Allegra L. Liberman-Martin

Assistant Professor of Chemistry and Biochemistry
Chapman University
Office phone: (714) 516-5586
Cell phone: (602) 330-3206
Email: libermanmartin@chapman.edu
Website: www.allegraliberman-martin.com

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

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

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

Aryl Orientation Preferences during Reductive Elimination from Platinum Complexes

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

Iridium-Catalyzed Transfer Dehydrogenation of Cyclic Alkyl Ether Substrates

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

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

Publications

* denotes corresponding authorship; ‡ denotes equal contribution; undergraduate coauthors underlined

With Chapman University Affiliation:

(19) **Liberman-Martin, A. L.**;‡ van Vleet, M.;‡ Zapeda, E.; Elenberger, T.; Cave, R. J.; Williams, N. S. B. Geometric Control of Carbon–Carbon Reductive Elimination from a Platinum(IV) Pincer Complex. *Organometallics* **2022**, DOI: 10.1021/acs.organomet.2c00282. (special issue on "Organometallic Chemistry Inspired by Maurice Brookhart")

(18) Fleener, C. R.; Chang, D. K.; **Liberman-Martin, A. L.*** Carbodiphosphorane-Catalyzed Hydroboration of Ketones and Imines. *Organometallics* **2021**, *40*, 4050–4054.

- A "Most Read" article from December 2021–February 2022 on the *Organometallics* website
- This work is highlighted in the "Out in Inorganic Chemistry: A Celebration of LGBTQIAPN+ Inorganic Chemists" virtual issue of *Inorganic Chemistry*

(17) **Liberman-Martin, A. L.**;* ‡ Chang, A. B.;‡ Chu, C. K.; Siddique, R. H.; Lee. B;* Grubbs, R. H.* Processing Effects on the Self-Assembly of Brush Block Polymer Photonic Crystals. *ACS Macro Letters*, **2021**, *10*, 1480–1486.

- A "Most Read" article from November–December 2021 on the *ACS Macro Letters* website

(16) Naumann, R. A.; Ziller, J. W.; **Liberman-Martin, A. L.*** Crystal Structure of 2-(2,6-diisopropylbenzene)-*N*,*N*-diethyl-3,3-dimethyl-2-azaspiro[4.5]decan-1-amine: A Diethylamine Adduct of a Cyclic(Alkyl)(Amino)Carbene (CAAC). *Acta Crystallogr.* **2021**, *E77*, 903–906.

(15) **Liberman-Martin, A. L.**;*‡ Ogba, O. M.*‡ Midsemester Transition to Remote Instruction in a Flipped College-Level Organic Chemistry Course. *J. Chem. Educ.* **2020**, *97*, 3188–3193. (special issue on "Insights Gained While Teaching Chemistry in the Time of COVID-19")

From Prior Training:

(14) Chu, C. K.; Lin, T.-P.; Shao, H.; **Liberman-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) **Liberman-Martin, A. L.**; Grubbs, R. H. Ruthenium Olefin Metathesis Catalysts Featuring a Labile Carbodicarbene Ligand. *Organometallics* **2017**, *36*, 4091–4094.

(12) **Liberman-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

(11) 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.

(10) Lin, T.-P.; Chang, A. B.; Chen, H.-Y.; **Liberman-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.

(9) 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.

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

(7) **Liberman-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.; **Liberman-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) **Liberman-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) **Liberman-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) **Liberman-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) **Liberman-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.; **Liberman-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

At Chapman University

Funded

- National Science Foundation Launching Early-Career Academic Pathways in the Mathematical and Physical Sciences (LEAPS-MPS) "LEAPS-MPS: Development of Carbodiphosphorane Catalysts for Organic and Polymer Synthesis" ($235,421) 2022–2024
- Organic Syntheses Summer Research Grant for Faculty at Principally Undergraduate Institutions "Synthesis and Catalytic Applications of Carbodiphosphoranes" ($16,000) 2022–2023
- American Chemical Society Petroleum Research Fund Undergraduate New Investigator Program "Carbodiphosphoranes as Organocatalysts for Carbodiimide and Isocyanate Reduction" ($55,000) 2021–2023
- Chapman Pedagogical Innovation Award and Grant "Development of a Concept Video Library and Class Demonstrations for an Advanced Organic Chemistry Course" ($5,000) 2020–2021
- Chapman Grant Writers Bootcamp Grant ($5,000) 2019–2021
- Chapman University Faculty Opportunity Fund Grant ($15,000) 2019–2021
- Hamilton Syringe Grant ($1,000) 2019

Pending

- Cottrell Scholar Award "Broadening Applications of the Weakly Coordinating Triflimidate Anion in Main Group Catalysis ($100,000; submitted July 1, 2022)

At Caltech

- Resnick Sustainability Institute Postdoctoral Fellowship 2016–2018
- Outstanding Poster Award, Division of Polymer Chemistry 2017
  253rd American Chemical Society National Meeting, San Francisco, CA

At UC Berkeley

- Benjamin Boussert 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

At Scripps College

- Barbara McClintock Award for Best Senior Thesis in the Sciences 2010
- ACS Division of Inorganic Chemistry Undergraduate Award 2009

Teaching Experience

Chapman University

- CHEM 230: Organic Chemistry — Fall 2018, 2019, 2020, 2021, 2022
- CHEM 230L: Organic Chemistry I Laboratory — Fall 2018, 2019
- CHEM 331: Organic Chemistry II — Spring 2019, 2020, 2021
- CHEM 331L: Organic Chemistry II Laboratory — Spring 2019
- CHEM 432: Advanced Organic Chemistry — Fall 2020, 2022

California Institute of Technology

- Ch101: "Revolutionary Inorganic Molecules" (co-instructor) — 2017

University of California, Berkeley (as a 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

Recent Presentations

Undergraduate researchers are underlined; bolded name denotes presenter

Liberman-Martin, A. L.; Chang, D. K.; Fleener, C. R.; Sullivan, L.; Janda, B. Carbodiphosphoranes as Organocatalysts for Hydroboration and Hydrosilylation Reactions. American Chemical Society National Meeting, San Diego, CA, March 2022. (invited talk in the Phosphorus Chemistry Symposium)

Liberman-Martin, A. L. Nucleophilic Carbon Catalysts for Organic and Polymer Synthesis. Chemistry Department Seminar (by remote video), Reed College, March 2022. (invited talk)

Liberman-Martin, A. L. Nucleophilic Carbon Catalysts for Organic and Polymer Synthesis. Chemistry Seminar (by remote video), Montclair State University, November 2021. (invited talk)

Liberman-Martin, A. L. Main Group Catalysts for Organic and Polymer Synthesis. Chemistry Department Seminar, Virtual Science Nights (intercollegiate seminar series between University of San Diego, Gonzaga University, Metropolitan State University of Denver, Point Loma Nazarene University, LaSierra University, and Chapman University), March 2021. (invited talk)

Liberman-Martin, A. L. Main Group Catalysts for Organic and Polymer Synthesis. Chemistry Department Seminar (by remote video), Cleveland State University, January 2021. (invited talk)

Chang, D. K.; Fleener, C. R.; Naumann, R. A.; **Liberman-Martin A. L.** Metal-Free Catalysts for Organic and Polymer Synthesis. Schmid Science Forum (by remote video), Chapman University, November 2020 (invited talk).

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

Service and Outreach

As an Assistant Professor at Chapman University

Service to the chemistry profession and broader community

- Ad hoc manuscript reviewer: 2018–present
  - *Journal of the American Chemical Society*
  - *Chemical Science*
  - *Chemical Communications*
  - *Dalton Transactions*
  - *Organic and Biomolecular Chemistry*
  - *Journal of Chemical Education*
- Ad hoc grant proposal reviewer 2021–present
  - Army Research Office – Materials Design Program
  - National Science Foundation – Chemical Catalysis Program
- Beckman Scholars Program Advisory Panel member (2023 cycle) 2022
- Facilitator for ACS "Postdoc to Faculty" workshop 2022
  Led session on inclusive teaching methods
- Presider: *Phosphorus Chemistry Symposium*, Division of Inorganic Chemistry, American Chemical Society National Meeting, San Diego, CA. 2022
- Caltech panelist on "Demystifying the Research Statement" 2020
- Invited speaker to University of California, Berkeley's Science, Leadership, and Management Seminar Series on "Mentoring and Working with Undergraduates" 2019
- Judge for the California Junior Science and Humanities Symposium (JSHS) 2019

Service to the Chapman University community

- Leader of ACS Chemistry exit exam working group 2022
- Research Mentor for Simon-Orange-Chapman STEM Scholars 2022
- Chapman Academic Integrity Committee member 2021–present
- Chapman Tutoring and Learning Center Advisory Board member 2021–present
- Macromolecular curriculum working group 2021–present
  - Co-designing a supramolecular, polymer, and nanochemistry course
  - Developing polymer chemistry lecture and laboratory experiments
- Panelist for Introduction to Chemistry Majors & Career Paths course 2019, 2020, 2022
- Beckman Scholars Program working group 2021
- Chapman Schmid College Discussion Leader on "Flipped Classrooms" 2020
- Member of search committee for Assistant Professor of Mathematics 2019–2020
- Organic Chemistry curriculum development working group 2018 –2019
  - Adopted new organic chemistry textbook (Klein's *Organic Chemistry*)
  - Revised Organic I Laboratory experiments
- Co-founder and co-director of the Chemistry & Biochemistry Seminar Series 2018–present
- Invited speaker to the Chapman TriBeta Biological Honor Society 2018

At Caltech

- 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
- Presider: *New Synthesis & Characterization of Polymers*, Division of Polymer Chemistry, American Chemical Society National Meeting, Washington DC 2017

At UC Berkeley

- Student Chair, Chemical Sciences Division Catalysis Group 2013–2015
  Lawrence Berkeley National Laboratory
  - Organized a monthly interdisciplinary seminar series
- Bay Area Scientists in Schools classroom volunteer 2010–2015
  - "Be a Scientist" program mentoring 7th grade students' scientific investigations over a two-month period

Research Students

At Chapman University (alphabetical order by last name)

Daniel Chang (Chemistry 2019, Chapman University; 2018 – 2020)

- Completed M.S. in Chemistry at the California Institute of Technology (Reisman group)
- NSF Graduate Research Fellowship recipient
- Ronald M. Huntington Award recipient (campus-wide award for research accomplishments)
- Recipient of Chapman Outstanding Senior in Chemistry award (2019)
- Awarded a Spring 2019 Student Scholarly Research/Creative grant ($1,000)

An Dang (Biochemistry 2024, Chapman University; 2022 – present)

Tamara Elenberger (Biochemistry 2022, Chapman University; 2020 – 2021)

- Awarded a Spring 2021 Student Scholarly Research/Creative grant ($750)

Cara Fleener (Biochemistry 2021, Chapman University; 2019 – 2021)

- Awarded a 2019 Chapman Summer Undergraduate Research Fellowship ($4,000)
- Awarded a Spring 2020 Student Scholarly Research/Creative grant ($1,000)

Ben Janda (Chemistry 2023, Chapman University; 2021 – present)

- Goldwater Scholar (2022)
- Beckman Scholar (2022)
- Poster Award Winner at the 2022 National Organic Chemistry Symposium

Vanna Kizirian (Chemistry 2022, Chapman University; 2020 – 2021)

Ali Mahmoud (transferred to the University of Washington; 2020)

- Received Honorable Mention for 2020 Chapman Summer Undergraduate Research Fellowship

Roxanne Naumann (Chemistry 2021, Chapman University; 2019 – 2021)

- Currently completing a Ph.D. in Chemistry at UC - San Diego (Romero group)

- Co-Recipient of Chapman Outstanding Senior in Chemistry award (2021)
- Awarded a 2019 Chapman Summer Undergraduate Research Fellowship ($4,000)
- Awarded a Fall 2019 Student Scholarly Research/Creative grant ($1,000)

Haley Robertson (Chemistry 2023, Chapman University; 2021 – present)

- Awarded 2021 Schmid College of Science and Technology Summer Research Funding ($5,000)

Liam Sullivan (Chemistry 2022, Chapman University; 2020 – 2022)

- Awarded the American Chemical Society Senior Leadership Award (2022)
- Awarded a 2021 Chapman Summer Undergraduate Research Fellowship ($4,000)

Julie Tran (Biochemsitry 2024, Chapman University; 2022 – present)

Alexa Wilson (Chemistry 2022, Chapman University; 2020 – 2022)

- Awarded 2021 Schmid College of Science and Technology Summer Research Funding ($5,000)

Biyu (Chelsea) Zhao (Chemistry 2022, Chapman University; 2022 – present)

- Awarded the American Chemical Society Undergraduate Award in Organic Chemistry (2022)

At Caltech and UC Berkeley

Jayce Miller; Caltech undergraduate (supervised 2016–2018)

Jana Schmitt; visiting master's student (supervised 2013–2014)

Myles Walden; high school research student (supervised Summer 2012)