

Allegra L. Liberman-Martin

Department of Chemistry and Chemical Engineering
California Institute of Technology
Pasadena, CA 91125
Phone: (602) 330-3206
Email: alibermanmartin@caltech.edu
Website: www.allegraliberman-martin.com

Education and Research Experience

- California Institute of Technology, Pasadena, CA** 2016 – present
Resnick Sustainability Institute postdoctoral fellow
with Prof. Robert H. Grubbs
Investigation of Brush Polymers as Stimuli-Responsive Photonic Crystals
- University of California, Berkeley** 2010 – 2015
Ph.D. in Chemistry
with Profs. T. Don Tilley and Robert G. Bergman
Lewis Acid Mediated Reactions: Electronic Modification of Platinum Complexes and Metal-Free Catalysis
- Scripps College, Claremont, CA** 2006 – 2010
B.A. in Chemistry, summa cum laude with honors in chemistry
Research advisor (2008–2010): Prof. Nancy S. B. Williams (Scripps College)
Aryl Orientation Preferences during Reductive Elimination from Platinum Complexes
Research advisor (Summer 2009): Prof. Alan S. Goldman (Rutgers University)
Iridium-Catalyzed Transfer Dehydrogenation of Cyclic Alkyl Ether Substrates
Research advisor (2007–2008): Prof. Kathleen L. Purvis-Roberts (Scripps College)
Analysis of Amines in Air and Smog Chamber Samples by Ion Chromatography

Publications

- (13) **Liberman-Martin, A. L.**; Grubbs, R. H. Ruthenium Olefin Metathesis Catalysts Featuring a Labile Carbodicarbene Ligand. *Organometallics* **2017**, 36, 4091–4094.
- (12) Chang, A. B.; Lin, T.-P.; Thompson, N. B.; Luo, S.-X.; **Liberman-Martin, A. L.**; Chen, H.-Y.; Lee, B.; Grubbs, R. H. Design, Synthesis, and Self-Assembly of Polymers with Tailored Graft Distributions. *J. Am. Chem. Soc.* **2017**, 139, 17683–17693.
- (11) Suslick, B. A.; **Liberman-Martin, A. L.**; Wambach, T. C.; Tilley, T. D. Olefin Hydroarylation Catalyzed by (Pyridyl-Indolate)Pt(II) Complexes: Catalytic Efficiencies and Mechanistic Aspects, *ACS Catal.*, **2017**, 7, 4313–4322.

(10) **Lieberman-Martin, A. L.**; Chu, C. K.; Grubbs, R. H. Application of Bottlebrush Block Copolymers as Photonic Crystals. *Macromol. Rapid Commun.* (special issue on “Polymers and Light”), **2017**, DOI: 10.1002/marc.201700058.

- Featured in *Advanced Science News*
- A “Most Accessed” article of 2017 on the *Macromol. Rapid Commun.* website

(9) Lin, T.-P.; Chang, A. B.; Chen, H.-Y.; **Lieberman-Martin, A. L.**; Bates, C. M.; Voegtle, M.; Bauer, C. A.; Grubbs, R. H. Control of Grafting Density and Distribution in Graft Polymers by Living Ring-Opening Metathesis Copolymerization. *J. Am. Chem. Soc.* **2017**, *139*, 3896–3903.

(8) Lipke, M. C.; **Lieberman-Martin, A. L.**; Tilley, T. D. Electrophilic Activation of Silicon–Hydrogen Bonds in Catalytic Hydrosilations. *Angew. Chem., Int. Ed.* **2017**, *56*, 2260–2294.

(7) **Lieberman-Martin, A. L.**; Levine, D. S.; Ziegler, M. S.; Bergman, R. G.; Tilley, T. D. Lewis Acid-Base Interactions between Platinum(II) Diaryl Complexes and Bis(perfluorophenyl)zinc: Strongly Accelerated Reductive Elimination Induced by a Z-Type Ligand. *Chem. Commun.* **2016**, *52*, 7039–7042.

(6) Lipke, M. C.; **Lieberman-Martin, A. L.**; Tilley, T. D. Significant Cooperativity Between Ruthenium and Silicon in Catalytic Transformations of an Isocyanide. *J. Am. Chem. Soc.* **2016**, *138*, 9704–9713

(5) **Lieberman-Martin, A. L.**; Ziegler, M. S.; DiPasquale, A. G.; Bergman, R. G.; Tilley, T. D. Functionalization of an Iridium–Diamidocarbene Complex by Ligand-Based Reactions with Titanocene and Zirconocene Sources. *Polyhedron* (special issue dedicated to Malcolm L. H. Green) **2016**, *116*, 111–115.

(4) **Lieberman-Martin, A. L.**; Levine, D. S.; Liu, W.; Bergman, R. G.; Tilley, T. D. Biaryl Reductive Elimination Is Dramatically Accelerated by Remote Lewis Acid Binding to a 2,2'-Bipyrimidyl–Platinum Complex: Evidence for a Bidentate Ligand Dissociation Mechanism. *Organometallics* **2016**, *35*, 1064–1069.

- Featured as cover article
- A “Most Read” article from January–April 2016 on the *Organometallics* website

(3) **Lieberman-Martin, A. L.**; Bergman, R. G.; Tilley, T. D. Lewis Acidity of Bis(perfluorocatecholato)silane: Aldehyde Hydrosilylation Catalyzed by a Neutral Silicon Compound. *J. Am. Chem. Soc.* **2015**, *137*, 5328–5331.

- Featured in *Synfacts*, 2015; 11(7): 0764.
- Featured in *ChemInform*, 46: DOI: 10.1002/chin.201538046

(2) **Lieberman-Martin, A. L.**; Bergman, R. G.; Tilley, T. D. A Remote Lewis Acid Trigger Dramatically Accelerates Biaryl Reductive Elimination from a Platinum Complex. *J. Am. Chem. Soc.* **2013**, *135*, 9612–9615.

(1) Erupe, M. E.; **Lieberman-Martin, A. L.**; Silva, P. J.; Malloy, Q. G. J.; Yonis, N.; Crocker, D. R.; Purvis-Roberts, K. L. Determination of Methylamines & Trimethylamine-N-oxide in Particulate Matter by Non-suppressed Ion Chromatography. *J. Chromatogr. A.* **2010**, *1217*, 2070–2073.

Teaching Experience

California Institute of Technology

- Ch101: “Revolutionary Inorganic Molecules” 2017
- Guest Lecturer, Organic Chemistry 2016
- Research Mentor, Jayce Miller, Undergraduate Student 2016 – present

University of California, Berkeley

- Graduate Student Instructor
 - Organometallic Chemistry (Prof. T. Don Tilley) 2011, 2015
 - NMR Spectroscopy (Dr. Chris Canlas) 2013
 - Physical Organic Chemistry (Prof. Robert G. Bergman) 2012
 - General Chemistry (Prof. John Arnold) 2010
- Guest lecturer 2011 – 2015
 - Organometallic Chemistry and Physical Organic Chemistry
- Research Mentor
 - Kathryn Liu, Undergraduate Student 2013 – 2014
 - Jana Schmitt, Visiting Graduate Student 2013 – 2014
 - Myles Walden, High School Student Summer 2012

Honors and Awards

- Outstanding Poster Award, Division of Polymer Chemistry, 253rd American Chemical Society National Meeting, San Francisco, CA (2017)
- Resnick Sustainability Institute Postdoctoral Fellowship (2016–present)
- Benjamin Boussett Memorial Award, UC-Berkeley, Department of Chemistry (2016)
Award for exemplifying commitment to social or environmental change
- Margaret Jorgenson Memorial Prize Travel Grant, UC-Berkeley, Department of Chemistry (2013)
- Graduate Division Conference Travel Grant, UC-Berkeley (2013 and 2015)
- Barbara McClintock Award for Best Senior Thesis in the Sciences, Scripps College (2010)
- Phi Beta Kappa, Scripps College (2010)
- ACS Division of Inorganic Chemistry Undergraduate Award in Inorganic Chemistry (2009)
- Center for Enabling New Technologies through Catalysis Undergraduate Summer Research Fellowship, Rutgers University (2009)
- Sigma Xi Scientific Research Society, Scripps College (2008)
- Norris Foundation Summer Research Fellowship, Scripps College (2008)

Service and Outreach

California Institute of Technology

- Caltech Teaching Conference Organizing Committee 2017
 - Facilitated a conference session on authoring problem sets and exams
- Women Mentoring Women Program 2016 – present
 - Peer mentor for a female graduate student
- Safe Zone Ally 2016 – present
 - Trained member of a network of Caltech faculty and staff who are openly supportive mentors for LGBTQ students.

University of California, Berkeley

- Student Chair, Chemical Sciences Division Catalysis Group, Lawrence Berkeley National Laboratory 2013 – 2015
 - Organized a monthly interdisciplinary seminar series
- Department of Chemistry volunteer 2010 – 2015
 - Peer advisor for first-year graduate students
 - Presenter to undergraduate chemistry students on research opportunities
 - Member of student-hosted inorganic seminar committee
 - Spoke on “Choosing a Research Group” panel (through Iota Sigma Pi, National Honor Society of Women in Chemistry)
- Bay Area Scientists in Schools classroom volunteer 2010 – 2015
 - “Be a Scientist” pilot program mentoring 7th grade students’ scientific investigations over a two-month period
 - “Science of Soap” and “Water and Carbon Dioxide” classes for 5th graders

Scripps College

- Alumna interviewer 2012 – 2015
- Co-director of the Chemistry Mentor Program 2009 – 2010
 - Program provided all general chemistry students with a peer mentor.
- Chemistry mentor for six general chemistry students 2008 – 2010

Professional Activities

Pedagogy and professional development:

- Completed Caltech course E110: Principles of University Teaching in STEM (2017)
- Attended the ACS Postdoc to PUI Professor (P3) Workshop (2017)

Professional affiliations:

- American Chemical Society
- Council on Undergraduate Research
- Phi Beta Kappa
- Sigma Xi Scientific Research Honor Society

Peer reviewer:

- *Journal of the American Chemical Society*
- *Chemical Communications*

Conference session chair: *New Synthesis & Characterization of Polymers*, Division of Polymer Chemistry, 254th American Chemical Society National Meeting, Washington DC, August 2017.

Presentations

Lieberman-Martin, A. L. Stimuli-Responsive Molecules: From Inorganic Complexes to Light-Reflecting Polymers. Chemistry Department Seminar, Reed College, Portland, OR, September 2017.

Lieberman-Martin, A. L.; Chu, C. K.; Grubbs, R. H. Synthesis and Self-Assembly of Brush Block Copolymers with Low T_g Side Chains. 254th American Chemical Society National Meeting, Washington, DC, August 2017.

Lieberman-Martin, A. L.; Chu, C. K.; Chang, A. B.; Grubbs, R. H. Self-Assembly of Brush Block Copolymer Photonic Crystals Featuring Low T_g Side Chains. 253rd American Chemical Society National Meeting, San Francisco, CA, April 2017. (poster)

Lieberman-Martin, A. L. Side Chain Design in Brush Block Copolymer Photonic Crystals. Resnick Foundation Seminar, California Institute of Technology, Pasadena, CA, March 2017.

Lieberman-Martin, A. L.; Bergman, R. G.; Tilley, T. D. Activation of Platinum Complexes by Ligand-Based Reactions with Lewis Acids. Organometallics Gordon Research Conference and Seminar, Newport, RI, July 2015. (poster at GRC, speaker at GRS)

Lieberman-Martin, A. L.; Bergman, R. G.; Tilley, T. D. Aldehyde Hydrosilylation Catalyzed by a Neutral Bis(perfluorocatecholato)silicon Compound. 46th Silicon Symposium, Davis, CA, June 2015.

Lieberman-Martin, A. L. Activation of Platinum Complexes by Ligand-Based Reactions with Lewis Acids. University of California, Berkeley, Berkeley, CA, February 2015. *Invited seminar for prospective graduate students.

Lieberman-Martin, A. L. Activation of Platinum Complexes by Ligand-Based Reactions with Lewis Acids. Inorganic Division Seminar, University of Washington, Seattle, WA, January 2015.

Lieberman-Martin, A. L.; Bergman, R. G.; Tilley, T. D. Remote Triggers for the Activation of Unreactive Bonds by Late Metal Complexes. 248th American Chemical Society National Meeting, San Francisco, CA, August 2014.

Lieberman-Martin, A. L.; Bergman, R. G.; Tilley, T. D. Platinum Complexes Activated by Ligand-Based Reactions with Lewis Acids. 245th American Chemical Society National Meeting, New Orleans, LA, April 2013.