reviewed publication (JGR, 2016) as a co-author, and a University of Puget Sound Senior Thesis (2016).
- Post baccalaureate: PhD candidate in chemical engineering at MIT, Cambridge

Alec Pankow (2015-2016)

- Research in Chile: Participated in a field campaign for measuring the black carbon content in snow in the Chilean Andes, resulting in a conference presentation (AGU, 2015) as a co-author.
- Post baccalaureate: Research Scientist at UW Microbiology, Seattle

Cameron Malik (2015-2016)

- Investigations into ice as a possible substrate for hypothesized pre-biotic (RNA-world) reactions, resulting in a University of Puget Sound Senior Thesis.
- Post baccalaureate: Senior Technologist, Analytical Services at NAMSA, Orange County

Jonathan Adams (2015-2016)

- Research at UPS: Constructed a reaction-diffusion model of growing faceted ice surfaces, resulting in a peer-reviewed publication (JGR, 2016) as a co-author, and a University of Puget Sound Senior Thesis (2016).
- Post baccalaureate: Process Engineering Intern at nLIGHT, Seattle

Sam Naatz (2014-2015)

- Research at UPS and at the Institute of Organic Chemistry and Biochemistry, Czech Republic: Conducted research on molecular dynamics of faceted ice surfaces, resulting in a peer-reviewed publication (PCCP, 2015) as a co-author.

Max LaBerge (2014)

- Research at UPS: Building a spectroscope for measuring black carbon in snow.
- Post baccalaureate: Graduate student at UT Austin, Physics

Tristan Stickle (2014)

- Research at UPS: Ray tracing studies of rough cirrus ice for remote sensing.
- Post baccalaureate: Graduate student in College of Engineering, Oregon State

Chelsea Jaeger (2013-2014)

- Research at UPS: Use of cold imprinting for the study of ice morphology, resulting in a conference presentation (PCI 2014) as co-author.
- Post baccalaureate: Senior Staff Geologist at LGC Geotechnical, Orange County

Nick Butterfield (2013-2015)

- Research at UPS: Quantitative investigation of roughness in cirrus-like ice crystals by variable pressure scanning electron microscopy parallax imaging, resulting in two conference presentations (PCI 2014, and the AIR-UCI workshop, 2014) and a peer-reviewed publication (JGR, 2016) as co-author.
- Post baccalaureate: Kayak guide at Whidbey Island Kayaking

Drew Harrison (2013-2014)

- Research at UPS: Observation of surface morphology of rough ice crystals from scanning electron micrographs, resulting in two conference presentations (PCI 2014, and the AIR-UCI workshop, 2014) as co-author.

Alicia Burns (2013-2014)

- Research at UPS: Construction of modeled hexagonal ice as a vicinal surface for molecular dynamics simulations, resulting in a conference presentation (PCI 2014) as co-author and a University of Puget Sound Senior Thesis (2014).
- Post baccalaureate: MD candidate, Veradale WA

Bryan Soto (2013-2014)

- Research at UPS: Conversion of scanning electron micrographs of rough ice crystals into three-dimensionally-rendered visible images.
- Post baccalaureate: Graduate student at U. Georgia

David Roesel (2013, 2015)

- Research at UPS: Observation of surface morphology of rough ice crystals from scanning electron micrographs, resulting in two conference presentations (PCI 2014, and the AIR-UCI workshop, 2014), and a peer-reviewed publication (JGR, 2016) as co-author.
- Post baccalaureate: Ph.D. candidate in Physics

Jack Rosenberg (2013)

- Research at UPS: Assessment of the flipped classroom model for General Chemistry.

Hayley Caddes (2013)

- Research at UPS: Extraction of surface metrology of rough ice crystals from scanning electron micrographs.
- Post baccalaureate: Data Science Fellow at NYC Data Science Academy

Mitch Benning (2012-2013)

- Research at UPS: Completed a Senior Thesis on scanning electron microscopy of faceted ice surfaces, resulting in one peer-reviewed publication (JGR), one conference presentation (Gordon) as co-author, and a University of Puget Sound Senior Thesis (2013).
- Post baccalaureate: Higher Education Professional, Reno

Ariel Lawson (2012-2013)

- Research at UPS: Completed a Senior Thesis on scanning electron microscopy of faceted ice surfaces, resulting in one peer-reviewed publication (JGR) as co-author.
- Post baccalaureate: Recruitment at CliftonLarsonAllen, Sacramento

Carolyn McCotter (2012)

- Research at UPS: Conducted research on scanning electron microscopy of salty faceted ice surfaces.

Amrei Oswald (2012-2013)

- Research at UPS: Conducted research on molecular dynamics of faceted ice surfaces, resulting in one conference presentation (Gordon) as co-author.

Natalie Bowens (2012)

- Research at UPS and at the Institute of Organic Chemistry and Biochemistry, Czech Republic: Conducted research on molecular dynamics and Burton-Cabrera-Frank modeling of faceted ice surfaces, resulting in one conference presentation (Gordon).
- Post baccalaureate: Neonatal Intensive Care Nurse

Becca M Lowen (2011-2012)

- Research at UPS: Completed a Senior Thesis on scanning electron microscopy studies of rough ice, resulting in one peer-reviewed publication (JGR) and a conference presentation (Gordon) as co-author.

William Pfalzgraff (2009-2010)

- Research at UPS and at the Institute of Organic Chemistry and Biochemistry, Czech Republic: Completed a Senior Thesis in scanning electron microscopy and molecular dynamics of ice, resulting in three peer-reviewed publications (ACP, PCCP, and JPC-A) and four presentations at national/international conferences (Gordon, ACS, Hydrogen Bonds, Telluride) as co-author.
- Post baccalaureate: Ph.D. in Chemistry from Stanford, appointment to faculty at Chatham University.

Ryan Hulscher (2010)

- Research at UPS: Carried out summer research and guided research in molecular dynamics of ice, resulting in one peer-reviewed publication (ACP) and one presentation (Telluride) as co-author.
- Post baccalaureate: Ph.D. in Chemistry from Johns Hopkins.

Erin Nugent (2008)

- Research at UPS: Completed a Senior Thesis, “Molecular dynamics simulations of cirrus like ice crystal growth and sublimation”, resulting in one publication (JPC) and three presentations at national/international conferences (ICCP, AGU, IACIS) as co-author; Nugent’s ICCP presentation was awarded 2nd place in the student competition.
- Post baccalaureate: Non-profit work in Nicaragua, Licensed Physical Therapist.

Andrew Brik (2008)

- Research at UPS: Completed a Senior Thesis, “SEM investigations of Arctic Haze Deposition of Soot in Snow”, resulting in a poster presentation at a UPS research symposium.

Timothy Guasco (2006)

- Research at UPS: Completed a Senior Thesis, “Determining the surface structure of cirrus cloudlike ice crystal using low temperature scanning electron microscopy”, resulting in a presentation (AGU) as co-author.
- Post baccalaureate: Ph.D. Physical Chemistry (2011) at Yale University, followed by post-doctoral research in chemistry at UCSD and appointment to the faculty at Millikin University.

Amelia Peterson (2006)

- Research at UPS: Completed a Senior Thesis, “Applications of supercritical carbon dioxide: Extraction of essential oil from geranium (*Pelargonium graveolens*), and synthesis and attachment of zinc oxide nanoparticles to multiwalled carbon nanotubes”, resulting in a poster presentation at a UPS research symposium.
- Post baccalaureate: Ph.D. in Analytical Chemistry from UW-Madison.

Laura Read (2006)

- Research at UPS: Completed a Senior Thesis “Applications of the Gamma-weighted distribution and the homogeneity parameter to downwelling longwave radiative flux of Arctic clouds”, resulting in a poster presentation at a UPS research symposium.
- Post baccalaureate: Ph.D. in Environmental Engineering, Tufts, followed by appointment to the research staff at NCAR. Currently Head of Product Strategy at Upstream Tech.

Matthew Wolhowe (2005)

- Research at UPS: Completed a Senior Thesis “Determination of PPH flux biases in the Arctic and the evaluation of gamma-predicted corrections”, resulting in a poster presentation at a UPS research symposium.

- Post baccalaureate: Ph.D. Oceanography, Oregon State University, Post-doctoral fellow at University of Washington.

Josh Patterson (2004)

- Research at UPS: Completed a Senior Thesis, resulting in a poster presentation at a UPS research symposium.
- Post baccalaureate: Ph.D. Physical Chemistry, UW-Seattle. Chemistry faculty at Christopher Newport College.

Aubrey Maxwell (2002)

- Research at UPS: Carried out field research at Barrow, AK, resulting in a poster presentation at a UPS research symposium.

Erin Haney (2002)

- Research at UPS: Completed a Senior Thesis “A theoretical comparison of fractal and plane parallel cloud models for infrared emissivity”, resulting in a poster presentation at a UPS research symposium.

Aaron Rivers (2001)

- Research at UPS: Completed a Senior Thesis “Modeling Arctic ice clouds using a single column model”, resulting in a presentation at a SHEBA workshop as co-author.
- Post baccalaureate: M.S., Applied Physics Laboratory, UW-Seattle. Currently teaching high school.

Elizabeth Catlin (2001)

- Research at UPS: Carried out an independent study, “Remote infrared sensing of the Arctic”, resulting in a presentation (AGU) as co-author.
- Post baccalaureate: JD, Vermont Law School, *summa cum laude*, 2008, later joined Dunkiel-Saunders, VT, law firm.

Alicia Piedalue (2000)

- Research at UPS: Completed a Senior Thesis, resulting in a presentation at a SHEBA workshop as co-author.

George White (1998)

- Research at UPS: Completed a Senior Thesis “Investigations of the scattering and absorption properties of water and ice particles using Mie theory”, resulting in a presentation at a national ACS conference as co-author.
- Post baccalaureate: General contractor in Spokane, WA.

Matt Shupe (1997)

- Research at UPS: Completed a Senior Thesis “Determining cloud properties from remote sensing using infrared spectrometry”, resulting in two peer-reviewed publications (JGR-Atmospheres, GRL) and a presentation at the Workshop on Arctic Change as co-author.
- Post baccalaureate: Ph.D, Astrophysical, Planetary, and Atmospheric Sciences, 2007, Research Scientist at the University of Colorado – CIRES NOAA/ESRL/PSD.

PM Rowe (1997)

- Research at UPS: Completed a Senior Thesis “Remote sensing of trace atmospheric gases by ground-based infrared radiometry and radiative transfer theory”, resulting in one peer-reviewed publication (JGR-Atmospheres) and two presentations (Workshop on Arctic Change and IRS) as co-author.
- Post baccalaureate: Ph.D, Physical Chemistry, UW-Seattle, 2005. Currently a research associate at NWRA (Redmond, WA).

Wendy Weise (1996)

- Research at UPS: Completed a Senior Thesis “Turing patterns in a modified Belousov-Zhabotinski reaction.”
- Post baccalaureate: Director of Marketing Communications at Pacific Biosciences.

Mark Mitchell (1996)

- Research at UPS: Completed a Senior Thesis (Chemistry + Honors Program).
- Post baccalaureate: Currently ES&H R&D and Student and Military Programs Manager at Lawrence Livermore National Laboratory.

Peer-reviewed publications (with mentored undergraduate coauthors in bold)

46. “Black carbon’s increased concentration in Mount Rainier’s snowpack between the summers of 2020 to 2021”, **Charles Hope Henning**, Penny Rowe, Carl Schmitt, and Steven Neshyba (in preparation, *Atmospheric Chemistry and Physics*).
45. “Undergraduate-student knowledge gains in polar literacy and statistics after completing computational guided inquiry modules”, Penny Rowe, James Bernhard, Jacob Price, **A. Adhav**, **Danielle Dolan**, **Anna Van Boven**, Lea Fortmann, Michael Town, and Steven Neshyba, *Journal of Geoscience Education* (submitted July 2023).
44. “Ice Crystal Complexity and Link to Cirrus Cloud Radiative Effect”, Emma Järvinen, Bastiaan Van Dienenhoven, Nathan Magee, Steven Neshyba, Martin Schnaiter, David Delene, Guanglang Xu, Fritz Waitz, Olivier Jourdan, Simone Lolli, and Seiji Kato, *AGU Books* (2023). NSF CHE-1807898 acknowledged.
43. "Black Carbon Footprint of Human Presence in Antarctica", Raul Cordero, Edgardo Sepúlveda, Sarah Feron, Damiani Alessandro, Francisco Fernandoy, Steven Neshyba, Penny Rowe, Valentina Asencio, Jorge Carrasco, Juan Alfonso, Pedro Llanillo, Paul Wachter, Gunther Seckmeyer, Marina Stepanova, Juan Carrera, Jose Jorquera, Chenghao Wang, Avni Malhotra, Jacob Dana, Alia Khan, and Gino Casassa, *Nat Commun* **13**, 984 (2022). <https://doi.org/10.1038/s41467-022-28560-w>.
42. “Evaluation of temperature-dependent complex refractive indices of liquid water using downwelling radiance and in-situ cloud measurements at South Pole”, Penny Rowe, Von Walden, Richard Brandt, Michael Town, Stephen Hudson, and Steven Neshyba, *J. Geophys. Res. – Atmospheres*, **127**, e2021JD035182 (2022).

41. “Molecular Dynamics of Ice, Ice Surfaces and Impurities on Ice”, Ivan Gladich and Steven Neshyba, Chapter 4 of *ACS Advances in Atmospheric Chemistry, Chemistry in the Cryosphere*, 173-257 (2022).
40. “Contaminant emissions as indicators of chemical elements in the snow along a latitudinal gradient in southern Andes”, Jaime Pizarro, Pablo Vergara, Sergio Cerda, Raul Cordero, Ximena Castillo, Penny Rowe, Gino Casassa, Jorge Carrasco, Alessandro Damiani, Pedro Llanillo, Fabrice Lambert, Roberto Rondanelli, Nicolas Huneus, Francisco Fernandoy, Juan Alfonso, and Steven Neshyba (*Scientific Reports*, **11**, 14530 (2021)).
39. “Solvation and Stabilization of Single Strand RNA at the Air/Ice Interface Support a Primordial RNA World on Ice”, Ivan Gladich, **Margaret Berrens**, Penny Rowe, Rodolfo G. Pereyra, and Steven Neshyba, *J. Phys. Chem. C*, **124**, 18587-18594 (2020). NSF CHE-1807898 acknowledged.
38. “Temperature-Dependent Optical Properties of Liquid Water from 240 to 298 K”, Penny M. Rowe, **Matt Fergoda**, and Steven Neshyba, *Journal of Geophysical Research – Atmospheres*, **125**, e2020JD032624, <https://doi.org/10.1029/2020JD032624> (2020). NSF CHE-1807898 acknowledged.
37. “Integrating polar research into undergraduate curricula using computational guided inquiry”, Penny M. Rowe, Lea Fortmann, Timothy L. Guasco, **Aedin Wright**, Amy Ryken, **Emma Sevier**, Grace Stokes, Amanda Mifflin, Rachel Wade, Haiyan Cheng, William Pfalzgraff, Justin Beaudoin, Isha Rajbhandari, Kena Fox-Dobbs, and Steven Neshyba, *Journal of Geoscience Education*, DOI: [10.1080/10899995.2020.1768004](https://doi.org/10.1080/10899995.2020.1768004) (2020). NSF 17123545 acknowledged.
36. “Teaching Modules for Incorporating Climate Literacy in Economics Courses using Computational Guided Inquiry”, Lea Fortmann, Justin Beaudoin, Isha Rajbhandari, **Aedin Wright**, Steven Neshyba, and Penny Rowe, *Journal of Economic Education*, **51**, 143-158 (2020). NSF 17123545 acknowledged.
35. “Toward autonomous surface-based infrared remote sensing of polar clouds: retrievals of cloud optical and microphysical properties”, Penny Rowe, Christopher Cox, Steven Neshyba, Von Walden, *Atmospheric Measurement Techniques*, **12**, 5071-5086 (2019). NSF CHE-1807898 acknowledged.
34. “Elemental and Mineralogical Composition of the Western Andean Snow (18°S–41°S)”, Juan Alfonso, Raul Cordero, Penny Rowe, Steven Neshyba, Gino Casassa, Jorge Carrasco, Shelley MacDonnel, Fabrice Lambert, Jaime Pizarro, Francisco Fernandoy, Sarah Feron, Alessandro Damiani, Pedro Llanillo, Edgardo Sepulveda, Jose Jorquera, Belkis Garcia, Juan M. Carrera, Pedro Oyola, and Choong-Min Kang, *Nature Scientific Reports*, **9**, 8130 (2019). NSF CHE-1306366 acknowledged.

33. “Black carbon and other light-absorbing impurities in snow in the Chilean Andes”, Penny M. Rowe, Raul R. Cordero, Stephen G. Warren, **Emily Stewart**, Sarah J. Doherty, **Alec Pankow**, Michael Schrempf, Gino Casassa, Jorge Carrasco, Jaime Pizarro, Shelley MacDonell, Alessandro Damaini, Fabrice Lambert, Roberto Rondanelli, Nicolas Huneeus, Francisco Fernandez, and Steven Neshyba, *Nature Scientific Reports*, **9**, 4008 (2019). NSF CHE-1306366 acknowledged.
32. “Teaching image processing in an upper level CS undergraduate class using computational guided inquiry and polar data”, Penny M. Rowe, Haiyan Cheng, Lea Fortmann, **Aedin Wright**, and Steven Neshyba, *J. of Computing Sciences in Colleges*, **34**, 171-179 (2018).
31. “Quantitative three-dimensional ice roughness from scanning electron microscopy”, **Nicholas Butterfield**, Penny M. Rowe, **Emily Stewart**, David Roesel, and Steven Neshyba, *Journal of Geophysical Research - Atmospheres*, **122**, 3023–3041 (2017). (See <http://onlinelibrary.wiley.com/doi/10.1002/2016JD026094/full>). NSF CHE-1306366 acknowledged.
30. “A quasi-liquid mediated continuum model of faceted ice dynamics”, Steven Neshyba, **Jonathan Adams**, **Kelsey Reed**, Penny M. Rowe, and Ivan Gladich, *Journal of Geophysical Research - Atmospheres*, **121**, 14035-14055 (2016). (See <http://onlinelibrary.wiley.com/doi/10.1002/2016JD025458/full>). NSF CHE-1306366 acknowledged.
29. “A synthetic data set of high-spectral resolution infrared spectra for the Arctic atmosphere”, C.J. Cox, P.M. Rowe, S.P. Neshyba, and V.P. Walden, *Earth Syst. Sci. Data*, **8**, 199-211 (2016). (see <http://www.earth-syst-sci-data.net/8/199/2016/>). NSF CHE-1306366 acknowledged.
28. “Mechanism of Anisotropic Surface Self-Diffusivity at the Prismatic Ice-Vapor Interface”, Ivan Gladich, **Amrei Oswald**, **Natalie Bowens**, **Sam Naatz**, Penny Rowe, Martina Roeselová, and Steven Neshyba, *Physical Chemistry Chemical Physics*, **17**, 22947 – 22958 (2015). (see <http://pubs.rsc.org/en/content/articlelanding/2015/cp/c5cp01330e#!divAbstract>). NSF CHE-1306366 acknowledged.
27. “Radiative consequences of low-temperature infrared refractive indices for supercooled water clouds”, P.M. Rowe, S.P. Neshyba, and Von P. Walden, *Atmos. Chem. Phys.*, **13**, 11925-11933 (2013). (see <http://www.atmos-chem-phys.net/13/11925/2013/acp-13-11925-2013.html>). NSF CHE-1306366 acknowledged.
26. “Roughness metrics of prismatic facets of ice”, S.P. Neshyba, **B. Lowen**, **M. Benning**, **A. Lawson**, and P.M. Rowe, *Journal of Geophysical Research - Atmospheres*, **118**, 3309-3318 (2013). (see <http://onlinelibrary.wiley.com/doi/10.1002/jgrd.50357/abstract>)

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 - Marked for “Editor Highlight” on the JGR homepage; see <http://onlinelibrary.wiley.com/journal/10.1002/%28ISSN%292169-8996/homepage/EditorsHighlights.html>
 - Listed in the Council of Undergraduate Research website on undergraduate research highlights, http://www.cur.org/highlights/highlight_category/?code=Geosciences#2251
25. “Arrhenius analysis of anisotropic surface diffusion on the prismatic facet of ice”, Ivan Gladich, **William Pfalzgraff**, Ondřej Maršálek, Pavel Jungwirth, Martina Roeselová, and Steven Neshyba, *Physical Chemistry Chemical Physics*, **13** (invited paper), 19960-9 (2011).
 24. “Comparative molecular dynamics study of vapor-exposed basal, prismatic, and pyramidal surfaces of ice”, **William Pfalzgraff**, Steven Neshyba, and Martina Roeselová, *J. Phys. Chem. A, Buch Memorial Issue (invited paper)*, 115 (23), 6184–6193. DOI: 10.1021/jp111359a (2011).
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 22. “A responsivity-based criterion for accurate calibration of FTIR spectra: theoretical development and bandwidth estimation”, Penny M. Rowe, Steven Neshyba, and Von P. Walden, *Optics Express*, **19**, 5451-5463 (2011). (see www.opticsinfobase.org/abstract.cfm?uri=oe-19-6-5451.)
 21. “Scanning electron microscopy and molecular dynamics of surfaces of growing and ablating hexagonal ice crystals”, **William Pfalzgraff**, **Ryan Hulscher**, and Steven Neshyba, *Atmos. Chem. Phys.*, **10**, 2927-2935 (2010). (see www.atmos-chem-phys.net/10/2927/2010/; www.atmos-chem-phys-discuss.net/9/20739/2009.html is the discussion paper associated with this article)
 20. “Molecular Dynamics study of ice-vapor interactions via the quasi-liquid layer”, Steven Neshyba, **Erin Nugent**, Martina Roeselová, Pavel Jungwirth, *J. Phys. Chem. C*, **113**, 4597-4604, doi: 10.1021/jp810589a (2009).
 19. “Self-broadening of water vapor transitions via the complex Robert-Bonamy theory”, B. K. Antony, Steven Neshyba, Robert Gamache, *J. Quant. Spectr. Rad. Trans*, **105**, 148-163 (2007).
 18. “Representation of a nonspherical ice particle by a collection of independent spheres for scattering and absorption of radiation: III. Concave particles”, Thomas C. Grenfell, Stephen G. Warren, and S. Neshyba, *Journal of Geophysical Research – Atmospheres*, **110**, D17203, doi:10.1029/2005JD005811 (2005).

17. "Representation of a nonspherical ice particle by a collection of independent spheres for scattering and absorption of radiation: II. Hexagonal columns and plates", Steven Neshyba, Thomas C. Grenfell, and Stephen G. Warren, *Journal of Geophysical Research – Atmospheres*, **108(D15)**, 4448, doi: 10.1029/2002JD003302 (2003).
16. "Statistics of Arctic cloud downwelling infrared emissivity", Steven Neshyba and Carsten Rathke, *Journal of Geophysical Research – Atmospheres*, **108(D15)**, 4468; doi, 10.1029/2002JD003157 (2003).
15. "Radiative and microphysical properties of Arctic stratus clouds from multiangle downwelling infrared radiances", Carsten Rathke, Steven Neshyba, **Matthew D. Shupe, Penny Rowe, and Aaron Rivers**, *Journal of Geophysical Research – Atmospheres*, **107(D23)**, 4703, doi:10.1029/2001JD001545 (2002).
14. "Improving IR cloud phase determination with 20 microns spectral observations", Carsten Rathke, J. Fischer, Steven Neshyba, and **Matthew Shupe**, *Geophys. Res. Lett.* **29(8)**, 1209, doi: 10.1029/2001GL014594 (2002).13. "Pressure Broadening of H₂O in the (301)<-(000) Band: Effects of Angular Momentum and Close Intermolecular Interactions", R. Lynch, R.R. Gamache, and S.P Neshyba, *J. Quant. Spectr. Rad. Trans* **59**, 615-625 (1998).
12. "N₂ and O₂ Induced Halfwidths and Line Shifts of water vapor transitions in the (301)<-(000) and (221)<-(000) Bands", R. Lynch, R.R. Gamache, and S.P Neshyba, *J. Quant. Spectr. Rad. Trans* **59**, 695-613 (1998).
11. "New Developments in the Theory of Pressure-Broadening and Pressure-shifting of Spectral Lines of H₂O: The Complex Robert-Bonamy Formalism", R.R. Gamache, R. Lynch, and S.P Neshyba (*J. Quant. Spectr. Rad. Trans* **59**, 319-335 (1998).
10. "Fully Complex Implementation of the Robert-Bonamy Formalism: Halfwidths and Line Shifts of H₂O Broadened by N₂", R. Lynch, R.R. Gamache, and S.P Neshyba, *J. Chem. Phys.* **105**, 5711 (1996)
9. "Characterization of Arctic Haze by Infrared Emission: A Feasibility Study", **P. Rowe** and S.P Neshyba, in *IRS '96: Current Problems in Atmospheric Radiation*, W.L. Smith and K. Stamnes, Eds. (A. Deepak, 1996).
8. "Neural Networks for Recognition of Ionogram Traces", I.A. Galkin, B.W. Reinisch, G.A. Ososkov, E.G. Zaznobina, and S.P Neshyba, *Radio Science* **31**, 1119-1128 (1996).
7. "CO₂-broadening of water-vapor lines", R. R. Gamache, S.P Neshyba, J.J. Plateaux, A. Barbe, L. Regalia, and J. B. Pollack, *J. Mol. Spec.* **170**, 131 (1995).
6. "Pressure-Induced Widths and Shifts for the nu₃ Band of Methane", S.P Neshyba, R. Lynch, R. R. Gamache, T. Gabard, and J.-P. Champion, *J. Chem. Phys.* **101**, 9412 (1994).

5. “Improved line-broadening coefficients for asymmetric rotor molecules with application to ozone lines broadened by nitrogen”, S.P Neshyba and R. R. Gamache, *J. Quant. Spectr. Rad. Trans.* **50**, 443 (1993).
4. “Quantum Mechanical Motions of Hydrides in Solution: Proton-Proton Exchange Couplings in Transition Metal Polyhydrides”, K. W. Zilm, D. M. Heinekey, J. M. Millar, N. G. Payne, S.P Neshyba, J. C. Duchamp, and Jolanta Szcayrba, *J. Amer. Chem. Society* **112**, 920 (1990).
3. “Projection Operator Formalism for Nonorthogonal States: Application to a 3:4 Resonant System”, S.P Neshyba and N. De Leon, *J. Chem. Phys.* **91**, 7772 (1989).
2. “Projection Operators for Calculation of Electronic Populations”, N. De Leon and S.P Neshyba, *Chem. Phys. Lett.* **151**, 296 (1988).
1. “Classical Resonances, Fermi Resonances and Canonical Transformations for Three Nonlinearly Coupled Oscillators”, S.P Neshyba and N. De Leon, *J. Chem. Phys.* **86**, 6295 (1987).

Presentations (with mentored undergraduate coauthors in bold)

105. “Climate change and higher education”, S.P Neshyba, invited talk at Delgado Community College, Louisiana, November 2023.
105. “What’s an educated person to do in a time of climate change?”, S.P Neshyba, invited talk for the Puget Sound Alumni Book Club, September 2023.
104. “Climate change and the liberal arts”, S.P Neshyba, invited talk for the Thompson Science Seminar Series at the University of Puget Sound, September 2023.
103. “Strong coupling, vibrational frequency, and negative thermophoresis”, R. de Miguel, J.M. Rubí, and S.P Neshyba, presented by de Miguel at the XXVII Sitges Conference on Statistical Mechanics, Sitges, Spain, June 2023.
102. “Research at Puget Sound”, S.P Neshyba, invited talk at the Puget Sound Donors event, University of Puget Sound, April 2023.
101. “Motivating simple linear regression with climate modeling and polar data”, Price, J.; Rowe, P.; Neshyba, S.; and Bernhard, J. PNW Section of MAA Annual Meeting, Newport, Oregon, March 2023.
100. “Empowering undergraduates using computation-intensive pedagogy in the physical sciences” Neshyba, S., Computational Infusion for Missouri Undergraduate Science and Education (CIMUSE) Workshop, August 2023.
99. “An introduction to climate science”, S.P Neshyba, invited talk for the course *Economics of Climate Change*, hosted by L. Fortmann, University of Puget Sound, January 2023.

98. “Modeling climate with Cambio” Neshyba, S., Computational Infusion for Missouri Undergraduate Science and Education (CIMUSE) Workshop, August 2022.
97. “Faculty evaluation at Puget Sound”, S.P Neshyba, invited talk for new faculty orientation at the University of Puget Sound, August 2022.
96. “Thermodynamics of climate change”, S.P Neshyba, invited talk for a Physical Chemistry class taught by Professor N. James at Reed College, April 2022.
95. “Saying goodbye”, S.P. Neshyba, invited talk for the Thompson Science Seminar Series at the University of Puget Sound, November 2021.
94. “A box model for climate using Jupyter Notebooks”, S.P. Neshyba, SERC symposium, July 2021.
93. “State of the climate, 2021”, S.P Neshyba and P. Hodum, invited talk for the Thompson Science Seminar Series at the University of Puget Sound, University of Puget Sound, March 2021.
92. “Modeling Heating Rate to Distinguish Black Carbon from Other Impurities in Snow”, **Jodie McLennan**, Steven Neshyba, **Cameron Markovsky**, **Charlie Henning**, **Vanessa Schultz**, Carl G Schmitt, and Penny Rowe, remote presentation at the AGU2020 conference, San Francisco, CA, September 2020.
91. “Using Excel to Teach Polar Data to High School Students”, **Augustin Kalytiak-Davis**, **Isabella Hedly**, Timothy Chalberg, Steven Neshyba, and Penny Rowe, remote presentation at the AGU2020 conference, San Francisco, CA, September 2020.
90. “Teaching Polar Science with an Online Data Science Platform”, **Isabella Hedly**, **Augustin Kalytiak-Davis**, Penny Rowe, and Steven Neshyba, remote presentation at the AGU2020 conference, San Francisco, CA, September 2020.
89. “Antarctic Cloud Property Retrievals from Infrared Radiances”, Penny Rowe, Von Walden, **Matthew Fergoda**, **Connor Krill**, Jonathon Gero, and Steven Neshyba, remote presentation at the EGU2020 conference, Vienna, Austria, May 2020.
88. “Molecular Dynamics simulations indicate solvation and stability of single-strand RNA at the air/ice interface, supporting a primordial RNA world on Ice”, Steven Neshyba, Ivan Gladich, Penny Rowe, **Maggie Berrens**, and Rodolfo Pereyra, remote presentation at the EGU2020 conference, Vienna, Austria, May 2020. NSF CHE-1807898 acknowledged.
87. “State of the Climate, 2019”, S.P. Neshyba, invited talk for an Environmental Policy and Decision-Making course (ECON 225: Environmental and Natural Resource Economics) at the University of Puget Sound, February 2020.

86. “Surface Morphology of Basal Ice Roughness from Scanning Electron Microscopy (SEM)”, **Natalie Reszka** and S.P. Neshyba, poster presented at the Partners in Science National Conference, San Diego, January 2020.
85. “Ubiquitous Low-Level Surface Roughness of Cirrus-Like Ice”, **Maggie Berrens** and S.P. Neshyba, poster presented at the AGU2019 conference, San Francisco, December 2019.
84. “State of the Climate, 2019”, S.P. Neshyba, invited talk for the Thompson Science Seminar Series at the University of Puget Sound, December 2019.
83. “State of the Climate, 2017”, S.P. Neshyba, invited talk for an Environmental Policy and Decision-Making course (ENVR 253: Topics in Environmental Justice) at University of Puget Sound, February 2019.
82. “Science of Climate Change”, S.P. Neshyba, invited talk for a Sociology class (SOAN 298: Social Research) at the University of Puget Sound, February 2019.
81. “State of the Climate, 2017”, S.P. Neshyba, invited talk for the Thompson Science Seminar Series at the University of Puget Sound, October 2018.
80. “Science of Climate Change”, S.P. Neshyba, invited talk for an Economics class at the University of Puget Sound, September 2018.
79. “Climate Change Activism”, S.P. Neshyba, invited panelist at King’s Bookstore, Tacoma, WA, 2018.
78. “The Infrared Radiative Impact of Antarctic Clouds”, Penny M. Rowe, V. Walden, **C. Krill**, **M. Fergoda**, and S. P. Neshyba, poster presented at the AMS Cloud/Radiation conference, Vancouver, BC, July 2018.
77. “Quantitative three-dimensional ice roughness from scanning electron microscopy”, S.P. Neshyba, **Nicholas Butterfield**, Penny M. Rowe, **Emily Stewart**, and **David Roesel**, poster presented at the AMS Cloud/Radiation conference, Vancouver, BC, July 2018.
76. “Bridging the Gap Between Molecular and Mesoscopic Scales of Ice Microphysics”, Steven Neshyba, **Jonathan Adams**, **Kelsey Reed**, Penny M. Rowe, and Ivan Gladich, talk presented at the AMS Cloud/Radiation conference, Vancouver, BC. July 2018.
75. “Masters and Controllers of Nature (A Look at the Ethics of Climate Change)”, S.P. Neshyba, invited talk at the University of Puget Sound, October 2017.
74. “Writing for Broad Publics: Op-Eds and Essays”, S.P. Neshyba, invited panelist at the University of Puget Sound, October 2017.

73. "Ice Science in a Changing Climate", S.P. Neshyba, invited talk at the MaST Center, Des Moines, October 2017.
72. "Characterizing the Antarctic Atmosphere and Low Clouds", Rowe, P., Damiani, A., Sepúlveda, E., Neshyba, S., and Cordero, R., talk presented at YOPP-SH, June 28-29, 2017.
71. "Scientists in the public sphere", S.P. Neshyba, invited talk at the Tacoma March for Science, Tacoma, April 2017.
70. "Ice Science in a Changing Climate", S.P. Neshyba, invited talk at Reed College, Portland, Oregon, October 2016.
69. "What I learned in Chile about teaching, learning, and climate change", S.P. Neshyba, University of Puget Sound Thompson Science Symposium, Tacoma, October 2016.
68. "Ice Science in a Changing Climate", S.P. Neshyba, invited talk at University of Puget Sound, as part of "Discover Puget Sound", Tacoma, October 2016.
67. "Lecciones de un (flipped) taller para profesores universitarios en el aprendizaje activo y aula invertida", Steven Neshyba, Dominique Müller P., and Izaskun Alvarez A., presented by Müller and Alvarez at SOCHEDI 2016: XXIX Congreso Chileno de Educación en Ingeniería, October 2016, Pucón, Chile.
66. "Expanding the time scale of climate management thinking: from short-lived climate pollutants to averting the next glacial cycle", S.P. Neshyba, invited talk at Aquambiente LTDA, Valparaiso, Chile, May,2016.
65. "Classroom Flipping for First-Year Undergraduates", S.P. Neshyba, invited talk at the Universidad Catolica de Valparaiso, UMDU, Valparaiso, Chile, May,2016.
64. "Classroom Flipping for Engineers", S.P. Neshyba, invited talk at the Universidad Catolica de Valparaiso, School of Engineering, Valparaiso, Chile, April,2016.
63. "Fulbright-sponsored research: Black Carbon and Classroom Flipping in Chile", S.P. Neshyba, invited talk at Fulbright Foundation, Santiago, Chile, March 2016.
62. "Black carbon and other light-absorbing impurities in the Andes of Northern Chile", Penny M Rowe, Raul Cordero, Stephen G Warren, **Alec Pankow**, José Jorquera, Michael Schrempf, Sarah J Doherty, Marta Cabellero, Jorge F Carrasco, and Steven Neshyba, presented by Rowe at the 2015 AGU Fall meeting, San Francisco, December 2015.
61. "Ice Science in a Changing Climate", S. P Neshyba, as the 42nd Register Lecture, University of Puget Sound, November 2015.

60. “Radiative consequences of low-temperature infrared refractive indices for supercooled water clouds”, Penny M. Rowe, S.P. Neshyba and V. Walden, presented by Rowe at the 14th Conference on Atmospheric Radiation, Boston, MA, 7-11 July 2014.
59. “Using scanning electron microscopy to assess the impact of ice facet roughening on cirrus ice albedo”, S. Neshyba, invited talk at the University of Washington Atmospheric Physics and Chemistry Seminar Series, Seattle, April 14, 2014.
58. “Reconstructed Morphology of Rough Ice Facets by Variable Pressure Scanning Electron Microscopy”, presented by Steven Neshyba with David Roesel, Martina Roeselova, Ivan Gladich, **Alicia Burns**, **Chelsea Jaeger**, and **Drew Harrison** as co-authors, Physics and Chemistry of Ice (PCI2014), Hanover, NH, March 2014 (see <https://engineering.dartmouth.edu/pci-2014/session-5-snow-morphology.html>).
57. “Nitrate Anion at the Ice-Vapour Interface: A Molecular Picture of Crucial Atmospheric Importance”, Ivan Gladich, with Celine Toubin, Steven Neshyba, and Martina Roeselova as co-authors, Physics and Chemistry of Ice (PCI2014), Hanover, NH, March 2014.
56. “Spartan and Excel in a flipped General Chemistry course”, Steven Neshyba, Northwest Regional Meeting of the American Chemical Society (NORM-13), Corvallis, OR, 21-24 July 2013.
55. “Atomistic processes underlying mesoscopic roughening of ice at the ice-air interface”, Steven Neshyba, Northwest Regional Meeting of the American Chemical Society (NORM-13), Corvallis, OR, 21-24 July 2013.
54. “Underestimation of the greenhouse effect of Polar supercooled water clouds”, presented by Von Walden with Steven Neshyba and Penny Rowe as co-authors, Davos Atmosphere and Cryosphere Assembly (DACA-13), Davos, Switzerland, 8-12 July, 2013.
53. “Flipping General Chemistry”, Steven Neshyba, presented by Neshyba at the May 2013 University of Puget Sound Trustee's workshop on line learning, May 2013.
52. “Underestimation of the greenhouse effect of Polar supercooled water clouds”, presented by Penny Rowe with Steven Neshyba and Von Walden as co-authors, 12th Conference on Polar Meteorology and Oceanography, Seattle, WA, 29 April-1 May, 2013.
51. “Looking for the Mechanism of Anisotropic Surface Self-diffusion on Ice Crystals Using Molecular Dynamics”, poster presented by **Amrei Oswald**, with **Natalie Bowens**, Ivan Gladich, Steven Neshyba, and Martina Roeselova, as co-authors, 2012 Gordon Conference on Water and Aqueous Solutions, Holderness, NH, August 2012.

50. “Quantitative characterization of rough prismatic facets of ice by scanning electron microscopy”, poster presented by Steven Neshyba with **Mitch Benning, Becca Lowen**, Penny Rowe, Martina Roeselova, and Ivan Gladich, 2012 Gordon Conference on Water and Aqueous Solutions, Holderness, NH, August 2012.
49. “Arrhenius analysis of anisotropic surface self-diffusion on the prismatic facet of ice”, presented by Ivan Gladich with **William Pfalzgraff**, Ondrej Marsalek, Pavel Jungwirth, Martina Roeselova, and Steven Neshyba, as co-authors, 243rd ACS National Meeting & Exposition, San Diego, California, March 2012.
48. “Developing Models for Sustainability 101: Eighteen Faculty Members Collaborate on a New Foundation for Sustainability Teaching and Learning”, co-presented by Robert Turner, Rob Cole, Benjamin Fackler-Adams, Jean MacGregor, Sonya Remington, Rebeca Rivera, Daniel Sherman, Claus Svendsen, Jill Whitman and, and Steven Neshyba, Eighth International Conference on Environmental, Cultural, Economic, and Social Sustainability, Vancouver, BC, January 2012.
47. “Arrhenius Analysis of Anisotropic Surface Self-Diffusion on the Prismatic Facet of Ice”, talk presented by Ivan Gladich with **William Pfalzgraff**, Ondřej Maršálek, Pavel Jungwirth, Martina Roeselová, and Steven Neshyba as co-authors, XIXth Conference of Hydrogen Bonds, Gottingen, Germany, September 2011.
46. “The Importance of Temperature-Dependent Optical Properties for Radiative Closure in Super-Cooled Water Clouds”, presented by Von Walden with Penny Rowe and Steven Neshyba as co-authors, 11th Conference on Polar Meteorology and Oceanography, Boston, MA, 2-5 May 2011.
45. “Scanning electron microscopy and molecular dynamics of ice: What is the origin of trans-prismatic strands?”, poster presented by Steven Neshyba with **William Pfalzgraff** and Martina Roeselova as co-authors, 2010 Gordon Conference on Water and Aqueous Solutions, Holderness, NH, August 8-13, 2010.
44. “Molecular dynamics studies of dirty ice-vapor interfaces”, presented by Steven Neshyba with Martina Roeselova, Pavel Jungwirth, **Ryan Hulscher**, and **William Pfalzgraff** as co-authors, Telluride workshop “Electrification of Water Drops and Ice Particles: In the Laboratory, Through Simulations and in the Natural Environment” Telluride, Colorado, August 10-14, 2009.
43. “Ice-Vapor Interactions Via the Quasi-Liquid Layer Studied by Molecular Dynamics”, talk presented by Martina Roeselova with Steven Neshyba, **Erin Nugent**, and Pavel Jungwirth as co-authors, Environmental Colloids and Interfacial Processes symposium of the 13th IACIS International Conference on Surface and Colloid Science and the 83rd ACS Colloid & Surface Science Symposium, New York, June 14-19, 2009.
42. “Molecular Dynamics Study of Nonequilibrium Ice-vapor Interactions via the Quasiliquid Layer”, poster presented by Steven Neshyba with **E.K. Nugent**, M.

Roeselova, and P. Jungwirth as co-authors, AGU2008, San Francisco, USA, December 2008.

41. “How do cirrus ice crystals grow? Using Molecular Dynamics to study the ice-vapor interface”, Steven Neshyba, talk presented at the UPS Thompson Hall Science Seminar Series, October 2008.
40. “Molecular dynamics simulations of cirrus-like ice crystal growth and sublimation”, poster presented by **Erin Nugent** with Steven Neshyba and Pavel Jungwirth as co-authors, ICCP 2008, Cancun, Mexico, July 2008. Nugent was awarded 2nd place in the student competition for her presentation of this poster.
39. “How rough is cirrus ice?” Steven Neshyba, talk presented at the Institute of Organic Chemistry and Biochemistry Academy of Sciences of the Czech Republic, Prague, CR, March 9, 2007.
38. “Indented and hollow ice crystals: representation by collections of independent spheres”, poster presented by Stephen G. Warren with Steven Neshyba and Thomas C. Grenfell as co-authors, 12th AMS Conference on Cloud Physics, Madison, Wisconsin. July 10-14, 2006.
37. “Clustered and textured ice crystals: Equal V/A sphere representation and high-resolution imaging”, poster presented by Steven Neshyba with Thomas C. Grenfell and Stephen G. Warren as co-authors, 12th AMS Conference on Cloud Physics, Madison, Wisconsin. July 10-14, 2006.
36. “Low-Temperature Scanning Electron Microscopy of Ice Hexagons”, poster presented by **Tim Guasco** with Steven Neshyba, Brian Swanson, and Eric Erbe, AGU Joint Assembly, Baltimore, Maryland, May 23-26, 2006.
35. “Self-broadening of water vapor transitions via the corrected complex Robert-Bonamy theory”, talk presented by Gamache with Bobby Antony and Steven Neshyba as co-authors, 7th Atmospheric Spectroscopy Applications Meeting, Reims-France, Sept. 6-8, 2005.
34. “Representation of a concave nonspherical ice particle by an assembly of equal- V/A spheres for scattering and absorption of radiation”, talk presented by Neshyba with Thomas C. Grenfell and Stephen G. Warren as co-authors, International Radiation Symposium, Busan, S. Korea, August 2004.
33. “Remote sensing and fractal properties of Arctic clouds”, S. Neshyba, invited talk presented at the University of Washington, Department of Atmospheric Sciences, April 2003.
32. “Remote sensing and fractal properties of Arctic clouds”, S. Neshyba, invited talk presented at the Reed College Chemistry Department, February 2003.

31. “What we can learn about clouds from the photons they send down”, S. Neshyba, invited talk presented at the Daedalus Society, University of Puget Sound, December 2002.
30. “A bounded cascade model for cloud infrared emissivity”, talk presented by S.P Neshyba with C. Rathke as co-author, International Arctic Research Center - PI meeting, Boulder, October 2002.
29. “Distribution of Arctic Cloud Thickness”, poster presented by **A. Maxwell** with S.P Neshyba as co-author, UPS Fall Undergraduate Research Symposium, Tacoma, Sept. 12, 2002.
27. “Representation of a hexagonal ice crystal by a collection of independent spheres for scattering and absorption of radiation”, poster presented by Neshyba with T.C. Grenfell and S.G. Warren as co-authors, Conference of American Meterological Society, Ogden, June 2002.
26. “Investigation into a scaling model for Arctic stratus downwelling radiance”, talk presented by Steven Neshyba with Carsten Rathke as co-author, International Arctic Research Center - PI meeting, Boulder, October 2001.
25. “Infrared Remote sensing of clouds”, S. Neshyba, invited talk presented at the Institut für Weltraumwissenschaften, Berlin, May 2001.
24. “Fractal Statistics of Cloud Downwelling Radiance?” Neshyba, S.P, and **E. Catlin**, poster presented by Catlin at the Fall 2000 AGU, San Francisco.
23. “Remote sensing and radiation entropy”, S. Neshyba, invited talk presented at the University of Washington Chemistry Graduate Student Symposium, September 1999.
22. “Clouds, climate, and chemistry”, S. Neshyba, lecture given as part of the UPS Ideas as Work and Play freshman orientation series, August 1999.
21. “Radiative balance and the evolution of planetary atmospheres”, S. Neshyba, invited talk presented at Bellevue High School, Seattle, June 1999.
20. “Heuristics and writing in the sciences”, UPS Workshop on writing, June 1999.
19. “Cloud properties from downwelling infrared radiance”, S. Neshyba, poster presented at the University of Washington Physical Chemistry Symposium, Seattle, April 1999.
18. “Cloud properties from downwelling infrared radiance”, S. Neshyba, talk presented at the UPS Thompson Hall Science Seminar Series, April 1999.
17. “Cloud properties from downwelling infrared radiance,” poster presented by Neshyba with **Aaron Rivers** and **Alicia Piedalue** as co-authors, SHEBA Workshop, Tucson, AZ, Jan. 25-29, 1999.

16. “Scattering of electromagnetic radiation by arbitrary surfaces”, S. Neshyba, talk presented at the UPS Physics symposium, November 1998.
15. “Emissivity and effective particle size of Arctic clouds using a ship-based infrared radiometer,” talk presented by Neshyba with **Matt Shupe** and **Penny Rowe** as co-authors, Workshop on Arctic Change, Seattle, WA, Nov. 10-12, 1997.
14. “Probing the roughness of vapor-deposited water-ice films using grazing angle FTIR-Reflection Absorption Spectroscopy,” poster presented by Marin Robinson with Govind Mallick, Jennifer Spillman, Robert DeGroot, Steven Neshyba, and **George White** as co-authors, 214th American Chemical Society National Meeting, Las Vegas, NV, Sept. 7-11, 1997.
13. “Probing the roughness of vapor-deposited water-ice films using grazing angle FTIR-Reflection Absorption Spectroscopy,” poster presented by Marin Robinson with Govind Mallick, Jennifer Spillman, Robert DeGroot, Steven Neshyba, and **G. White** as co-authors, Workshop on Remote Sensing of Planetary Ices: Earth and other Solid Bodies, Flagstaff, AZ, June 11-13, 1997.
12. “Radiative balance and the evolution of planetary atmospheres”, S. Neshyba, invited lecture given to chemistry students at Bellevue High School, Seattle, January 1997.
11. “Characterization of sulfate aerosols in Arctic haze by infrared emission: a feasibility study”, talk presented by **P. Rowe** with S. Neshyba as co-author, International Radiation Symposium, University of Alaska Fairbanks, August 1996.
10. “Halfwidths and line shifts of H₂O from the fully complex Robert-Bonamy (FCRB) theory”, talk presented by R. Gamache with R. Lynch and S.P Neshyba as co-authors, ASA conference on high resolution spectroscopy, Rheims (France), June 1996.
9. “Pressure-broadening in Methane with applications to remote sensing”, S. Neshyba, invited talk at the College of St. Martins, Olympia WA, March 1996.
8. “Turing Structures in a Laboratory Reaction-Diffusion System”, S. Neshyba, invited talk presented at the Murdock Symposium for Undergraduate Research, Whitman College, November 1995.
7. “Pressure-induced widths and shifts for the nu₃ band of Methane”, talk presented by S.P Neshyba with R. Lynch and R. Gamache as co-authors, International Symposium on Molecular Spectroscopy, Ohio State University, June 1995.
6. “Waves in Air: A Physical Chemistry Experiment”, S. Neshyba, invited talk given at Shoreline High School, Seattle, May 1995.
5. “Spectroscopic Line Mixing in CH₄”, S. Neshyba. University of Puget Sound Chemistry Department, March 1994.

4. "Ozone: Friend or Foe: How ozone pollutes and protects", S. Neshyba, invited talk presented at the Oyster River High School Third Annual Conference on the Environment, Durham, NH, November 1993.
3. "Resonance functions for line-width and shift calculations", talk presented by Neshyba with R. Lynch and R. Gamache as co-authors, International Symposium on Molecular Spectroscopy, Ohio State University, June 1993.
2. Communication B30, talk presented by Gamache with S.P Neshyba and R. Lynch as co-authors, XIIIth colloquium on high resolution spectroscopy, Riccione, 1993.
1. Communication E2, talk presented by R. R. Gamache with S. Neshyba and L. Rosenmann as co-authors, XIIth international conference on high resolution infrared and MW spectroscopy, Prague, September 1992.

Published courses

2. *Perceiving Climate Change from Local Temperature Anomalies*, published August 2017. See <http://serc.carleton.edu/bioregion/examples/185525.html>.
1. *Science and Sustainability: A Freshman Seminar*, published June 2011. See <http://serc.carleton.edu/bioregion/courses/54447.html>.

See <https://serc.carleton.edu/person/12560.html> for my SERC author page

Unrefereed Publications

"How Not to Become Road Kill", S.P Neshyba, *Inside Higher Education* (July 19, 2013; see <http://www.insidehighered.com/views/2013/07/19/how-liberal-arts-can-avoid-becoming-road-kill-essay>).

"It's a Flipping Revolution", S.P Neshyba, *The Chronicle of Higher Education* (April 4, 2013; see chronicle.com/article/Its-a-Flipping-Revolution/138259/).

"Structural and Radiative Inhomogeneities of the Arctic Atmosphere", S.P Neshyba, *Final Report to the International Arctic Research Center* (2002).

"Ship-based Infrared remote sensing of the Arctic sky, July 1997", S.P Neshyba and **P. Rowe**. *Report to Canadian Coast Guard* (1997).

"Rotational Relaxation of Methane: Master Equation Approach", S. P Neshyba, *41st Annual Report on Research, ACS-PRF* (1996).

"Estimation of Minimum Detectable Concentrations of Gases Measured by Fourier Transform Infrared Spectroscopy", R. R. Gamache, S. P Neshyba, and D. Golomb, *Final Report 05-6852, University of Lowell Center for Atmospheric Research* (1994).

"The atom-atom potential in pressure-broadened line width calculations for XY₂AB: New expressions in the II_R, II_L, and I_R representations", R. Gamache and S. P Neshyba, *Scientific Report No. 1, Phillips Laboratory, Geophysics Directorate, United States Air Force, Hanscom AFB, Bedford, MA* (1993).

Film/Stage Credits

Occasional soloist in productions of the Puget Sound Christmas Revels (1994-2022)

Appeared in the role of *Black Phillip* in “A Night of Horror Themed Belly Dance”, at Temple Theatre, Tacoma, January, 2019.

Appeared in the role of *Professor* in “And Then”, a film by Nadav Heyman and Emerson Sample, first screened at the University of Puget Sound campus, April 27-28, 2012.

Radio Interviews/podcasts

Gerard Morris & Steven Neshyba – Two Holiday Performances, recorded by We Art Tacoma (2018). See <https://wearttacoma.com/gerard-morris-steven-neshyba-two-holiday-performances/>

The Science and Economics of Climate change, co-interview with Lea Fortmann, recorded at the University of Puget Sound (2017). See <https://soundcloud.com/pswhatwedo/the-science-and-economics-of-climate-change>.

Cambio Climático – Carbono Negro en Los Andes, co-interview with Gino Casassa, recorded at the US Embassy in Santiago, Chile (2016). See <https://soundcloud.com/santiagopress/carbononegro>.

Professional Affiliations AGU, AAAS, ACS

Languages English, Spanish