



Jun.-Prof. Hélène Seiler, Ph.D.

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Birthday : 23.04.1988

Citizenship : Swiss, born in Lausanne

Civil status: married, one daughter (12.2020)

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Google scholar: Hélène Seiler

Languages: French (native), English (IELTS 8.5),
German (C1), Chinese (HSK3), Spanish (basic)

Education

Ph.D. in Chemistry (CGPA 3.9/4.0) McGill University, Canada	01.2013 – 02.2018
M.Sc. in Environmental Policy (with Distinction, in top 5 students) London School of Economics, United Kingdom	09.2011 – 11.2012
M.Sc. in Physics (5.65/6.00, ranked 3rd of graduating year) Swiss Institute of Technology Lausanne (EPFL), Switzerland	09.2009 – 01.2011
B.Sc. in Physics (5.00/6.00, cum laude) Swiss Institute of Technology Lausanne (EPFL), Switzerland Third year spent at Imperial College London, United Kingdom	09.2006 – 07.2009

Academic research positions

Tenure-track assistant Professor (W1) Freie Universität Berlin, Germany	Since 10.2022
<ul style="list-style-type: none">Head of the Ultrafast Dynamics in Nanomaterials Group	
Postdoctoral fellow, Ernstorfer Lab Fritz Haber Institute of the Max Planck Society, Germany	04.2018 – 09.2022
<ul style="list-style-type: none">Performed Femtosecond Electron Diffraction experiments on 2D materials and organic/inorganic heterostructuresMaternity leave from 12.2020-06.2021	
Ph.D. student, Kambhampati Lab McGill University, Canada	01.2013 – 02.2018
<ul style="list-style-type: none">Developed new methods in 2D spectroscopy at optical frequencies and applied them to colloidal nanocrystals	
M.Sc. Student, European Institute for Energy Research Karlsruhe Institute of Technology, Germany	09.2010 - 02.2011
<ul style="list-style-type: none">Performed modelling of degradation processes in fuel cells	
B.Sc. Student, Schultz Lab Imperial College London, United Kingdom	09.2008 – 05.2009
<ul style="list-style-type: none">Implemented a maximum entropy algorithm for neural decoding	

Other work experience

Optical Scientist 08.2017 – 02.2018

Airy 3D Inc., Canada

- Designed transmission diffractive optical elements for single-sensor 3D applications
- Helped raise US\$10M in Series A funding round led by Intel Capital

Diplomatic Intern, Swiss Embassy to China 03.2011 – 09.2011

Beijing, China

- Organized diplomatic meetings and Embassy events, including visits of 2 Federal Ministers
- Wrote the official 2011 Embassy reports on air, water and the environment in China

Publications

23 publications (8 as first author, 2 of which generated media coverage), see my google scholar or ORCID profile for more details.

1. Y. Qi*, N. Chen, T. Vasileiadis, D. Zahn, **H. Seiler**, X. Li, and R. Ernstorfer*: Photoinduced Ultrafast Transition of the Local Correlated Structure in Chalcogenide Phase-Change Materials. *Physical Review Letters* 129 (13), 135701 (2022).
2. Y. Qi*, M. Guan, D. Zahn, T. Vasileiadis, **H. Seiler**, Y. W. Windsor, H. Zhao, S. Meng, and R. Ernstorfer*: Traversing Double-Well Potential Energy Surfaces: Photoinduced Concurrent Intralayer and Interlayer Structural Transitions in XTe₂ (X= Mo, W). *ACS Nano* 16, 11124–11135 (2022).
3. D. Zahn*, F. Jakobs, **H. Seiler**, T. A. Butcher, D. Engel, J. Vorberger, U. Atxitia, Y. W. Windsor, and R. Ernstorfer*: Intrinsic energy flow in laser-excited ferromagnets. *Physical Review Research* 4 (1), 013104 (2022).
4. D. Zahn*, **H. Seiler**, Y. W. Windsor, and R. Ernstorfer*: Ultrafast lattice dynamics and electron-phonon coupling in platinum extracted with a global fitting approach for time-resolved polycrystalline diffraction data. *Structural Dynamics* 8 (6), 064301 (2021). **Editor's pick.**
5. M. Zacharias*, **H. Seiler**, F. Caruso, D. Zahn, F. Giustino, P. C. Kelires, and R. Ernstorfer*: Efficient first-principles methodology for the calculation of the all-phonon inelastic scattering in solids. *Phys. Rev. Lett.* 127 (20), 207401 (2021). **Editor's suggestion.**
6. M. Zacharias*, **H. Seiler**, F. Caruso, D. Zahn, F. Giustino, P. C. Kelires, and R. Ernstorfer*: Multiphonon diffuse scattering in solids from first principles: Application to layered crystals and two-dimensional materials. *Phys. Rev. B* 104 (20), 205109 (2021).
7. **H. Seiler***, D. Zahn, M. Zacharias, P. Hildebrandt, T. Vasileiadis, Y. W. Windsor, Y. Qi, C. Carbogno, C. Draxl, R. Ernstorfer, and F. Caruso*: Accessing the anisotropic non-thermal phonon populations in black phosphorus. *Nano Letters* 21 (14), 6171 (2021).
8. **H. Seiler***, M. Krynski, D. Zahn, Y. W. Windsor, T. Vasileiadis, S. Hammer*, J. Pflaum, M. Rossi*, R. Ernstorfer, and H. Schwoerer*: Nuclear dynamics of singlet exciton fission in pen-tacene single crystals. *Science Advances* 7 (6), eabg0869 (2021).
9. D. Zahn*, F. Jakobs, Y. W. Windsor, **H. Seiler**, T. Vasileiadis, T. A. Butcher, Y. Qi, D. Engel, U. Atxitia, J. Vorberger, and R. Ernstorfer*, Lattice dynamics and ultrafast energy flow between electrons, spins, and phonons in a 3d ferromagnet, *Physical Review Research* 3 (2), 023032 (2021).

10. Y. W. Windsor*, D. Zahn, R. Kamrta, J. Feldl, **H. Seiler**, C.-T. Chiang, M. Ramsteiner, W. Widdra, R. Ernstorfer, and L. Rettig*, Exchange-striction driven ultrafast nonthermal lattice dynamics in NiO, *Physical Review Letters* 126 (14), 147202 (2021).
11. P. Brosseau, S. Palato, **H. Seiler**, H. Baker, and P. Kambhampati*, Fifth-order two-quantum absorptive two-dimensional electronic spectroscopy of CdSe quantum dots, *Journal of Chemical Physics* 153(23), 234703 (2020).
12. S. Palato, **H. Seiler**, H. Baker, C. Sonnichsen, R. Zifkin, J. McGowan, and P. Kambhampati*: An analysis of hollow-core fiber for applications in coherent femtosecond spectroscopies, *Journal of Applied Physics* 128 (10), 103107 (2020).
13. D. Zahn*, P.N. Hildebrandt, T. Vasileiadis, Y.W. Windsor, **H. Seiler**, and R. Ernstorfer*: Anisotropic non-equilibrium lattice dynamics of black phosphorus, *Nano Letters* 20(5), 3728 (2020).
14. S. Palato, **H. Seiler**, H. Baker, C. Sonnichsen, P. Brosseau, and P. Kambhampati*: Investigating the electronic structure of confined multiexcitons with nonlinear spectroscopies, *Journal of Chemical Physics* 152(10), 104710 (2020).
15. S. Palato, **H. Seiler**, P. Nijjar, O. Prezdh, and P. Kambhampati*: Atomic fluctuations in electronic materials revealed by dephasing. *Proceedings of the National Academy of Sciences* 117(22), 11940 (2020).
16. **H. Seiler**, S. Palato, C. Sonnichsen, H. Baker, E. Socie, D. Strandell and P. Kambhampati*: Two-dimensional electronic spectroscopy reveals liquid-like lineshape dynamics in CsPbI₃ perovskite nanocrystals. *Nature communications* 10 (1) 4962 (2019). **Editor's suggestion.**
17. **H. Seiler**, S. Palato, C. Sonnichsen, H. Baker, and P. Kambhampati*: Seeing Multiexcitons through Sample Inhomogeneity: Band-Edge Biexciton Structure in CdSe Nanocrystals Revealed by Two-Dimensional Electronic Spectroscopy, *Nano Letters* 18(5), 2999 (2018).
18. **H. Seiler**, S. Palato, and P. Kambhampati*: Investigating exciton structure and dynamics in colloidal CdSe quantum dots with two-dimensional electronic spectroscopy, *Journal of Chemical Physics* 149(7), 074702 (2018)
19. S. Palato, **H. Seiler**, L. McGovern, T. Mack, L. Jethi, and P. Kambhampati*: Electron Dynamics at the Surface of Semiconductor Nanocrystals, *J. Phys. Chem. C* 121(47), 26519 (2017).
20. **H. Seiler**, S. Palato, and P. Kambhampati*: Coherent multi-dimensional spectroscopy at optical frequencies in a single beam with optical readout, *Journal of Chemical Physics* 147(9), 094203 (2017).
21. **H. Seiler**, S. Palato, B. Schmidt, and P. Kambhampati*: Simple fiber-based solution for coherent multi-dimensional spectroscopy in the visible regime, *Optics Letters* 42(3),643 (2017).
22. **H. Seiler**, B. Walsh, S. Palato, A. Thai, V. Crozatier, N. Forget, and P. Kambhampati*: Kilohertz generation of high contrast polarization states for visible femtosecond pulses via phase-locked acousto-optic pulse shapers, *Journal of Applied Physics* 118(10), 103110 (2015).
23. L. Tsikonis*, S. Diethelm, **H. Seiler**, A. Nakajo, J. Van Herle, and D. Favrat: Investigating Reliability on Fuel Cell Model Identification. Part II: An Estimation Method for Stochastic Parameters, *Fuel Cells Journal* 5 (12), 685 (2012).

Submitted publications

1. **H. Seiler***, D. Zahn, V.C.A. Taylor, M.I. Bodnarchuk, Y. W. Windsor, M. V. Kovalenko, and R. Ernstorfer: Direct observation of ultrafast lattice distortions during exciton-polaron formation in lead-halide perovskite nanocrystals. arXiv:2209.05931.
2. T. Pincelli*, T. Vasileiadis*, S. Dong, S. Beaulieu, M. Dendzik, D. Zahn, S.-E. Lee, **H. Seiler**, Y. Qi, R.P. Xian, J. Maklar, E. Coy, N. S. Müller, Y. Okamura, S. Reich, M. Wolf, L. Rettig, and R. Ernstorfer*: Observation of multi-directional energy transfer in a hybrid plasmonic-excitonic nanostructure. Submitted.

Funding

Swiss National Science Foundation (Early Postdoc.Mobilty) 02.2019 - 09.2020
Swiss National Science Foundation (Doc.Mobility) 01.2015 - 07.2016

Presentations

12 talks at international conferences (9 invited), 5 posters at international conferences, 15 talks in workshops and university colloquia (10 invited).

Reviewing activities

Reviewer for ACS Omega, Advanced Materials, Journal of Applied Physics, Journal of Chemical Physics, Journal of Physical Chemistry, Nano Letters, Optics Express, Physical Review Letters, Review of Scientific Instruments, Structural Dynamics.

Prizes, Awards, Memberships

Member of the Lindau Nobel Laureate Meetings Alumni Network Since 2022
Young Investigators Poster prize 2020
GRC on Ultrafast Phenomena in Cooperative Systems, Italy
Whitehead Award for Excellence in Research 2015
McGill University, Canada
Member of the Swiss Study Foundation (Schweizerische Studienstiftung) 2006 - 2016