

## Education:

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**Doctor of Philosophy, Physical/Analytical Chemistry** May 2021  
*University of Utah*  
Dissertation: Bond Dissociation Energies of *d*- and *f*-Block Chalcogenides (Advisor: Dist. Prof. Michael D. Morse)

**Bachelor of Science, Chemistry (ACS-Certified), Minor: Physics** June 2015  
*Southern Oregon University, cum laude*

## Employment:

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**Brigham Young University**, Department of Chemistry and Biochemistry, Provo, UT (March 2023-Present)  
*Assistant Research Professor, Spectroscopic Facility Manager*

- Manage, maintain, troubleshoot, repair and train users on instruments such as: GC-MS, GC-FID, ICP-OES, ICP-MS, UV-Vis, FTIR, HPLC, CE, Raman spectrometers, Fluorescence spectrometers, and XPS.
- Teach undergraduate and graduate chemistry courses such as: general chemistry, instrumental analysis, instrumental analysis lab and physical chemistry lab.

**Old Dominion University**, Department of Chemistry and Biochemistry, Norfolk, VA (2021-2023)  
*Post-Doctoral Researcher for Professor and Eminent Scholar Peter Bernath*

- Performed high resolution FTS spectroscopy on small molecules at high and low temperatures
- In depth spectroscopic data analysis on high temperature molecules
- Trained graduate students on laboratory safety, proper instrumental use, and procedures

**University of Utah**, Department of Chemistry, Salt Lake City, UT (2016-2020)  
*Research Assistant*

- Performed experimental research that resulted in publications
- Supervised incoming graduate students: taught them instrumentation and safety
- Troubleshooting, maintaining and repairing complex, custom built, spectroscopic instrumentation and equipment
- Helped design and build a cryogenically cooled ion trapping, photodissociation mass spectrometer

*Teaching Assistant* (2015-2020)

- Quantum Chemistry (Supervised 2 discussion sections, 1 semester, ~ 150 students)
- Advanced Analytical Lab (Supervised lab section, 2 semester, ~ 20 students each)
- Advanced Physical Chemistry Lab (Supervised lab section, 2 semester, ~ 20 students each)
- General Chemistry Lecture (Assisted in 5 discussion sections, 1 semester, ~ 150 students)

**River Guide**, Marble Mountain Ranch, Somes Bar, CA (June-September, 2011-2014)

- Oversaw and led multi-boat river rafting trips down the middle Klamath river with guests
- Oversaw training and review of new river guides

**Wildland Firefighter**, Greyback Forestry Inc., White City, OR (May-September, 2010)

- Constructing fire line in difficult terrain and under harsh conditions
- Overseeing safety of fellow firefighters

## Publications:

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K. Tomchak, **J. J. Sorensen**, E. Tieu, M. D. Morse, *Predissociation-Based Measurements of Bond Dissociation Energies: US2, OUS and USe*. J. Chem. Phys. **161**, 044306, 2024.

D. M. Merriles, A. Knapp, Y. Barrera-Casas, A. Sevy, **J. J. Sorensen**, M. D. Morse, *Bond Dissociation Energies of Diatomic Transition Metal Nitrides*. J. Chem. Phys. **158**, 084308, 2023.

M. J. Lecours, P. F. Bernath, **J. J. Sorensen**, C. D. Boone, R. M. Johnson, K. LaBelle, *Atlas of ACE spectra of clouds and aerosols*. JQSRT, **292**, 108361, 2022.

**J. J. Sorensen**, P. F. Bernath, R. M. Johnson, R. Dodangodage, W. D. Cameron, and K. LaBelle, *Absorption cross sections of n-butane, n-pentane, cyclopentane and cyclohexane*. JQSRT, **290**, 108284, 2022.

**J. J. Sorensen**, P. F. Bernath, *Near-infrared and Visible Opacities of S-type Stars: The B<sup>1</sup>Π–X<sup>1</sup>Σ<sup>+</sup> Band System of ZrO*. ApJ, **923**, 2021.

- J. J. Sorensen**, E. Tieu, M. D. Morse, *Bond dissociation energies of lanthanide sulfides and selenides*. J. Chem. Phys. **154**, 124307 (2021).
- J. J. Sorensen**, E. Tieu, A. Sevy, D. M. Merriles, C. Nielson, J. C. Ewigleben, M. D. Morse, *Bond dissociation energies of transition metal oxides: CrO, MoO, RuO, and RhO*. J. Chem. Phys. **153**, 074303 (2020).
- J. J. Sorensen**, E. Tieu, M. D. Morse, *Spectroscopic Investigation of the Bond Dissociation Energies of the Late Transition Metal Sulfide Diatomics: RuS, OsS, CoS, RhS, IrS, and PtS*. J. Chem. Phys. **152**, 244305 (2020).
- J. J. Sorensen**, E. Tieu, C. Nielson, A. Sevy, and M. D. Morse, *Bond dissociation energies of diatomic transition metal sulfides: ScS, YS, TiS, ZrS, HfS, NbS, and TaS*. J. Chem. Phys. **152**, 194307 (2020).
- J. J. Sorensen**, E. Tieu, M. D. Morse, *Bond dissociation energies of diatomic transition metal selenides: ScSe, YSe, RuSe, OsSe, CoSe, RhSe, IrSe, and PtSe*. J. Chem. Phys. **152**, 124305 (2020).
- J. J. Sorensen**, T. D. Persinger, A. Sevy, J. A. Franchina, E. L. Johnson, and M. D. Morse, *Bond dissociation energies of diatomic transition metal selenides: TiSe, ZrSe, HfSe, VSe, NbSe, and TaSe*. J. Chem. Phys. **145**, 214308 (2016).
- A. Sevy, **J. J. Sorensen**, T. D. Persinger, J. A. Franchina, E. L. Johnson, and M. D. Morse, *Bond dissociation energies of TiSi, ZrSi, HfSi, VSi, NbSi, and TaSi*. J. Chem. Phys. **147**, 084301 (2017).

## Presentations:

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- M. Bhusal, P. F. Bernath, **J. J. Sorensen**, J. Lievin, The low lying singlet states of zirconium oxide. *Presented at the International Symposium on Molecular Spectroscopy*, June 2023.
- J. J. Sorensen**, P. F. Bernath, M. Lecours, C. D. Boone, R. M. Johnson, K. LaBelle, Atlas of ACE spectra of Clouds and Aerosols. *Presented at the International Symposium on Molecular Spectroscopy*, June 2022.
- J. J. Sorensen**, P. F. Bernath, M. Lecours, C. D. Boone, R. M. Johnson, K. LaBelle, Atlas of ACE spectra of Clouds and Aerosols. *Presented at Atmospheric Chemistry Experiment 45<sup>th</sup> Science Meeting*, May 2022.
- J. J. Sorensen**, Spectroscopy: Mapping the foundations of Chemistry. *Presented at Rogue Community College, Medford OR*, December 2021.
- J. J. Sorensen**, E. Tieu, M. D. Morse, Bond Dissociation Energies of Diatomic Lanthanide Sulfides and Selenides. *Presented at the International Symposium on Molecular Spectroscopy*, June 2021.
- J. J. Sorensen**, P. F. Bernath, High Temperature Fourier Transform Spectroscopy of the B <sup>1</sup>Π - X <sup>1</sup>Σ<sup>+</sup> Transition of ZrO. *Presented at the International Symposium on Molecular Spectroscopy*, June 2021.
- J. J. Sorensen**, Bond Dissociation Energies of Transition Metal Chalcogenides. *Presented at Austin College, Sherman TX*, October 2020.
- J. J. Sorensen**, Bond Dissociation Energies of Transition-Metal Species, the Future of Catalyst Chemistry, *Presented at Southern Oregon University, Ashland OR*, October 2019
- A. Sevy, **J. J. Sorensen**, E. L. Johnson, D. J. Mathew and M. D. Morse. Predissociation measurements of bond dissociation energies. *Presented at the International Conference of Chemical Bonding*, July 2018.

## Service:

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Mission for The Church of Jesus Christ of Latter-Day Saints, Taiwan Taipei Mission, Mandarin Speaking, 2008-2010

## Awards:

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2021 Curie Graduate Research Award

## Trainings:

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Radiation Worker Training, University of Utah 2019 and again at Old Dominion University 2021

- Training for the safe use of class 3b and 4 lasers
- Training for proper handling of radioactive materials in research settings

Machine shop class, University of Utah, Department of Chemistry, 2016.

- For unsupervised access to departments lathes, milling machines and other heavy machinery

Ham Radio Technicians license: KJ7HBB