

## Curriculum Vitae: Lauren Benz

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Lauren Benz, Clare Boothe Luce Associate Professor  
Department of Chemistry & Biochemistry  
University of San Diego  
Phone: (619) 260-4117  
E-mail: laurenbenz@sandiego.edu

### EDUCATION/TRAINING

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2007 – 2009	Postdoctoral fellow	Harvard University
2007	Ph.D., Inorganic Chemistry	U.C. Santa Barbara
2007	Certificate in College & University Teaching	U.C. Santa Barbara
2001	B.S., Chemistry ( <i>Summa cum laude</i> )	University of Rhode Island

### PROFESSIONAL EXPERIENCE

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2015 – present	Associate Professor	University of San Diego
2009 – 2015	Assistant Professor	University of San Diego
2001 – 2002	Assistant Scientist I	Pfizer, Inc., Groton, CT

### HONORS AND AWARDS

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2015	Cottrell Scholar, Research Corporation
2014	Outstanding Undergraduate Research Mentor Award, USD
2014	ACS Rising Star Award, Women Chemists Committee
2013	NSF CAREER Award
2013	Distinguished Faculty of the Year (McNair Program, USD)
2009	Clare Boothe Luce Professorship, Luce Foundation
2007	Best Poster Award, Chemistry of Nanomaterials Workshop, UZ South Africa
2006 - 2007	UC Presidents Dissertation Year Fellowship
2006	Teaching Excellence Award, UCSB, Department of Chemistry and Biochemistry
2005	Teaching Assistant Instructional Development Grant, UCSB
2004–2005	NSF LEAPS (Let's Explore Applied Physical Science) Fellowship
2002	Pfizer Outstanding Achievement Award
2001	URI President's Student Excellence Award, #1 Chemistry Graduate
2001	Phi Beta Kappa Honor Society
2000	G. Dickinson Kenney & Virginia Stiles Achievement in Chemistry Scholarship
2000	ACS Award, RI Section
2000	ACS Division of Analytical Chemistry Award
1997	Full 4-year Centennial Scholarship, University of Rhode Island

### GRANTS

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2017	Cottrell Scholar Teacher-Scholar Ambassadors for PUI-R1 Partnerships, \$3,000
2017	Beckman Scholars Program (PI for USD), \$130,000
2013	National Science Foundation CAREER Award, \$471,605 (includes \$20,000 CBL supplement, awarded 2016)
2011	Research Corporation Cottrell College Science Award, \$45,000
2011, 2013, 2014	Enhanced Student Faculty Interaction Grant (x 3), \$750 (USD)
2010	Teaching and Learning Grant, \$500 (USD)
2010	ACS Petroleum Research Fund, \$50,000

## COURSES TAUGHT

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General Chemistry Lecture I (F09, F10, F11, F12(H), F13(H), F14(H))  
General Chemistry Lab I (F09, F10, F11, F12)  
General Chemistry Lecture II (S10, S11, S13(H), S14(H), S15, S17)  
General Chemistry Lab II (S10, S13)  
Inorganic Chemistry Lecture (F10, F11)  
Physical Chemistry Lecture (S11, S12)  
Research Methods (S12, F14, S17)  
Materials Chemistry (F13)  
Upper Division Inorganic/Physical Chemistry Lab (S14, S15)

## PUBLICATIONS

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### Independent Publications (\*undergraduate contributor)

1. "Metal-organic frameworks for membrane-based separations," M.S. Denny Jr., J.C. Moreton, L. Benz, S. M. Cohen, *Nature Reviews Materials*, **1**, 16078 (2016).
2. "Low-temperature Adsorption and Diffusion of Methanol in ZIF-8 Nanoparticle Films," A.M. Mosier,\* H.L.W. Larson,\* E.R. Webster,\* M. Ivos,\* F. Tian and L. Benz, *Langmuir*, **32** (12), 2947, (2016).
3. "In Situ Measurement of CO<sub>2</sub> and H<sub>2</sub>O Adsorption by ZIF-8 Films," F. Tian, A. M. Mosier,\* A. Park,\* E. R. Webster,\* A. M. Cerro,\* R. S. Shine\* and L. Benz, *J. Phys. Chem. C.*, **119**, 15248, (2015).
4. "High Temperature Mass Detection Using a Carbon Nanotube Bilayer Modified Quartz Crystal Microbalance as a GC Detector," M. Benz, L. Benz, S. V. Patel, *Analytical Chemistry*, **87**(5), 2779, (2015).
5. "Surface and stability characterization of a nanoporous ZIF-8 thin film," F. Tian, A. M. Cerro,\* A. M. Mosier,\* H. K. Wayment-Steele,\* R. S. Shine,\* A. Park,\* E. R. Webster,\* L. E. Johnson, M.S. Johal, and L. Benz, *J. Phys. Chem. C.*, **118**, 14449, (2014).
6. "Monitoring N3 dye adsorption and desorption on TiO<sub>2</sub> surfaces: A combined QCM-D and XPS study," H.K. Wayment-Steele,\* L.E. Johnson, F. Tian, M.C. Dixon, L. Benz, and M.S. Johal, *Applied Materials & Interfaces*, **6**(12), 9093, (2014).
7. "Adsorption of dibenzothiophene and fluorene on TiO<sub>2</sub>(110) and supported Ag clusters," E.R. Webster,\* A. Park,\* M. B. Stratton,\* V. C. Park,\* A. M. Mosier,\* R. S. Shine\* and L. Benz, *Energy and Fuels*, **27**(11) 6575, (2013).
8. "Improving the compostability of natural fiber-reinforced thermoset composites with a tertiary oil phase," T. Ngo, C. Lambert,\* L. Benz, M. Chau,\* *Polymer-Plastics Technology and Engineering*, **52**(7) 710, (2013).
9. "Interaction of petroleum-relevant organosulfur compounds with TiO<sub>2</sub>(110)," L. Benz, A. Park,\* J. R. Corey,\* M. P. Mezher,\* V. C. Park,\* *Langmuir*, **28**, 10209, (2012).
10. "Employing magnetic levitation to monitor reaction kinetics and measure activation energy," L. Benz, K.E. Cesafsky,\* T. Le,\* A. Park,\* and D. Malicky, *J. Chem. Educ.*, **89**, 776, (2012).

### Supervised Publications (\*undergraduate contributor)

11. "Molecular imaging of reductive coupling reactions: Interstitial-mediated coupling of benzaldehyde on reduced TiO<sub>2</sub>(110)," L. Benz, J. Haubrich, S. C. Jensen, and C. M. Friend, *ACS Nano*, **5**(2) 834, (2011).

12. "Direct visualization of water-induced relocation of Au atoms from oxygen vacancies on a TiO<sub>2</sub>(110) surface," X. Tong, L. Benz, S. Chrétien, M.T. Bowers, and S.K. Buratto, *J. Phys. Chem. C*, **114**, 3987, (2010).
13. "In-situ ambient pressure studies of the chemistry of NO<sub>2</sub> and water on rutile TiO<sub>2</sub>(110)," J. Haubrich, R. G. Quiller, L. Benz, Z. Liu, and C. M. Friend, *Langmuir*, **26** (4), 2445, (2010).
14. "McMurry chemistry on TiO<sub>2</sub>(110): Titanium interstitial driven reductive C=C coupling of benzaldehyde to stilbene," L. Benz, J. Haubrich, R. G. Quiller, S. Jensen, and C. M. Friend, *J. Am. Chem. Soc.*, **131**, 15026, (2009).
15. "Surface chemistry of organic pollutants: styrene, ozone, and water on TiO<sub>2</sub>(110)" R. G. Quiller, L. Benz, J. Haubrich, M. E. Colling\* and C. M. Friend, *J. Phys. Chem. C*, **113**(6), 2063 (2009).
16. "Acrolein coupling on reduced TiO<sub>2</sub>(110): The effect of surface oxidation and the role of subsurface defects," L. Benz, J. Haubrich, R. G. Quiller, and C. M. Friend, *Surf. Sci.*, **603**, 1010, (2009).
17. "Formation, deposition, and examination of size-selected metal clusters on semiconductor surfaces: An experimental setup," P. Kemper, A. Kolmakov, X. Tong, Y. Lilach, L. Benz, M. Manard, H. Metiu, S. K. Buratto, and M. T. Bowers, *I.J.M.S*, **254**(3), 202, (2006).
18. "Pinning mononuclear Au on the surface of titania," L. Benz, X. Tong, P. Kemper, H. Metiu, M. T. Bowers, and S. K. Buratto, *J. Phys. Chem.*, **110**, 663, (2006).
19. "Intact size-selected Au<sub>n</sub> clusters on a TiO<sub>2</sub>(110)-(1×1) surface at room temperature," X. Tong, L. Benz, P. Kemper, H. Metiu, M. T. Bowers, and S. K. Buratto, *J. Am. Chem. Soc.*, **127**, 13516, (2005).
20. "Pinning mass-selected Ag<sub>n</sub> clusters on the TiO<sub>2</sub>(110)-(1×1) surface via deposition at high kinetic energy." X. Tong, L. Benz, S. Chrétien, P. Kemper, A. Kolmakov, H. Metiu, M.T. Bowers, and S.K. Buratto, *J. Chem. Phys.*, **123**, 204701, (2005).
21. "Landing of size-selected Ag<sub>n</sub><sup>+</sup> clusters on single crystal TiO<sub>2</sub>(110)-(1×1) surfaces at room temperature," L. Benz, X. Tong, P. Kemper, Y. Lilach, A. Kolmakov, H. Metiu, M. T. Bowers, and S. K. Buratto, *J. Chem. Phys.*, **122**, 081102, (2005).
22. "The nucleation sites of Ag clusters grown by vapor deposition on a TiO<sub>2</sub>(110)-(1×1) surface," X. Tong, L. Benz, A. Kolmakov, S. Chrétien, H. Metiu, and S. K. Buratto, *Surf. Sci.*, **575**, 60, (2005).
23. "Dynamic NMR studies of a potential chiroptical switch based on dithiocarbamate-iminodithiolane interconversion," L. B. Aubin(maiden name),\* T. M. Wagner,\* J. D. Thoburn, B. S. Kesler, K. A. Hutchison, R. R. Schumaker, and J. P. Parakka, *Org. Let.*, **3** (21), 3413, (2001).

## Book Contributions

1. "Au<sub>n</sub> and Ag<sub>n</sub> (n= 1-8) Nanocluster Catalysts: Gas Phase Reactivity to Deposited Structures," Chapter 4 in The Chemical Physics of Solid Surfaces and Heterogeneous Catalysis, S. K. Buratto, M. T. Bowers, H. Metiu, M. Manard, X. Tong, L. Benz, P. Kemper and S. Chrétien. v. 12, Ed. D.P. Woodruff, NY, 151 (2006).

## SELECTED PRESENTATIONS

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### Select Oral Presentations

1. "Probing the surfaces and interfaces of MOF materials using surface science techniques" L. Benz, (**invited talk**) *San Diego State University, San Diego, March 2017.*

2. "Application of surface science techniques to nanoporous materials: Studies of metal organic frameworks" L. Benz, (**invited talk**) *American Chemical Society National Meeting, ACS Award in Surface Symposium in Honor of Prof. Cynthia Friend, San Francisco*, April 2017.
3. "Expanding beyond the single crystal: Surface science studies of nanoporous materials," L. Benz, (**invited talk**) *Santa Clara University, Santa Clara*, October 2015.
4. "Expanding beyond the single crystal: Surface science studies of nanoporous materials," L. Benz, (**invited talk**) *California State University, Los Angeles*, March 2015.
5. "The adsorption of carbon dioxide by ZIF-8 Nano-sponge films," L. Benz, (invited talk) *Pomona College*, April 2014.
6. "Expanding beyond the single crystal: Surface science studies of nanoporous materials," L. Benz, (**invited talk**) *American Chemical Society National Meeting, WCC Rising Star Award Symposium, Dallas*, March 2014.
7. "Surface investigations of ZIF thin films," L. Benz, A. M. Cerro, A. Gomez, A. M. Mosier, (**invited talk**) *American Chemical Society National Meeting, Indianapolis*, September 2013.
8. "The role of surfaces in energy-relevant adsorption and reaction processes," L. Benz, (**invited talk**) *California State University, Long Beach*, May 2013.
9. "Adsorption and reaction of organosulfur compounds on TiO<sub>2</sub>(110)," L. Benz, A. Park, M. P. Mezher, J. R. Corey, and V. C. Park, *American Chemical Society National Meeting, Philadelphia*, August 2012.
10. "Employing magnetic levitation to measure reaction kinetics: A novel undergraduate laboratory experiment," L. Benz, K.E. Cesafsky, T. Le, A. Park, D. Malicky, *American Chemical Society National Meeting, San Diego*, March 2012.
11. "Graduate students and K-12 teachers: A symbiotic relationship," L. Benz, *American Chemical Society National Meeting, San Francisco*, March 2010.
12. "Interstitial-driven benzaldehyde coupling over reduced TiO<sub>2</sub>(110)," L. Benz, J. Haubrich, S. Jensen, C.M. Elias, and C.M. Friend, *American Chemical Society National Meeting, San Francisco*, March 2010.
13. "McMurry chemistry on TiO<sub>2</sub>(110): Reductive coupling driven by bulk interstitials," L. Benz, J. Haubrich, S. Jensen, R.G. Quiller, and C.M. Friend, *Ascher Group, The Hebrew University of Jerusalem, Israel*, July 2009.
14. "The chemistry of volatile organic compounds on TiO<sub>2</sub>(110) and the influence of defects and coadsorbed species," L. Benz, J. Haubrich, R.G. Quiller, and C.M. Friend, *American Vacuum Society International Symposium, Boston*, October 2008.
15. "Fundamental studies of environmental chemistry on TiO<sub>2</sub>(110): Water and atmospheric pollutants," C.M. Friend, L. Benz, J. Haubrich, R.G. Quiller and M.E. Colling, *American Chemical Society National Meeting, New Orleans*, April 2008.
16. "Deposition of mass-selected Au and Ag clusters on titania: A model catalyst study," L. Benz, X. Tong, P. Kemper, S. Chrétien, H. Metiu, M.T. Bowers, S.K. Buratto, *Materials Department, University of California, Santa Barbara*, March 2007.
17. "Deposition of mass-selected Au and Ag nanoclusters on titania," L. Benz, X. Tong, P. Kemper, S. Chrétien, Y. Lilach, A. Kolmakov, H. Metiu, M.T. Bowers and S.K. Buratto, *American Chemical Society National Meeting, San Francisco*, September 2006.
18. "Deposition of size-selected silver and gold nanoclusters on titania: An STM study," L. Benz, X. Tong, P. Kemper, S. Chrétien, Y. Lilach, A. Kolmakov, H. Metiu, M.T. Bowers and S.K. Buratto, *American Chemical Society National Meeting, San Diego*, March 2005.

**Select Poster Presentations by Postdoctoral and Undergraduate Mentees  
(\*undergraduate contributor, presenter underlined)**

1. “Adsorption of methanol on ZIF-8 thin films under low temperature and low pressure conditions,” F. Tian, A.M. Mosier,\* H.L.W. Larson,\* E.R. Webster,\* M. Ivos,\* L. Benz, 251st ACS National Meeting, San Diego, March 2016.
2. “The role of surface groups in cycloaddition reactions over ZIF-8 films,” E.R. Webster,\* F. Tian, L. Benz, Beckman Symposium, Irvine, August 2015.
3. “The adsorption and interaction of alcohols with ZIF-8 films and the role of surface groups,” H.L.W. Larson,\* A.M. Mosier,\* F. Tian, E. Baxter, A.K. Cheetham, and L. Benz, American Chemical Society National Meeting, Denver, March 2015.
4. “The role of surface groups in cycloaddition reactions over ZIF-8 films,” E.R. Webster,\* F. Tian, L. Benz, American Chemical Society National Meeting, Denver, March 2015.
5. “Adsorption of energy-relevant gases by nanoporous ZIF-8 films,” A. M. Cerro,\* A.M. Mosier,\* A. Park,\* E. R. Webster,\* R.S. Shine,\* F. Tian, and L. Benz, American Chemical Society National Meeting, Dallas, March 2014.
6. “Interaction of dibenzothiophene with Ag clusters on oxidized and reduced TiO<sub>2</sub>(110),” E.R. Webster,\* A. Park,\* V.C. Park,\* M. Stratton,\* and L. Benz, American Chemical Society National Meeting, New Orleans, April 2013.
7. “Preparation and investigation of ZIF-8 thin films with XPS and TPRS,” B.M. Benedicks,\* A. Gomez,\* A.M. Cerro,\* L. Benz, American Chemical Society National Meeting, New Orleans, April 2013.
8. “Interaction of petroleum-based organosulfur compounds with a TiO<sub>2</sub>(110) surface,” A. Park,\* J. R. Corey,\* M. P. Mezher,\* and L. Benz, American Chemical Society National Meeting, San Diego, March, March 2012. (**Award**: Division of Colloid and Surface Chemistry)
9. “Employing magnetic levitation to monitor reaction kinetics: Development of a novel undergraduate laboratory experiment,” L. Benz, K. E. Cesafsky,\* T. Le,\* A. Park,\* K. A. Mirica, J.G. Salameh,\* American Chemical Society National Meeting, Anaheim, March 2011.

**PROFESSIONAL ASSOCIATION MEMEBERSHIPS**

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American Chemical Society (since 1999)

Council on Undergraduate Research (since 2012)