Dr. Vít Svoboda

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ResearcherID: F-3197-2018, h-index 9 (accessed August 2023)
Scopus Author ID: 57192887611, h-index 9 (accessed August 2023)
Google Scholar https://shorturl.at/cfnFJ, h-index 10 (accessed August 2023)
Author or more than 20 publications in high-impact journals, such as Science (1), Nature Chemistry (1), Science Advances (2), Proceedings of the National Academy of Sciences (1), Physical Review Letters (1), The Journal of Physical Chemistry Letters (2), and Physical Chemistry Chemical Physics (3)

Contact details

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Personal data

Date of birth: November 19th 1990
Place of birth: Klatovy, Czech Republic
Nationality: Czech
Marital status: Single

Languages

Czech (native)
English (fluent)
German (basic)

Appointments

05/01/2022 – present	Postdoctoral researcher, JILA, Boulder, CO, USA
03/01/2022 – 04/30/2022	Visiting scientist, Max-Born Institute, Berlin, Germany
08/01/2019 – 04/30/2022	Postdoctoral researcher, ETH Zurich, Switzerland
09/01/2015 – 07/31/2019	Research assistant, ETH Zurich, Switzerland
08/01/2010 – 08/31/2015	Research assistant, JH Institute of Physical Chemistry, Czech Republic
01/01/2007 – 07/31/2010	Student fellowship, JH Institute of Physical Chemistry, Czech Republic

Education

11/01/2015 – 07/16/2019
Doctoral degree in Physical Chemistry, Laboratory of Physical Chemistry, Department of Chemistry and Applied Biosciences, ETH Zurich, Switzerland
Thesis: Time-Resolved Photoelectron Imaging with a VUV Low-Order-Harmonic Source: From Femtochemistry to Femtochirality
Supervisor: Prof. Dr. Hans Jakob Wörner

09/01/2013 – 06/02/2015
Master degree in Physical Chemistry, Faculty of Chemical Engineering, University of Chemistry and Technology, Prague, Czech Republic
Graduation *summa cum laude*
Thesis: High Resolution Overtone Spectroscopy of Atmospherically Relevant Molecules
Supervisor: Dr. Ondřej Votava

09/01/2010 – 06/26/2013
Bachelor degree in Chemistry, Faculty of Chemical Engineering, Institute of Chemical Technology, Prague, Czech Republic
Graduation *summa cum laude*
Thesis: Study of Vibrational Overtone Spectra of N-H Bonds of Selected Molecules in Supersonic Expansion
Supervisor: Dr. Ondřej Votava
Consultant: Prof. Petr Slavíček, Ph.D.

Honors and Awards

02/13/2023 Seal of Excellence, Marie Skłodowska-Curie Actions 2023
06/26/2022 Invited to 71st Lindau Nobel Laureate Meeting, Lindau, Germany
08/02/2019 Best Poster Prize Award, FEMTO14, Shanghai, China
06/27/2019 Best Poster Prize Award, CD2019, Pisa, Italy
09/07/2018 Award for the Best Oral Presentation, SCS Fall Meeting, Lausanne, Switzerland
04/01/2018 Chemistry Travel Award sponsored by Swiss Chemical Society, Bern, Switzerland
02/04/2016 Werner von Siemens Prize for the best master thesis in the Czech Republic
06/02/2015 The Rector's Prize for excellent studying results (grade average of 1.00), UCT Prague
05/06/2015 A-grade at Seminar of Students 2015, JH Institute of Physical Chemistry
11/21/2014 1st place in Physical Chemistry section at Student's Scientific Conference, UCT Prague
04/30/2014 A-grade at Seminar of Students 2014, JH Institute of Physical Chemistry
11/22/2013 1st place in Physical Chemistry section at Student's Scientific Conference, UCT Prague
06/26/2013 The Dean's Prize for excellent studying result, UCT Prague
04/26/2013 A-grade at Seminar of Students 2013, JH Institute of Physical Chemistry
11/23/2012 2nd place in Theor. Phys. Chem. section at Student's Scientific Conference, UCT Prague
05/24/2010 Grammar School Student Award, The Learned Society of the Czech Republic

Grants

1. Ultrafast camera for photoelectron imaging, OP JAK – PhDInfra, Ministry of Education, Youth, and Sport, Czech Republic, duration 09/01/2023 – 12/31/2026, $172,000
2. Innovative Ultrafast Laser System for Scanning Photoionization Imaging Microscopy, Defense University Research Instrumentation Program (DURIP), The Department of Defense (DoD), USA, duration 09/01/2023 – 12/31/2024, $311,000
3. Chemistry Travel Award, Swiss Chemical Society, Switzerland, duration 04/01/2018 – 12/31/2018, $1200

Teaching

09/14/2015 – 04/26/2021	Teaching Assistant, ETH Zurich, Switzerland

Professional Experience

02/01/2018 – 06/30/2021	Supervisor of students' theses, ETH Zurich, Switzerland (1 doctoral student, 2 master students, 3 semester students)
2019	Co-author of a university textbook for master students
11/01/2013 – 06/30/2015	Supervisor of students' research projects, JH Institute of Physical Chemistry, Czech Republic (3 high school students)

Public outreach

02/07/2023 – now	A member of the project "Zeptej se vědce" (Ask a Scientist)
03/11/2023	CU Wizards show – science experiments for public, Boulder, CO, USA
07/23/2022	STEM stall at North Park Days 2022, Walden, CO, USA

Publications

1. **Svoboda V.**, Baykusheva D., and Wörner H. J., Ab initio electron-molecule scattering calculations of photoelectron circular dichroism, *in preparation*
2. Fiechter M.*, **Svoboda V.***, and Wörner H. J., Theoretical study of time-resolved PECD of 1-iodo-2methylbutane, *submitted to Structural Dynamics,* (* these authors contributed equally)
3. Mondal A.*, Neufeld O.*, Yin Z.*, Nourbakhsh Z.*, **Svoboda V.***, Rubio A., Tancogne-Dejean N., and Wörner H. J., Probing the low-energy electron-scattering dynamics in liquids with high-harmonic spectroscopy, *accepted in Nature Physics,* (* these authors contributed equally)
4. P. Zhang, V.-H. Hoang, C. Wang, T. T. Luu, **V. Svoboda**, A.-T. Le, and H. J. Wörner, "Effects of Autoionizing Resonances on Wave-Packet Dynamics Studied by Time-Resolved Photoelectron Spectroscopy," PRL **130**, 153201 (2023). IF(WoS): 9.185, doi: 10.1103/PhysRevLett.130.153201
5. M. D. Waters, N. Ladda, A. Senftleben, **V. Svoboda**, M. Belozertsev, T. Baumert, and H. J. Wörner, "Ground-State Photoelectron Circular Dichroism of Methyl p-Tolyl Sulfoxide by Single-Photon Ionisation from a Table-Top Source," ChemPhysChem **23**, e202200575 (2022). IF(WoS): 3.52, 2022, doi: 10.1002/cphc.202200575
6. C. Wang, M. D. Waters, P. Zhang, J. Suchan, **V. Svoboda**, T. T. Luu, C. Perry, Z. Yin, P. Slavíček, and H. J. Wörner, "Different timescales during ultrafast stilbene isomerization in the gas and liquid phases revealed using time-resolved photoelectron spectroscopy," Nat. Chem. **14**, 1126–1132 (2022). IF(WoS): 24.274, doi: 10.1038/s41557-022-01012-0
7. **V. Svoboda**, M. D. Waters, D. Zindel, and H. J. Wörner, "Generation and complete polarimetry of ultrashort circularly polarized extreme-ultraviolet pulses," Optics Express **30**, 14358–14367 (2022). IF(WoS): 3.833, doi: 10.1364/OE.449411
8. **V. Svoboda**, J. Rakovský, and O. Votava, "High-resolution spectra of 2νOH overtone of trans-formic acid in the supersonic jet," JQSRT **292**, 108319 (2022). IF(WoS): 2.342, doi: 10.1016/j.jqsrt.2022.108319
9. **V. Svoboda**, R. N. Bhargava, B. Denitsa, Z. Daniel, W. M. D. J., S. Benjamin, O. Manuel, H. Holger, S. Jürgen, and W. H. Jakob, "Femtosecond photoelectron circular dichroism of chemical reactions," Science Advances **8**, eabq2811 (2022). IF(WoS): 14.957, doi: 10.1126/sciadv.abq2811

10. **V. Svoboda**, Z. Yin, T. T. Luu, and H. J. Wörner, "Polarization measurements of deep-to extreme-ultraviolet high harmonics generated in liquid flat sheets," Optics Express **29**, 30799–30808 (2021). IF(WoS): 3.833, doi: 10.1364/OE.433849
11. J. Rakovský, **V. Svoboda**, V. Horká-Zelenková, and O. Votava, "Pattern recognition as a new strategy in high-resolution spectroscopy: application to methanol OH-stretch overtones," PCCP **23**, 20193–20200 (2021). IF(WoS): 3.945, doi: 10.1039/D1CP02639A
12. **V. Svoboda**, R. Michiels, A. C. LaForge, F. Stienkemeier, P. Slavíček, and H. J. Wörner, "Real-time observation of water radiolysis and hydrated electron formation induced by extreme-ultraviolet pulses," Science Advances **6**, eaaz0385 (2020). IF(WoS): 14.957, doi: 10.1126/sciadv.aaz0385
13. A. D. Smith, T. Balčiūnas, Y.-P. Chang, C. Schmidt, K. Zinchenko, F. B. Nunes, E. Rossi, **V. Svoboda**, Z. Yin, J.-P. Wolf, and H. J. Wörner, "Femtosecond soft-x-ray absorption spectroscopy of liquids with a water-window high-harmonic source," J. Phys. Chem. Lett. **11**, 1981–1988 (2020). IF(WoS): 6.888, doi: 10.1021/acs.jpclett.9b03559
14. R. Michiels, A. C. LaForge, M. Bohlen, C. Callegari, A. Clark, A. von Conta, M. Coreno, M. Di Fraia, M. Drabbels, P. Finetti, M. Huppert, V. Oliver, O. Plekan, K. C. Prince, S. Stranges, **V. Svoboda**, H. J. Wörner, and F. Stienkemeier, "Time-resolved formation of excited atomic and molecular states in XUV-induced nanoplasmas in ammonia clusters," PCCP **22**, 7828–7834 (2020). IF(WoS): 3.945, doi: 10.1039/D0CP00669F
15. M. McDonnell, A. C. LaForge, J. Reino-Gonzalez, M. Disla, N. G. Kling, D. Mishra, R. Obaid, M. Sundberg, **V. Svoboda**, S. Díaz-Tendero, F. Martín, and N. Berrah, "Ultrafast laser-induced isomerization dynamics in acetonitrile," J. Phys. Chem. Lett. **11**, 6724–6729 (2020). IF(WoS): 6.888, doi: 10.1021/acs.jpclett.0c01344
16. **V. Svoboda**, C. Wang, M. D. Waters, and H. J. Wörner, "Electronic and vibrational relaxation dynamics of NH3 Rydberg states probed by vacuum-ultraviolet time-resolved photoelectron imaging," JCP **151**, 104306 (2019). IF(WoS): 4.304, doi: 10.1063/1.5116707
17. **V. Svoboda**, J. Rakovský, and O. Votava, "New insight on ammonia 1.5 μm overtone spectra from two-temperature analysis in supersonic jet," JQSRT **227**, 201–210 (2019). IF(WoS): 2.342, doi: 10.1016/j.jqsrt.2019.01.030
18. A. C. LaForge, R. Michiels, M. Bohlen, C. Callegari, A. Clark, A. von Conta, M. Coreno, M. Di Fraia, M. Drabbels, M. Huppert, P. Finetti, J. Ma, M. Mudrich, V. Oliver, O. Plekan, K. C. Prince, M. Shcherbinin, S. Stranges, **V. Svoboda**, H. J. Wörner, and F. Stienkemeier, "Real-time dynamics of the formation of hydrated electrons upon irradiation of water clusters with extreme ultraviolet light," PRL **122**, 133001 (2019). IF(WoS): 9.185, doi: 10.1103/PhysRevLett.122.133001
19. D. Baykusheva, D. Zindel, **V. Svoboda**, E. Bommeli, M. Ochsner, A. Tehlar, and H. J. Wörner, "Real-time probing of chirality during a chemical reaction," PNAS **116**, 23923–23929 (2019). IF(WoS): 12.779, doi: 10.1073/pnas.1907189116
20. **V. Svoboda**, N. B. Ram, R. Rajeev, and H. J. Wörner, "Time-resolved photoelectron imaging with a femtosecond vacuum-ultraviolet light source: Dynamics in the A/B-and F-bands of SO2," JCP **146**, 084301 (2017). IF(WoS): 4.304, doi: 10.1063/1.4976552
21. Y. Pertot, C. Schmidt, M. Matthews, A. Chauvet, M. Huppert, **V. Svoboda**, A. Von Conta, A. Tehlar, D. Baykusheva, J.-P. Wolf, and H. J. Wörner, "Time-resolved x-ray absorption spectroscopy with a water window high-harmonic source," Science **355**, 264–267 (2017). IF(WoS): 63.714, doi: 10.1126/science.aah6114

22. **V. Svoboda**, V. Horká-Zelenková, J. Rakovský, P. Pracna, and O. Votava, "OH-stretch overtone of methanol: empirical assignment using a two-temperature technique in a supersonic jet," PCCP **17**, 15710–15717 (2015). IF(WoS): 3.945, doi: 10.1039/C5CP00425J

Other publications

1. Jia D., Manz J., Schild A., **Svoboda V.**, and Yang Y., Chapter 5: From Nuclear Fluxes During Tunnelling to Electronic Fluxes During Charge Migration, book: Tunnelling in Molecules: Nuclear Quantum Effects from Bio to Physical Chemistry, 2020
2. **Svoboda V.**, Time-Resolved Photoelectron Imaging with a VUV Low-Order-Harmonic Source: From Femtochemistry to Femtochirality, PhD Thesis, 2019
3. Slavíček P., Muchová E., **Svoboda V.**, Hollas D., Svoboda O., Quantum chemistry: First reading (in Czech), 2019, university textbook for master students
4. **Svoboda V.**, Relativity and chemistry (in Czech), 2015, lecture material for high school students
5. **Svoboda V.**, Periodic law a.k.a why we like the periodic table, Čs. čas. fyz., 2014 (in Czech)

Invited talks

1. Ultrafast time-resolved probes of chirality at University of Ottawa (Ottawa, Canada), 06/13/2023
2. Ultrafast time-resolved probes of chirality at Institute of Organic Chemistry and Biochemistry (Prague, Czech Republic), 01/09/2023
3. High harmonic spectroscopy in the liquid phase at J. Heyrovsky Institute of Physical Chemistry (Prague, Czech Republic), 09/22/2022
4. Ultrafast time-resolved probes of chirality during photochemical reactions at CISS Online Seminars (Uppsala, Sweden), 09/14/2022
5. Ultrafast time-resolved probes of chirality during photochemical reactions at University of South Bohemia (Ceske Budejovice, Czech Republic), 09/13/2022
6. Ultrafast time-resolved probes of chirality during photochemical reactions at European Symposium on Analytical Spectrometry (Brno, Czech Republic), 09/06/2022
7. Ultrafast time-resolved probes of chirality during photochemical reactions at Faculty of Mathematics and Physics, Charles University (Prague, Czech Republic), 04/12/2022
8. Ultrafast time-resolved probes of chirality during photochemical reactions at Institute of Organic Chemistry and Biochemistry (Prague, Czech Republic), 04/11/2022
9. Ultrafast time-resolved probes of chirality during photochemical reactions at JILA (Boulder, CO, USA), 03/17/2022
10. Real-time observation of water radiolysis and hydrated electron formation at JILA (Boulder, CO, USA), 09/30/2021
11. Time-resolved studies with electrons: water radiolysis and PECD at Max Born Institute (Berlin, Germany), 09/28/2021
12. Photons, electrons, and calculation madness at CALTECH (Pasadena, CA, USA), 07/13/2021
13. Time-resolved spectroscopy in clusters and liquid jets at Institute of Organic Chemistry and Biochemistry (Prague, Czech Republic), 07/22/2020
14. Ultrafast time-resolved probes of chirality during photochemical reactions at NCCR MUST (Bern, Switzerland), 05/21/2020

15. Real-time observation of water radiolysis and hydrated electron formation induced by extreme-ultraviolet pulses at Gordon Research Conference on Molecular and Ionic Clusters (Ventura, CA, USA), 01/28/2020
16. Down to atto-world to observe motion in the frozen molecular frame at University of Chemical and Technology, Prague (Prague, Czech Republic), 09/02/2019
17. Time-Resolved Photoelectron Imaging with a VUV Low-Order Harmonic Source: Probing Time-Dependent Molecular Chirality at J. Heyrovsky Institute of Physical Chemistry (Prague, Czech Republic), 01/23/2019
18. Time-Resolved Photoelectron Imaging with a VUV Low-Order Harmonic Source: Probing Time-Dependent Molecular Chirality at LPC Colloquium, ETH Zurich (Zurich, Switzerland), 11/13/2018
19. Time-Resolving Molecular Chirality in the Gas Phase at SCS Fall Meeting, EPFL (Lausanne, Switzerland), 09/07/2018
20. Time-Resolved Molecular Chirality in the Gas Phase at University of Chemical and Technology, Prague (Prague, Czech Republic), 08/22/2018
21. Femtosecond Dynamics in Water Clusters: The Birth and Decay of Solvated Electron Studied with HHG at University of Freiburg (Freiburg, Germany), 06/13/2018
22. Time-Resolved Molecular Chirality in the Gas Phase at J. Heyrovsky Institute of Physical Chemistry (Prague, Czech Republic), 01/08/2018
23. High resolution overtone spectroscopy of atmospherically relevant molecules at Seminar of Students, J. Heyrovsky Institute of Physical Chemistry (Prague, Czech Republic), 05/05/2015
24. How to reveal complicated methanol overtone spectra? in the group of Prof. Wörner, ETH Zurich (Zurich, Switzerland), 11/18/2014
25. Two-temperature analysis: a valuable tool to untangle complex overtone spectra at Seminar of Students, J. Heyrovsky Institute of Physical Chemistry (Prague, Czech Republic), 04/28/2014
26. Overtone spectroscopy in supersonic expansions at Seminar of Students, J. Heyrovsky Institute of Physical Chemistry (Prague, Czech Republic), 04/24/2013

Seminars and summer schools

1. 07/23/2023 – 07/26/2023 IMPRS Summer School (Prague, Czech Republic), lecturer
2. 06/15/2020 – 06/22/2020 UXSS: Ultrafast X-Ray Summer School (Stanford, CA, USA), participant
3. 02/17/2020 – 02/20/2020 Virtual Winter School on Computational Chemistry 2020, participant
4. 02/05/2019 – 02/07/2019 Virtual Winter School on Computational Chemistry 2019, participant
5. 01/31/2018 – 02/02/2018 Virtual Winter School on Computational Chemistry 2018, participant
6. 03/06/2017 – 03/10/2017 MOLIM Training School (Paris-Saclay, France), participant
7. 05/04/2015 – 05/06/2015 Seminar of Students 2015, JH Institute of Physical Chemistry (Liblice, Czech Republic), participant
8. 04/28/2014 – 04/30/2014 Seminar of Students 2014, JH Institute of Physical Chemistry (Liblice, Czech Republic), participant
9. 04/24/2013 – 05/26/2013 Seminar of Students 2013, JH Institute of Physical Chemistry (Liblice, Czech Republic), participant