

Max Verkamp

Objective

A tenure-track professor position at a primarily undergraduate institution.

Education

- University of Illinois at Urbana-Champaign**, Urbana, IL 2013 - 2019
- Doctorate of Philosophy: Chemical Physics
- Rose-Hulman Institute of Technology**, Terre Haute, IN 2009 - 2013
- Bachelor of Science: Physics and Chemistry, Summa Cum Laude
 - Minors in Mathematics and German

Research Experience

- University of Texas at Austin**, Austin, TX 2019 – Current
- Advisor: Prof. Sean Roberts
 - Designing and building a transient absorption microscope
 - Investigating singlet fission in PDI derivatives and charge injection into silicon
- University of Illinois at Urbana-Champaign**, Urbana, IL 2013 - 2019
- Advisor: Prof. Josh Vura-Weis
 - Designed, built, and maintained an ultrafast extreme ultraviolet absorption system, including a high-power titanium sapphire amplifier and ultra-high vacuum chambers
 - Investigated the femtosecond dynamics of excited carriers in PbI_2 and $\text{CH}_3\text{NH}_3\text{PbI}_3$ semiconductor materials
 - Designed and implemented LabVIEW controlled interlock systems
 - Supervised a UIUC undergraduate student as they did research
- Rose-Hulman Institute of Technology**, Terre Haute, IN 2012 - 2013
- Advisors: Prof. Daniel Morris and Prof. Maarij Syed
 - Used a homebuilt Faraday Rotation instrument to investigate concentration dependent speciation of aqueous solutions of ferric chloride and nitrate salts
 - Used Raman spectroscopy as a complementary technique
- NASA Langley Research Center**, Hampton, VA Summer 2012
- Advisors: Dr. Chris Wohl and Dr. Paul Danehy
 - Investigated doping polystyrene microspheres with fluorescent dyes to add temperature sensitivity to laser Doppler velocimetry methods
 - Identified candidate dyes for inclusion by looking at toxicity, fluorescent properties, and ability to be incorporated in a polystyrene microsphere
 - Synthesized batches of fluorescent particles and characterized them using fluorimetry and optical microscopy

Publications

- **Verkamp, M. A.**; Leveillee, J.; Sharma, A.; Schleife, A.; Vura-Weis, J. Bottleneck-Free Hot Hole Cooling in $\text{CH}_3\text{NH}_3\text{PbI}_3$ Revealed by Femtosecond XUV Absorption. Submitted.
- Kubas, A.; **Verkamp, M. A.**; Vura-Weis, J.; Neese, F.; Maganas, D. A Restricted Open Configuration Interaction Singles Study on M- and L-edge X-ray Absorption Spectroscopy of Solid Chemical Systems. *J. Chem. Theory Comput.* **14**, 4320-4334 (2018)
- Ryland, E.S.; Lin, M.-F.; **Verkamp, M.A.**; Zhang, K.; Benke, K.; Carlson, M.; Vura-Weis, J. Tabletop Femtosecond M-edge XANES of FeTPPCL: Metalloporphyrin Photophysics from the Perspective of the Metal. *J. Am. Chem. Soc.* **140**, 4691-4696 (2018)
- Lin, M.-F.*; **Verkamp, M.A.***; Leveillee, J.; Ryland, E.S.; Benke, K.; Zhang, K.; Weninger, C.; Shen, X.; Li, R.; Fritz, D.; Bergmann, U.; Wang, X.; Schleife, A.; Vura-Weis, J. Carrier-Specific Femtosecond XUV Transient Absorption of PbI_2 Reveals Ultrafast Nonradiative Recombination. *J. Phys. Chem. C* **121**, 27886-27839 (2017)
* equal contribution
- Lin, M.-F.; **Verkamp, M.A.**; Ryland, E.S.; Zhang, K.; Vura-Weis, J. Impact of spatial chirp on high harmonic extreme ultraviolet absorption spectroscopy of thin films. *J. Opt. Sci. Am. B.* **33**, 1986-1992 (2016)
- Zhang, K.; Lin, M.-F.; Ryland, E.S.; **Verkamp, M.A.**; Benke, K.; Girolami, G.S.; de Groot, F.M.F.; Vura-Weis, J. Shrinking the synchrotron: tabletop x-ray absorption of transition metal complexes. *J. Phys. Chem. Lett.* **7**, 3383-3387 (2016)
- Lowe, K.T., Maisto, P., Byun, G., Simpson, R.L., **Verkamp, M.**, Danehy, P.M., Tiemsin, P.I., and Wohl, C.J. Fluorescent dye-doped polystyrene microspheres for flow velocimetry. *Optics Letters.* **38**, 1197-1199 (2013)

Presentations

- “Rapid hole cooling and slow electron cooling in methylammonium lead iodide perovskite,” *International Symposium on Molecular Spectroscopy*, Urbana, IL, June 17-21, 2019
- “Hot-hole cooling in $\text{CH}_3\text{NH}_3\text{PbI}_3$ perovskite probed via transient XUV spectroscopy,” *ACS National Meeting*, Boston, MA, August 19-23, 2018
- “Ultrafast extreme ultraviolet spectroscopy of methylammonium lead iodide perovskite for carrier specific photophysics,” *International Symposium on Molecular Spectroscopy*, Urbana, IL, June 19-23, 2017
- “Ultrafast extreme ultraviolet spectroscopy of PbI_2 and $\text{CH}_3\text{NH}_3\text{PbI}_3$,” *APS National Meeting*, Baltimore, MD, March 14-18, 2016
- “Ultrafast extreme ultraviolet spectroscopy of methylammonium lead iodide perovskite,” *International Symposium on Molecular Spectroscopy*, Urbana, IL, June 20-24, 2016
- “Fluorescent dye-doped polystyrene microspheres for particle image velocimetry,” *ACS National Meeting*, Indianapolis, IN, September 8-12, 2013

Skills

- **Computational:** Python; LabVIEW; Maple, Mathematica, and MATLAB mathematics software; Gaussian, Orca, and Spartan quantum chemistry packages; OriginPro and Glotaran data analysis; SolidWorks CAD software; D2L Brightspace
- **Laboratory:** general chemistry laboratory and safety practices; visible and IR laser alignment; ultrafast laser maintenance; high vacuum set-up and maintenance; recirculating chiller maintenance; machine shop training; basic wiring and circuitry design

Teaching Experience

Eastern Illinois University, Charleston, IL 2018 - 2019

- Adjunct professor for General and Physical Chemistry
- Developed a Freshman Chemistry course following a general syllabus to synchronize with a Laboratory course
- Developed a Quantum Chemistry course
- Instructed and graded for a Physical Chemistry Laboratory course
- Held office hours and used online software (D2L Brightspace) to interact with students outside of class time

University of Illinois at Urbana-Champaign, Urbana, IL Fall 2016

- TA for Quantum Mechanics
- Assisted students as they did problems in an inverted classroom
- Held 1 office hour each week
- Held additional study sessions/lectures before tests
- Graded homework for 100 students once a week and graded tests

Rose-Hulman Learning Center, Terre Haute, IN 2010 - 2013

- Peer tutor for chemistry, physics, and math courses
- Held 4 office hours each week
- Prepared final exam preparation packets for students
- Held additional study sessions/lectures before final exams

Rose-Hulman Fast Track Calculus Program, Terre Haute, IN Summer 2010

- On-site counselor and TA for an intense summer calculus program
- Assisted students as they did problems in an inverted classroom
- Was available for questions ~24 hours a day
- Held additional study sessions/lectures before tests
- Graded homework for 50 students daily and graded tests and major projects weekly

Awards

- UIUC Springborn Fellow
- 2013 Rose-Hulman William Albert Noyes Award (Outstanding Chemistry award)
- 2013 Rose-Hulman John W. Rhee Award (Outstanding Physics award)
- Lilly Endowment Scholar
- Eagle Scout