

Jerry LaRue

Assistant Professor of Chemistry and Biochemistry
Chapman University
Phone: (714) 744-7660
Email: larue@chapman.edu

Education

- 2005-2011 **University of California at Santa Barbara**, Santa Barbara, CA
Ph.D in Physical Chemistry, March 2011
Advisor: Professor Alec Wodtke
Dissertation Title: Studies of Non-Adiabatic Effects at the Gas-Surface Interface
- 2000-2004 **Willamette University**, Salem, OR
B.A. in Chemistry with minors in Mathematics and Physics, May 2004
Graduated cum laude

Research Experience

- 2015-Present **Chapman University**, Orange, CA
Assistant Professor of Chemistry and Biochemistry
Affiliated Faculty of Physics
Schmid College of Science and Technology
Institute for Quantum Studies
- 2011-2015 **Stanford University / SLAC National Accelerator Laboratory**, Menlo Park, CA
Postdoctoral Scholar in the SUNCAT Center for Catalysis
Adviser: Dr. Anders Nilsson
- 2005-2011 **University of California at Santa Barbara**, Santa Barbara, CA
Research Assistant in Chemistry
Adviser: Dr. Alec Wodtke
- 2007 **Dalian Institute of Chemical Physics**, Dalian, China
Extended Research Visit Fellow
Mentor: Dr. Xueming Yang
- 2003-2004 **Willamette University**, Salem, OR
Student Researcher in Chemistry
Advisers: Dr. Karen McFarlane Holman, Dr. Arthur Payton

Teaching Experience

- 2015-Present **Chapman University**, Orange, CA
Assistant Professor of Chemistry & Biochemistry
Courses: Physical Chemistry: Quantum Chemistry, Physical Chemistry: Thermodynamics & Kinetics, Symmetry in Chemistry (Group Theory), Molecular Spectroscopy, General Chemistry I, General Chemistry II.
- 2014 **Willamette University**, Salem, OR
Visiting Assistant Professor of Chemistry
Courses: Physical Chemistry I – Thermodynamics, Intro Chemistry I Lab.

- 2005-2011 **University of California at Santa Barbara**, Santa Barbara, CA
Physics Circus Elementary and Middle School Outreach, 2008-2010
Chemistry Tutor, Campus Learning Assistance Services (CLAS), 2008- 2009
Super Mentor, Research Internships in Science and Engineering (RISE) Program, 2008
Inorganic/Analytical Chemistry Laboratory Instructor, 2006
Lead TA, Department of Chemistry and Biochemistry, 2006
General Chemistry Lab Instructor, 2005-2006, 2009
- 2000-2004 **Willamette University**, Salem, OR
Chem Club Elementary and Middle School Outreach, 2002-2004
Chemistry Department Peer-Tutor, 2002-2003
Introductory Chemistry Lab Assistant, 2001

Publications

- H. Y. Wang, S. Schreck, M. Weston, C. Liu, H. Ogasawara, J. LaRue, F. Perakis, M. Dell'Angela, F. Capotondi, L. Giannessi, E. Pedersoli, D. Naumenko, I. Nikolov, L. Raimondi, C. Spezzani, M. Beye, F. Cavalca, B. Liu, J. Gladh, S. Koroidov, P. S. Miedema, R. Costantini, L. G. M. Pettersson, A. Nilsson, Time-Resolved Observation of Transient Precursor State of CO on Ru(0001) using Carbon K-edge spectroscopy, *Physical Chemistry Chemical Physics* **2019**. <https://doi.org/10.1039/C9CP03677F>
- S. Schreck, E. Diesen, J. LaRue, H. Ogasawara, K. Marks, D. Nordlund, M. Weston, M. Beye, F. Cavalca, F. Perakis, J. Sellberg, A. Eilert, K. H. Kim, G. Coslovich, R. Coffee, J. Krzywinski, A. Reid, S. Moeller, A. Lutman, H. Öström, L. G. M. Pettersson, A. Nilsson, Atom-Specific Activation in CO Oxidation, *Journal of Chemical Physics* **2018**, 149, 234707. <https://doi.org/10.1063/1.5044579>
- J. LaRue, O. Krejčí, L. Yu, M. Beye, M. L. Ng, H. Öberg, H. Xin, G. Mercurio, S. Moeller, J. J. Turner, D. Nordlund, R. Coffee, M. P. Minitti, W. Wurth, L. G. M. Pettersson, H. Öström, A. Nilsson, F. Abild-Pedersen, H. Ogasawara, Dynamics of Competing Pathways during Catalytic CO Hydrogenation on Ru, *Journal of Physical Chemistry Letters* **2017**, 8, 3820-3825. <https://doi.org/10.1021/acs.jpcllett.7b01549>
- A. Nilsson, J. LaRue, H. Öberg, H. Ogasawara, M. Dell'Angela, M. Beye, H. Öström, J. Gladh, J.K. Nørskov, g, W. Wurth, h, F. Abild-Pedersen, L.G.M. Pettersson, Catalysis in Real Time using X-ray Lasers, *Chemical Physics Letters* **2017**, 675, 145-173. <https://doi.org/10.1016/j.cplett.2017.02.018>
- M. Beye, H. Öberg, H. Xin, G. L. Dakovski, M. Dell'Angela, A. Föhlisch, J. Gladh, M. Hantschmann, F. Hieke, S. Kaya, D. Kühn, J. LaRue, G. Mercurio, M. P. Minitti, A. Mitra, S. P. Möller, M. L. Ng, A. Nilsson, D. Nordlund, J. Nørskov, H. Öström, H. Ogasawara, M. Persson, W. F. Schlotter, J. A. Sellberg, M. Wolf, F. Abild-Pedersen, L. G. M. Pettersson, W. Wurth, Chemical Bond Activation Observed with an X-ray Laser, *Journal of Physical Chemistry Letters* **2016**, 7 (18), 3647–3651. <https://doi.org/10.1021/acs.jpcllett.6b01543>
- J. LaRue, T. Katayama, A. Lindenberg, A. Fisher, H. Östrom, A. Nilsson, H. Ogasawara, THz-induced catalytic reaction of CO oxidation, *Physical Review Letters* **2015**, 115(3), 036103. <https://doi.org/10.1103/PhysRevLett.115.036103>
- H. Xin, J. LaRue, H. Öberg, H. Öström, M. Beye, M. Dell'Angela, R. Coffee, J. Gladh, M. L. Ng, J. A. Sellberg, S. Kaya, F. Sorgenfrei, G. Mercuri, D. Nordlund, W. F. Schlotter, J. Turner, A. Föhlisch, M. Wolf, W. Wurth, H. Ogasawara, J. K. Nørskov, L. G. M Pettersson, A. Nilsson, F. Abild-Pedersen, Strong Influence of the Coadsorbate Interaction on CO Desorption Dynamics, *Physical Review Letters* **2015**, 114(15), 156101. <https://doi.org/10.1103/PhysRevLett.114.156101>
- H. Öberg, J. Gladh, M. Dell'Angela, T. Anniyev, M. Beye, R. Coffee, A. Föhlisch, T. Katayama, S. Kaya, J. LaRue, A. Møgelhøj, D. Nordlund, H. Ogasawara, W. F. Schlotter, J. A. Sellberg, F. Sorgenfrei, J. J. Turner, M. Wolf, W. Wurth, H. Öström, A. Nilsson, J. K. Nørskov, L. G. M. Pettersson, Optical Laser-Induced CO Desorption from Ru(0001) Monitored with a Free-Electron X-ray Laser: DFT Prediction and X-ray Confirmation of a Precursor State, *Surface Science* **2015**, 640, 80-88. <https://doi.org/10.1016/j.susc.2015.03.011>
- H. Öström, H. Öberg, H. Xin, J. LaRue, M. Beye, M. Dell'Angela, J. Gladh, M. L. Ng, J. A. Sellberg, S. Kaya, F. Sorgenfrei, G. Mercurio, D. Nordlund, W. F. Schlotter, A. Föhlisch, M. Wolf, W. Wurth, M. Persson, J. K. Nørskov, F. Abild-Pedersen, H. Ogasawara, L. G. M Pettersson, A. Nilsson, Probing the

- Transition State Region in Catalytic CO Oxidation on Ru, *Science* **2015**, *347*, 978-982. <https://doi.org/10.1126/science.1261747>
10. M. Dell'Angela, T. Anniyev, M. Beye, R. Coffee, A. Föhlisch, J. Gladh, T. Katayama, S. Kaya, O. Krupin, A. Møgelhøj, D. Nordlund, J. K. Nørskov, H. Öberg, H. Ogasawara, H. Öström, L. G. M. Pettersson, W. F. Schlotter, J. A. Sellberg, F. Sorgenfrei, J. LaRue, J. Turner, M. Wolf, W. Wurth, A. Nilsson, Real-Time Observation of Surface Bond Breaking with an X-ray Laser, *Science* **2013**, *339*, 1302. <https://doi.org/10.1126/science.1231711>
 11. J. LaRue, T. Schäfer, D. Matsiev, L. Velarde, H. Nahler, D. J. Auerbach, A. M. Wodtke, Electron Kinetic Energies from Vibrationally Promoted Surface Exoemission: Evidence for a Vibrational Autodetachment Mechanism, *Journal of Physical Chemistry A* **2011**, *115*, 14306–14314. <https://doi.org/10.1021/jp205868g>
 12. B. C. Knott, J. L. LaRue, A. M. Wodtke, M. F. Doherty, B. Peters, Laser-induced nucleation of a volatile solute - bubble formation in supersaturated aqueous carbon dioxide solutions, *Journal of Chemical Physics* **2011**, *134*, 171102. <https://doi.org/10.1063/1.3582897>
 13. J. LaRue, T. Schäfer, D. Matsiev, L. Velarde, H. Nahler, D. J. Auerbach, A. M. Wodtke, Vibrationally promoted electron emission at a metal surface: electron kinetic energy distributions, *Physical Chemistry Chemical Physics* **2011**, *13* (1), 97-99. <https://doi.org/10.1039/c0cp01626h>
 14. C. Zhou, Z. Ren, S. Tan, Z. Ma, X. Mao, D. Dai, H. Fan, X. Yang, J. LaRue, R. Cooper, A. M. Wodtke, Z. Wang, Z. Li, B. Wang, J. Yang, J. Hou, Site-specific photocatalytic splitting of methanol on TiO₂(110), *Chemical Science* **2010**, *1*, 575-580. <https://doi.org/10.1039/C0SC00316F>
 15. Z. Ren, C. Zhou, Z. Ma, C. Xiao, X. Mao, D. Dai, J. LaRue, R. Cooper, A. M. Wodtke, X. Yang, A Surface Femtosecond Two-Photon Photoemission Spectrometer for Excited Electron Dynamics and Time-Dependent Photochemical Kinetics, *Chinese Journal of Chemical Physics* **2010**, *23* (3), 255-261. <https://doi.org/10.1088/1674-0068/23/03/255-261>
 16. L. Verlarde, P. Engelhart, D. Matsiev, J. LaRue, D. J. Auerbach, A. M. Wodtke, Generation of tunable narrow bandwidth nanosecond pulses in the deep-ultraviolet for efficient optical pumping and high resolution spectroscopy, *Review of Scientific Instruments* **2010**, *81*, 063106. <https://doi.org/10.1063/1.3436973>
 17. N. H. Nahler, J. D. White, J. LaRue, D. J. Auerbach, A. M. Wodtke, Inverse Velocity Dependence of Vibrationally Promoted Electron Emission from a Metal Surface, *Science* **2008**, *321*, 1191-1194. <https://doi.org/10.1126/science.1160040>
 18. J. L. LaRue, J. D. White, N. H. Nahler, Z. Liu, S. Sun, P. A. Pianetta, D. J. Auerbach, A. M. Wodtke, The work function of sub-monolayer cesium-covered gold: A photoelectron spectroscopy study, *Journal of Chemical Physics* **2008**, *129*, 024709. <https://doi.org/10.1063/1.2953712>

Talks

1. *Probing carbon monoxide reaction dynamics on metal surfaces*, SSRL/LCLS Users' Meeting, SLAC National Accelerator Laboratory, Menlo Park, CA, September 2019
2. *Probing Ultrafast Dynamics of Reaction Pathways on Metal Surfaces using Ultrafast X-Rays*, 3rd Sino-German Young Scientists' Symposium, Dalian, China, September 2019
3. *Ultrafast Dynamics of Reaction Pathways on Metal Surfaces*, AVS 65th International Symposium & Exhibition, Long Beach, CA, October 2018
4. *Probing the dynamics of reaction pathways on metal surfaces using femtosecond X-ray pulses*, 256th ACS (American Chemical Society) National Meeting & Exposition, Boston, MA, August 2018
5. *Caught in the Act! Chemical Reactions Exposed*, Orange County Chapter of the American Chemistry Society, Santa Ana, CA, January 2017
6. *Dynamics of Competing Reaction Pathways during Catalytic CO Hydrogenation on Ruthenium*, SSRL/LCLS Users' Meeting, SLAC National Accelerator Laboratory, Menlo Park, CA, October 2016
7. *Dynamics of Competing Reaction Pathways during Catalytic CO Hydrogenation on Ruthenium*, Physics Seminar, Georg-August-Universität Göttingen, Göttingen, Germany, August 2016
8. *Challenges in catalytic surface dynamics*, Research Opportunities in Photochemistry, Solar Energy, & Advanced X-ray Methods, SLAC National Accelerator Laboratory, Menlo Park, CA, June 2016

9. *Dynamics of Competing Reaction Pathways during Catalytic CO Hydrogenation on Ruthenium*, Photon Science Seminar, SLAC National Accelerator Laboratory, Menlo Park, CA, June 2016
10. *Dynamics of Competing Reaction Pathways during Catalytic CO Hydrogenation on Ruthenium*, Fundamental X-ray Science and its Application to Catalysis and Water Research: Future Directions, Stockholm University, Stockholm, Sweden, May 2016
11. *Attosecond Processes in Surface Dynamics*, LCLS Annual Users' Meeting and Workshop, SLAC National Accelerator Laboratory, Menlo Park, CA, October 2015
12. *Probing the evolution of chemical reactions on metal surfaces in real time: CO hydrogenation on ruthenium*, Gordon Research Seminar on Dynamics at Surfaces, Salve Regina University, Newport, RI, August 2015
13. *Caught in the Act! Chemical Reactions Exposed*, Public Lecture Series, SLAC National Accelerator Laboratory, Menlo Park, CA, May 2015
14. *Probing chemical reactions on surfaces in real time*, Photon Science Seminar, SLAC National Accelerator Laboratory, Menlo Park, CA, January 2015
15. *Ultrafast Probing of Chemical Reactions using X-rays from a Free-Electron Laser*, AVS 60th International Symposium and Exhibition, Long Beach, CA, October 2013
16. *Translational promotion of electron emission at metal surfaces*, PIRE-ECCI Workshop on Heterogeneous Catalysis and Surface Science, Dalian Institute of Chemical Physics, Dalian, China, June 2007
17. *Vibrational Promotion of Electron Emission at Metal Surfaces*, PIRE-ECCI, University of California at Santa Barbara, Santa Barbara, CA, September 2006
18. *Spectroscopic Studies of Ruthenium Based Anti-Tumor Complexes*, Willamette SCRIP Conference, Willamette University, Salem, OR, May 2004
19. *Concentration Dependence of Thermoelectric Powers in Water/Methanol Systems Using Ag/AgCl Electrodes*, Willamette University, Salem, OR, May 2004

Honors and Awards

2014-2015	Carl Tryggers Foundation Scholar
2014-2015	Max Planck Institute Fellow
2007	PIRE- ECCI Graduate Fellowship
2006	Phi Lambda Upsilon Member, National Honorary Chemical Society
2003	Willamette University Physical Chemistry Award
2003	Willamette University Summer Undergraduate Summer Research Fellowship
2002-2003	Florian Von Eschen Chemistry Scholarship
2001-2002	William Long Scholarship
2000-2004	Willamette Oregon Scholar Scholarship