

Allegra L. Liberman-Martin

Assistant Professor of Chemistry and Biochemistry

Chapman University

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Education

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

with Prof. Nancy S. B. Williams (2008–2010, Scripps College)

Aryl Orientation Preferences during Reductive Elimination from Platinum Complexes

with Prof. Alan S. Goldman (Summer 2009, Rutgers University)

Iridium-Catalyzed Transfer Dehydrogenation of Cyclic Alkyl Ether Substrates

with Prof. Kathleen L. Purvis-Roberts (2007 – 2008, Scripps College)

Analysis of Amines in Air and Smog Chamber Samples by Ion Chromatography

Professional Appointments

Chapman University, Orange, CA

2018 – present

Assistant Professor of Chemistry & Biochemistry

Main Group Catalysis for Sustainable Organic and Polymer Synthesis

California Institute of Technology, Pasadena, CA

2016 – 2018

Resnick Sustainability Institute postdoctoral fellow

with Prof. Robert H. Grubbs

Investigation of Brush Polymers as Stimuli-Responsive Photonic Crystals

Publications

- (14) Chu, C. K.; Lin, T.-P.; Shao, H.; **Lieberman-Martin, A. L.**; Liu, P.; Grubbs, R. H. Disentangling Ligand Effects on Metathesis Catalyst Activity: Experimental and Computational Studies of Ruthenium–Aminophosphine Complexes. *J. Am. Chem. Soc.* **2018**, *140*, 5634–5643.
- (13) **Lieberman-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.; **Lieberman-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.; **Lieberman-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.

Grants and Awards

- Chapman University Faculty Opportunity Fund Grant (\$15,000) 2019
- Hamilton Syringe Grant (\$1,000) 2019
- Resnick Sustainability Institute Postdoctoral Fellowship 2016 – 2018
- Outstanding Poster Award, Division of Polymer Chemistry 2017
253rd American Chemical Society National Meeting, San Francisco, CA
- 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) 2013
- Graduate Division Conference Travel Grant (UC-Berkeley) 2013 and 2015
- Barbara McClintock Award for Best Senior Thesis in the Sciences (Scripps College) 2010
- ACS Division of Inorganic Chemistry Undergraduate Award (Scripps College) 2009
- Undergraduate Summer Research Fellowship (Rutgers University) 2009
Center for Enabling New Technologies through Catalysis
- Norris Foundation Summer Research Fellowship (Scripps College) 2008

Professional Activities

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 Science*
- *Chemical Communications*

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

Teaching Experience

Chapman University

- CHEM 230: Organic Chemistry I 2018, 2019
- CHEM 230L: Organic Chemistry I Laboratory 2018, 2019
- CHEM 331: Organic Chemistry II 2019
- CHEM 331L: Organic Chemistry II Laboratory 2019

California Institute of Technology

- Ch101: "Revolutionary Inorganic Molecules" 2017
- Research Mentor, Jayce Miller, Undergraduate Student 2016 – 2018

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
- Research Mentor
 - Jana Schmitt, Visiting Graduate Student 2013 – 2014
 - Myles Walden, High School Student Summer 2012

Supervised Research Students at Chapman University

Daniel Chang (Chemistry '19, Chapman University) (2018–present)

- awarded a Spring 2019 CUE Student Scholarly Research/Creative grant
- presented a poster at the SoCal Undergraduate Chemistry Research Symposium, July 2019
- presented a poster at the Fall 2019 American Chemistry Society National Meeting, San Diego, CA. August 2019

Cara Fleener (Biochemistry '21, Chapman University) (2019 – present)

- awarded a CUE 2019 Summer Undergraduate Research Fellowship

Roxanne Naumann (Chemistry '21, Chapman University) (2019 – present)

- awarded a CUE 2019 Summer Undergraduate Research Fellowship
- awarded a Fall 2019 CUE Student Scholarly Research/Creative grant

Service and Outreach

Chapman University

- Co-founder and co-director of the Chemistry & Biochemistry Seminar Series 2018 – present
- Mentor through the Chemistry Women Mentorship Network 2019 – present
- Organic Chemistry curriculum development 2018 – present
- Judge for the California Junior Science and Humanities Symposium (JSHS) 2019
- Invited speaker to the Chapman TriBeta Biological Honor Society 2018
Presented on “Pathways to a Ph.D. in Science”

California Institute of Technology

- Speaker on “Interviewing for Faculty Positions” Panel 2018
Caltech Project for Effective Teaching event
- Caltech Teaching Conference Organizing Committee 2017
Facilitated a conference session on authoring problem sets and exams
- Women Mentoring Women Program 2016 – 2018
Peer mentor for a female graduate student
- Safe Zone Ally 2016 – 2018
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, 2013 – 2015
Lawrence Berkeley National Laboratory
 - 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
 - Speaker 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

Presentations (* denotes Chapman University undergraduate co-authors)

Liberian-Martin, A. L. Metal-Free Catalysis for Organic and Polymer Synthesis. Chapman University Summer Undergraduate Research Fellowship (SURF) Seminar Series. Orange, CA, July 2019.

Liberian-Martin, A. L.; Chang, D. K.*; Fleener, C. R.* Hydroboration by a Cyclic Carbodiphosphorane Organocatalyst. Organometallics Gordon Research Conference, Newport, RI, July 2019. (poster)

Liberian-Martin, A. L.; Grubbs, R. H. Ruthenium Olefin Metathesis Catalysts Featuring Carbodicarbene and Carbodiphosphorane Ligands. Organometallics Gordon Research Conference, Newport, RI, July 2018. (poster)

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

Liberian-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.

Liberian-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)

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

Liberian-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)

Liberian-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.

Liberian-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.

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

Liberian-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.

Liberian-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.