

# Curriculum Vitae - Alexander Michael Spokoyny

## Current Address

University of California, Los Angeles, Department of Chemistry and Biochemistry and California NanoSystems Institute (CNSI); Box 951569, Mol. Sci. 1505B, Los Angeles, CA 90095  
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## Education

Northwestern University	Inorganic Chemistry	Ph.D. (12/2011)
UCLA	Chemistry	B.S. (06/2006)

## Professional Academic Experience

7/2020 – present	Associate Professor (with tenure), Department of Chemistry and Biochemistry, UCLA.
8/2014 – 7/2020	Assistant Professor, Department of Chemistry and Biochemistry, UCLA.
1/2012 – 07/2014	Post-Doctoral Fellow, Chemistry Department, MIT. Stephen L. Buchwald and Bradley L. Pentelute Laboratories.
12/2006 – 12/2011	Graduate Researcher, Chemistry Department, Northwestern University. Advisor: Chad A. Mirkin.
12/2004 – 08/2006	Undergraduate Researcher, Department of Chemistry and Biochemistry, UCLA. Advisor: M. Frederick Hawthorne.

## Selected Awards and Honors

UCLA Distinguished Teaching Award (2021)  
Camille Dreyfus Teacher-Scholar Award (2020)  
*Journal of Materials Chemistry (RSC)*, Emerging Investigator (2020)  
UCLA Undergraduate Faculty Mentor Award (2020)  
New Talent: Americas, *Dalton Transactions (RSC)* (2020)  
Thieme Chemistry Journal Award (2020)  
National Science Foundation CAREER Award (2019)  
Hanson-Dow Award for Outstanding Teaching (2019)  
*Inorganic Chemistry (ACS)*, Emerging Investigator (2019)  
*Chemical Communications (RSC)*, Emerging Investigator (2019)  
Cottrell Scholar, Research Corporation for Science Advancement (2018)  
NIH/NIGMS Maximizing Investigators Research Award (MIRA) (2017)  
Alfred P. Sloan Foundation Research Fellowship (2017)  
Glenn T. Seaborg Award, UCLA (2017)  
Krug Lectureship, University of Illinois, Urbana Champaign (2017)  
Chemical and Engineering News (C&EN), Talented 12 (2016)  
ACS Petroleum Research Fund, Doctoral New Investigator Grant (2016)  
3M Non-Tenured Faculty Award (2016)  
*Inorganic Chemistry Frontiers (RSC)*, Emerging Investigator (2015)  
UCLA Faculty Career Development Award (2015, 2016)  
Best Poster Prize (Grand Prize), 23<sup>rd</sup> American Peptide Symposium, Hawaii, USA (2013)  
IUPAC Prize for Young Chemists (2012)  
NIH Ruth Kirschstein NRSA Post-Doctoral Fellowship (2012 – 2014)  
Award for Excellence in Graduate Research, Northwestern Univ., Chemistry Department (2011)  
Finalist, Young Boron Chemist Award, XIV International Conference on Boron Chemistry (2011)

## Curriculum Vitae - Alexander Michael Spokoyny

Young Investigator Award, American Chemical Society, Division of Inorganic Chemistry (2011)  
JSPS Global Center of Excellence Visiting Fellowship, University of Tokyo (2011)  
E. W. Gelewitz Award (PLU, Alpha Gamma Chapter), Northwestern University (2010)  
Presidential Fellowship, Northwestern University (2010 – 2011)

### Synergistic Activities

2020 – present UCLA Master's in Applied Chemical Science (MACS), Faculty Advisor.  
2020 2020 UCLA Fall Open House (Zoom Edition), Faculty Speaker.  
2020 2020 Zoom Main Group Symposium, Organizer.  
2020 – present UC Chemical Symposium (UCCS), Faculty Advisor.  
2020 – 2021 UCLA Chemistry and Biochemistry Research Ramp-Up Committee.  
2020 – present UCLA Academic Senate Committee on Honors, Awards and Prizes.  
2019 – present UCLA Chemistry and Biochemistry Shared Instrumentation Committee.  
2019 – present UCLA Chemistry and Biochemistry Research Space Committee.  
2019 – present UCLA Chemistry and Biochemistry Instructional Laboratory Committee.  
2019 – present *Reviews and Advances in Chemistry*, Editorial Advisory Board Member.  
2019 – present UCLA Dissertation Year Fellowship, Faculty Reviewer (campus-wide).  
2019 2019 SoCal Bioinorganic Meeting, Organizer.  
2019 2019 UCLA Fall Open House, Faculty Speaker.  
2019 – present *Nano Research*, Editorial Advisory Board Member.  
2019 2019 UCLA Bruin Day, Faculty Speaker.  
2019 – present *Chem (Cell Press)*, Editorial Advisory Board Member.  
2019 UCLA Task Force on Undergraduate Safety in the Laboratory.  
2019 NAS BCST, Invited Speaker and Panelist.  
2019 UC Chemical Symposium, Faculty Mentor and Panelist.  
2019 – present Russian-American Science Association (RASA), Coordinating Committee Member.  
2018 UCLA Search Committee for a General Chemistry Academic Administrator.  
2018 UCLA Chemistry and Biochemistry Committee on Teaching Mentorship, Faculty Mentor.  
2018 Harry Gray Award for Inorganic Chemistry Symposium, Organizer.  
2018 Photochemistry and Polymers Symposium, ACS Meeting, Session Chair.  
2018 – present American Association for the Advancement of Science, Member (AAAS).  
2018 – present Royal Society of Chemistry, Member (MRSC).  
2018 – present Society of Biological Inorganic Chemistry (SBIC), Member.  
2018 – present Air Force Office of Scientific Research (AFOSR), Proposal Reviewer.  
2018 – present Cottrell Scholar (RCSA), Proposal Reviewer.  
2017 – present National Science Foundation, Proposal Reviewer, Panelist.  
2017 – present ACS Petroleum Research Fund, Proposal Reviewer.  
2017 National Academy of Sciences Panel on Preprint Servers, Panelist.  
2017 C&EN Talented 12 Selection Committee, Advisor.  
2017 NSF Early Career Investigator Workshop, Faculty Participant.  
2017 SoCal Organometallics Meeting, Organizer.  
2017 SoCal Main Group Symposium, Organizer.  
2017 UCLA Bruin Day Ambassador (together w. Azin Saebi).  
2017 ACS SoCal Undergraduate Research Conference, Discussion Leader.  
2016 – present UCLA Justice Work Group, Member.  
2016 – present UCLA Chemistry-Biology Interface Program, Faculty Mentor.  
2016 – present Boron in the Americas (BORAM) Advisory Committee, Member.  
2016 4<sup>th</sup> International Conference on Chemical Bonding, Session Chair.

## Curriculum Vitae - Alexander Michael Spokoyny

2016	NIH/NIGMS, New Faculty Workshop, Participant.
2016	UCLA Faculty Extramural Fellowships Advisor.
2016	ACS National Meeting, Inorganic Division, Session Chair.
2016	Organometallic Chemistry Gordon Research Seminar, Discussion Leader and Invited Panelist.
2016	EMN Hawaii Meeting, Organocatalysis Session Chair.
2016	UC LEADS Meeting (UC Davis), Poster Judge.
2015 – 2018	Legislative Assembly Representative, UCLA Faculty Senate.
2015 – present	UCLA Chemistry and Biochemistry Graduate Recruitment Committee.
2015 – present	UCLA Undergraduate Scholars Program, Proposal Reviewer.
2015	UCLA Undergraduate Student Orientation, Faculty Speaker.
2015	NSF Center for Enabling Technologies through Catalysis Summer School, Session Chair.
2014 – present	National Science Foundation, Graduate Research Fellowship Program (GRFP), Reviewer.
2015 – present	Beta Gamma Chapter of AXE, Chapter Faculty Advisor.
2015 – 2017	UCLA Diversity Outreach Day, Faculty Mentor.
2014 – present	External Proposal Reviewer for Czech Academy of Sciences, Netherlands Foundation for Fundamental Research.
2014	“New Faculty Workshop on Best Practices in Teaching”, Participant.
2013	American Chemical Society Meeting, Inorganic Division, Session Chair.
2013 – present	American Peptide Society, Member.
2011	Gordon Research Seminar, Organometallic Chemistry, co-Chair.
2011 – present	Referee for <i>ACS</i> , <i>Wiley</i> , <i>RSC</i> , <i>Cell and Nature</i> journals (~ 40 per year).
2009 – 2010	Basolo-Ibers-Pearson Inorganic Seminars (“BIP”), Organizer.
2009 – 2010	Northwestern Graduate Student Association, Operations Officer.
2008 – 2009	Alpha Gamma Chapter of PLU, Awards Chair (2008-2009).
2008 – present	Materials Research Society, Member.
2006 – 2011	Northwestern University, Department of Chemistry, Graduate Liaison Committee, Student Member.
2005 – present	American Chemical Society, Member.

### Teaching and Mentoring

2021	Instructor (8.0/9), Inorganic and Metallorganic Chemistry (Chemistry 174), UCLA.
2020	Instructor (8.8/9), Inorganic and Metallorganic Chemistry (Chemistry 174), UCLA.
2019	Instructor (8.1/9), Chemistry – Material World (Chemistry 3), UCLA.
2019	Instructor (8.7/9), Inorganic and Metallorganic Chemistry (Chemistry 174), UCLA.
2019	Instructor (4.8/5), Chemistry Fiat Lux Seminar (Chemistry 19), UCLA.
2018	Instructor (8.7/9), Chemistry – Material World (Chemistry 3), UCLA.
2018	Instructor (8.5/9), Chemistry – Material World (Chemistry 3), UCLA.
2018	Instructor (8.3/9), Careers in Chemistry Seminar (Chemistry 147), UCLA.
2018	Instructor (8.7/9), Inorganic and Metallorganic Chemistry (Chemistry 174), UCLA.
2017	Instructor (8.2/9), Advanced Inorganic Chemistry (Chemistry 172), UCLA.
2017	Instructor (9/9), Inorganic and Metallorganic Chemistry (Chemistry 174), UCLA.
2017	Instructor, Chemistry of Biology Seminar (Chemistry 206), UCLA.
2016	Instructor (8.6/9), Careers in Chemistry Seminar (Chemistry 147), UCLA.
2016	Instructor (4.8/5), Chemistry Fiat Lux Seminar (Chemistry 19), UCLA.
2015	Instructor (8.2/9), Intermediate Inorganic Chemistry (Chemistry 171), UCLA.
2015	Instructor (8.4/9), Bioinorganic Chemistry (Chemistry 179/279), UCLA.
2015	Instructor (7.9/9), Intermediate Inorganic Chemistry (Chemistry 171), UCLA.
2014 – now	<b>Graduate student mentees:</b> Dr. Alex Wixtrom (Ph.D. 2018, Current Position: Scientific Developer at Emerald Cloud Lab), Dr. Kent Kirlikovali (Ph.D. 2019, Current Position: Post-Doc at Northwestern University), Dr. Rafal Dziedzic (Ph.D. 2019, Current Position: Post-Doc at LBNL), Dr. Elaine Qian (Ph.D. 2019, Current

## Curriculum Vitae - Alexander Michael Spokoyny

Position: Scientist at Emerald Cloud Lab), Dr. Dahee Jung (Ph.D. 2019, Current Position: Post-Doc at Northwestern University), Dr. Marco Messina (Ph.D. 2019, Current Position: Post-Doc at UC Berkeley), Ms. Jessica Logan (M.S. 2020, Current Position: Teacher), Ms. Rebecca Kubena (M.S. 2020, Current Position: Teacher), Dr. Mary Waddington (Ph.D. 2021, Current Position: Lam Research), Mr. Harrison Mills, Mr. Nicholas Bernier, Ms. Kierstin Anderson, Mr. Zeeshan Parvez, Ms. Hayden Montgomery, Mr. Kevin Chandler, Mr. Austin Ready, Ms. Qiao Qiao Wang, Ms. Yessica Nelson, Ms. Angela Bui.

**Past undergraduate student mentees:** Ms. Elamar Hakim Mouly (Chemistry, Departmental Scholar), Ms. Seong-Jin Kim (Chemistry), Ms. Jamie Lam (Biochemistry), Mr. Vinh Nguyen (Biochemistry), Mr. Brian Munekiyo (Chemistry), Mr. Shaunt Kevork (Materials Science), Ms. Simone Stevens (Biochemistry), Mr. Parker Beatty (Biochemistry), Mr. Yanwu Shao (Chemistry), Mr. Yanbo Ren (Chemistry), Ms. Talia Saravi (Materials Science), Mr. Daniel Mosallaei (Biochemistry), Ms. Sarah Kim (Chemistry), Ms. Alice Phung (Biochemistry), Ms. Azin Saebi (Biochemistry, Departmental Scholar), Ms. Monica Kirolos (Biochemistry), Mr. Joshua Martin (Biochemistry), Ms. Michelle Ko (Chemistry), Ms. Ekaterina Titarenko (Chemistry), Ms. Sylvia Chow (Materials Science), Mr. Timur Katsnelson (Neuroscience), Mr. Graham Nethercot (Chemistry), Ms. Katelyn Spilman (Biochemistry), Mr. Paul Chong (Chemistry), Ms. Alejandra Gonzalez (Chemistry), Ms. Olivia Brand (Biology), Mr. Kevin Qian (Chemistry – Amgen Scholar), Ms. Chantel Mao (Chemistry), Mr. Benjamin Pisa (Materials Chemistry), Ms. Emily Ganley (Chemical Engineering, UNM), Mr. Isaac Diaz (Materials Chemistry), Anabel Cho (Chemistry), Alex Umanzor (Chemistry), Maya Pathuri (Chemistry), Mr. Miles Savage (Chemistry), Ms. Anabel Cho Lopez (Chemistry), Mr. Fadi Al Sarhan (Chemistry, Departmental Scholar), Mr. Gustavo Marin (Chemistry/Materials Science), Ms. Morgan Hopp (Biochemistry, Department Scholar), Ms. Ila Castro De La Torre (Chemistry),

**Current undergraduate student mentees:** Ms. Ovie Soman (Materials Chemistry), Mr. Gregory Gorobets (Chemistry), Ms. Aimee Liang (Biochemistry).

**Post-Doctoral mentees:** Dr. Liban Saleh (2015 - 2017); Dr. Jonathan Axtell (2015 - 2019); Dr. Xin Mu (2017 - present); Dr. Roshini Ramachandran (2017 - 2019); Dr. Julia Stauber (2017 - 2020); Dr. Congzhi Zhu (2019 - 2020), Dr. Gregory Dwulet (2020 - 2021), Dr. Evan Doud (2020 - present), Dr. Sangmin Kim (2021 - present).

- 2014 – now Chemistry and Biochemistry Doctoral Committee: Ziyang Feng, Patrick Yee, Brett Cory, Jason Fell, Eric Raftery, Nathan Gallup, Ha Seoung Kim, Raymond Gamache, Logan Stewart, Natcha Wattanatorn, Mufan Li, Boris Voloskiy, Shenkai Wang, Christopher Karaba, Andrew Serino, Brian Shao, Wai Han Mak, Katharine Winchell, Chengzhang Wan, Emily Cosco, Chuanzhen Zhao, Sophia King, Katherine Bay, Erin Avery, Dan Zhu, Anna Kataki, Neil Forsythe, Carl Ferber, Guangyan Zhong, Sydnee Green, James McDaniel, Christopher Jones, Benjamin Natinsky, Zachary Hern, Shreya Patel, Wenjiung Wei, Woojin Lee, Zhiyu Liu, Ernest Armenta, Benjamin Hoar, Chloe Williams, Cesar Garcia, Omar Leon, Alex Bagdasarian, Sibbo Wang, Zerina Mehmedovic, Brandon Jolly, Quynh Duong, Holly Senebandith, Charlene Salamat,
- 2021 – now External Dissertation Committees: Gabrielle Hoover (University of Toronto).
- 2014 – now Chemistry and Biochemistry Master's Committee: Amylynn Chen; Jun Gao; Michael Liao, Azin Saebi, Yi Shen, Daniel Hatfield.
- 2013 – 2014 Mentored student colleagues: Dr. Katia Vinogradova and Dr. Chi Zhang.
- 2012 Mentored summer student: Dr. Calvin D. Lewis.
- 2011 Mentored NSF/REU undergraduate student: Noel Leon.
- 2009 – 2011 Mentored graduate student colleagues: Dr. Charles Machan, Dr. Daniel

## Curriculum Vitae - Alexander Michael Spokoyny

2006 – 2007 Clingerman and Dr. Mari Rosen (Mirkin Group).  
Teaching Assistant (Organic Chemistry Lab/Lecture), NU.  
2006 Teaching Assistant (Chemistry 14CL and Chemistry 174), UCLA.

### Outreach Activities

2016 – now UCLA Prison Education Program.  
2016 Careers in Chemistry, Outreach Presentation at Santa Monica College.  
2015 – now Educational Outreach for UCLA Advancing Women in Science and Engineering (AWiSE).  
2015 AVID Guest Speaker, Careers in Science, Los Angeles Unified School District.  
2015 Guest Lecturer, Careers in Chemistry, UCLA.  
2014 – now Polling Place Inspector, Los Angeles, CA.  
2014 Faculty Host, Outreach and Diversity Day, UCLA.  
2008 – 2011 Volunteer Cook at the Inspiration Café, Chicago, IL.  
2008 – 2009 Teaching Outreach, Hayt Elementary, Chicago, IL.

### Peer-Reviewed Publications at UCLA (\* - denotes corresponding authorship)

1. Waddington, M. A.; Zheng, A.; Stauber, J. M.; Mouly, E. H.; Saleh, L. M. A.; Král, P.; Spokoyny, A. M.\* "An Organometallic Strategy for Cysteine Borylation", *J. Am. Chem. Soc.* **2021**, *143*, 8661-8668.
2. Li, B.; Zhang, X.; Stauber, J. M.; Miller, T. F.; Spokoyny, A. M.\* Electronic Structure of Super-Oxidized Radical Cationic Dodecaborate-Based Clusters", *J. Phys. Chem. A* **2021**, *125*, 6141-6150.
3. Stauber, J. M.\*; Rheingold, A. L.; Spokoyny, A. M.\* "Gold(III) Aryl Complexes as Reagents for Constructing Hybrid Peptide-Based Assemblies via Cysteine S-Arylation", *Inorg. Chem.* **2021**, *60*, 5054-5062.
4. Ramachandran, R.; Bernier, N. A.; Mavilian, C. M.; Izad, T.; Thomas, L.; Spokoyny, A. M.\* *J. Chem. Ed.* **2021**, *60*, 5054-5062.
5. Kim, Y.; Kubena, R.; Axtell, J. C.; Samouei, H.; Pham, P.; Stauber, J. M.; Spokoyny, A. M.\*; Hilty, C.\* "Dynamic Nuclear Polarization using 3D Aromatic Radicals", *J. Phys. Chem. Lett.* **2021**, *12*, 13-18.
6. Stevens, S. L.; Phung, A. C.; Gonzalez, A.; Shao, Y.; Mouly, E. H.; Nguyen, V. T.; Martin, J. L.; Mao, C.; Saebi, A.; Mosallaei, A.; Kirillos, M.; Chong, P.; Umanson, A.; Qian, K.; Marin, G.; Ebrahim, O. M.; Pathuri, R. S.; Hopp, M.; Ramachandran, R.\*; Waddington, M. A.\*; Spokoyny, A. M.\* "Narratives of Undergraduate Research, Mentorship, and Teaching at UCLA", *Pure & Appl. Chem.* **2021**, *93*, 207-221.
7. Mu, X.; Hopp, M.; Dziedzic, R. M.; Rheingold, A. L.; Sletten, E. M.; Axtell, J. C.\*; Spokoyny, A. M.\* "Expanding the Scope of Pd-Catalyzed B-N Cross-Coupling Chemistry in Carboranes", *Organometallics* **2020**, *39*, 4380-4386.
8. Kataki-Anastasakou, A.; Axtell, J. C.; Hernandez, S.; Dziedzic, R. M.; Balaich, G. J.; Rheingold, A. L.; Spokoyny, A. M.; Sletten, E. M.\* "Carborane Guests for Cucurbit[7]uril Facilitate Strong Binding and on Demand Removal", *J. Am. Chem. Soc.* **2020**, *142*, 20513-20518.
9. Jung, D.\*; Muni, M.; Marin, G., Ramachandran, R.; El-Kady, M. F.; Balandin, T. B.; Kaner, R. B.\*; Spokoyny, A. M.\* "Enhancing Cycling Stability of the Tungsten Oxide Supercapacitor Electrodes via a Boron Cluster-Based Molecular Cross-Linking Approach", *J. Mater. Chem. A* **2020**, 18015-18023.
10. Stauber, J. M.; Schwan, J.; Zhang, X.; Axtell, J. C.; Jung, D.; McNicholas, B. J.; Oyala, P. H.; Martinolich, A. J.; Winkler, J. R.; See, K. A.; Miller, T. F.\*; Gray, H. B.\*; Spokoyny, A. M.\* "A Super-Oxidized Radical Cationic Icosahedral Boron Cluster", *J. Am. Chem. Soc.* **2020**, *142*, 12948-12953.
11. Aubry, T. J.; Winchell, K. J.; Salamat, C. Z.; Basile, V. M.; Lindemuth, J. R.; Stauber, J. M.; Axtell, J. C.; Kubena, R. M.; Phan, M. D.; Bird, M. J.; Spokoyny, A. M.\*; Tolbert, S. H.\*;

## Curriculum Vitae - Alexander Michael Spokoyny

- Schwartz, B. J.\* "Tunable Dopants with Intrinsic Counterion Separation Reveal the Effects of Electron Affinity on Dopant Interaction and Free Carrier Production in Sequentially Doped Conjugated Polymer Films", *Adv. Funct. Mater.* **2020**, *30*, 2001800.
12. Anderson, K. P.; Waddington, M. A.; Balaich, G. J.; Stauber, J. M.; Caram, J. R.; Djurovich, P. I.; Spokoyny, A. M.\* "A Molecular Boron Cluster-Based Chromophore with Dual Emission", *Dalton Trans.* **2020**, *49*, 16245-16251. (Special Issue, New Talent: Americas.)
  13. Mills, H. A.; Martin, J. L.; Rheingold, A. L.; Spokoyny, A. M.\* "Oxidative Generation of Boron-Centered Radicals in Carboranes", *J. Am. Chem. Soc.* **2020**, *142*, 4586-4591.
  14. Stauber, J. M.; Qian, E. A.; Han, Y.; Rheingold, A. L.; Král, P.\*; Fujita, D.\*; Spokoyny, A. M.\* "An Organometallic Strategy for Assembling Atomically Precise Hybrid Nanomaterials", *J. Am. Chem. Soc.* **2020**, *142*, 327-334.
  15. Qian, E. A.; Han, Y.; Messina, M. S.; Maynard, H. D.; Král, P.; Spokoyny, A. M.\* "Multivalent Cluster Nanomolecules for Inhibiting Protein-Protein Interactions", *Bioconjugate Chem.* **2019**, *30*, 2594-2603.
  16. DiFranco, M.; Quinonez, M.; Dziedzic, R. M.; Spokoyny, A. M.; Cannon, S. C.\* "A Highly-Selective Chloride Microelectrode Based on the Mercuracarborand Ionophore", *Sci. Rep.* **2019**, *9*, 18860.
  17. Mu, X.; Axtell, J. C.; Bernier, N. A.; Kirlikovali, K. O.; Jung, D.; Umanzor, A.; Chen, X.; Bay, K. L.; Kirillos, M.; Rheingold, A. L.; Houk, K. N.; Spokoyny, A. M.\* "Sterically Unprotected Nucleophilic Boron Cluster Reagents", *Chem* **2019**, *5*, 2461-2469.
  18. Dziedzic, R. M.; Axtell, J. C.; Rheingold, A. L.; Spokoyny, A. M.\* "Off-Cycle Processes in Pd-Catalyzed Cross-Coupling of Carboranes", *Org. Proc. Res. Dev.* **2019**, *23*, 1638-1645. (Special Issue Commemorating 25 Year Anniversary of Buchwald-Hartwig Cross-Coupling Chemistry)
  19. Jung, D.; Raffan-Montoya, F.; Ramachandran, R.; Zhang, Y.; Islamoglu, T.; Marin, G.; Dziedzic, R.; Farha, O. K.; Stoliarov, S. I.; Spokoyny, A. M.\* "Cross-Linked Polyurethane Materials Featuring Dodecaborate Clusters as Inorganic Polyol Equivalents", *Chem. Commun.* **2019**, *55*, 8852-8855. (Special Issue on Emerging Investigators).
  20. Axtell, J. C.\*; Messina, M. S.; Liu, J.-Y.; Galaktionova, D.; Schwan, J.; Porter, T. M.; Savage, M. D.; Wixtrom, A. I.; Rheingold, A. L.; Kubiak, C. P.; Winkler, J. R.; Gray, H. B.; Kral, P.\*; Alexandrova, A. N.\*; Spokoyny, A. M.\* "Photooxidative Generation of Dodecaborate-Based Weakly Coordinating Anions", *Inorg. Chem.* **2019**, *58*, 10516-10526.
  21. Barton, J. L.; Wixtrom, A. I.; Kowalski, J. A.; Brushett, F. R.\*; Spokoyny, A. M.\* "Perfunctionalized Dodecaborate Clusters as Stable Metal-Free Active Materials for Charge Storage", *ACS Appl. Energy Mater.* **2019**, *2*, 4907-4913.
  22. Aubry, T. J.; Axtell, J. C.; Basile, V. M.; Winchell, K. J.; Lindemuth, J. R.; Porter, T. M.; Liu, J.-Y.; Alexandrova, A. N.; Kubiak, C. P.; Tolbert, S. H.\*; Spokoyny, A. M.\*; Schwartz, B. J.\* "Dodecaborane-Based Dopants Designed to Shield Anion Electrostatics to Increased Carrier Mobility in Doped Conjugated Polymers", *Adv. Mater.* **2019**, *31*, 1805647 (1-8).
  23. Messina, M. S.\*; Graefe, C. T.; Chong, P.; Ebrahim, O. M.; Pathuri, R. S.; Bernier, N. A.; Mills, H. A.; Rheingold, A. L.; Frontiera, R. R.\*; Maynard, H. D.\*; Spokoyny, A. M.\* "Carborane RAFT Agents as Tunable and Functional Molecular Probes for Polymer Materials", *Polym. Chem.* **2019**, *10*, 1660-1667.
  24. Ramachandran, R.; Jung, D.; Spokoyny, A. M.\* "Cross-Linking the Dots on Metal Oxides", *NPG Asia Mater.* **2019**, *11*:19.
  25. Yruegas, S.; Axtell, J. C.; Kirlikovali, K. O.; Spokoyny, A. M.; Martin, C. D.\* "Synthesis of 9-Borafluorene Analogues Featuring a Three-Dimensional 1,1'-Bis(o-carborane) Backbone", *Chem. Commun.* **2019**, *55*, 2892-2895. Cover Article.
  26. Dziedzic, R. M.\*; Spokoyny, A. M.\* "Metal-Catalyzed Cross-Coupling Chemistry with Polyhedral Boranes", *Chem. Commun.* **2019**, *55*, 430-442. Feature Article.

## Curriculum Vitae - Alexander Michael Spokoyny

27. Anderson, K. P.; Mills, H. A.; Mao, C.; Kirlikovali, K. O.; Axtell, J. C.; Rheingold, A. L.; Spokoyny, A. M.\* "Improved Synthesis of Icosahedral Carboranes Containing Exohedral B-C and C-C Bonds", *Tetrahedron* **2019**, *75*, 187-191. (Special Issue on Frustrated Lewis Acids and Organoboranes).
28. Zhang, C.; Vinogradova, E. V.; Spokoyny, A. M.; Buchwald, S. L.; Pentelute, B. L. "Arylation Chemistry for Bioconjugation", *Angew. Chem., Int. Ed.* **2019**, *58*, 4810-4839.
29. Kirlikovali, K. O.; Axtell, J. C.; Anderson, K.; Djurovic, P. I.; Rheingold, A. L.; Spokoyny, A. M.\* "Fine-Tuning Electronic Properties of Luminescent Pt(II) Complexes via Vertex-Differentiated Coordination of Sterically Invariant Carborane-Based Ligands", *Organometallics* **2018**, *37*, 3122-3131.
30. Messina, M. S.; Stauber, J. M.; Waddington, M. A.; Rheingold, A. L.; Maynard, H. D.\*; Spokoyny, A. M.\* "Organometallic Gold(III) Reagents for Cysteine Arylation", *J. Am. Chem. Soc.* **2018**, *140*, 7065-7069.
31. Ramachandran, R.; Jung, D.; Bernier, N. A.; Logan, J. K.; Waddington, M. A.; Spokoyny, A. M.\* "Synthesis of Small Boron Oxide Nanoparticles", *Inorg. Chem.* **2018**, *57*, 8037-8041.
32. Wixtrom, A. I.; Parvez, Z. A.; Savage, M. D.; Qian, E. A.; Jung, D.; Khan, S. I.; Rheingold, A. L.; Spokoyny, A. M.\* "Tuning the Electrochemical Potential of Perfunctionalized Dodecaborate Clusters through Vertex Differentiation", *Chem. Commun.* **2018**, *54*, 5867-5870.
33. Jung, D.; Saleh, L. M. A.; Berkson, Z.; El-Kady, M. F.; Hwang, J. Y.; Mohamed, N.; Wixtrom, A. I.; Titarenko, E.; Shao, Y.; McCarthy, K.; Guo, J.; Martini, I. B.; Kraemer, S.; Wegener, E. C.; Saint-Crieq, P.; Ruehle, B.; Langeslay, R. R.; Delferro, M.; Brosmer, J. L.; Hendon, C. H.; Gallagher-Jones, M.; Rodriguez, J.; Chapman, K. W.; Miller, J. T.; Duan, X.; Kaner, R. B.; Zink, J. I.; Chmelka, B. F.; Spokoyny, A. M.\* "A Molecular Cross-Linking Approach for Hybrid Metal Oxides", *Nature Materials* **2018**, *17*, 341-348.
34. Kung, C.-W.; Otake, K.; Buru, C. T.; Goswami, S.; Cui, Y.; Hupp, J. T.; Spokoyny, A. M.; Farha, O. K. "Increased Electrical Conductivity in Mesoporous Metal-Organic Framework Featuring Metallocarborane Guests", *J. Am. Chem. Soc.* **2018**, *140*, 3871-3875.
35. Kirlikovali, K. O.; Cho, E.; Downard, T. J.; Grigoryan, L.; Han, Z.; Hong, S.; Jung, D.; Quintana, J. C.; Reynoso, V.; Ro, S.; Shen, Y.; Swartz, K.; Ter Sahakyan, E.; Wixtrom, A. I.; Yoshida, B.; Rheingold, A. L.; Spokoyny, A. M.\* "Buchwald-Hartwig Amination Using Pd(I) Dimer Precatalysts Supported by Biaryl Phosphine Ligands", *Dalton Trans.* **2018**, *47*, 3684-3688.
36. Dziedzic, R. M. Waddington, M. A.; Lee, S. E.; Kleinsasser, J.; Plumley, J. B.; Ewing, W. C.; Bosley, B. D.\*; Lavallo, V.\*; Peng, T. L.\*; Spokoyny, A. M.\* "Reversible Silver Electrodeposition from Boron Cluster Ionic Liquid (BCIL) Electrolytes", *ACS Appl. Mater. Interfaces* **2018**, *10*, 6825-6830.
37. Axtell, J. C.; Saleh, L. M. A.; Qian, E. A.; Wixtrom, A. I.; Spokoyny, A. M.\* "Synthesis and Applications of Perfunctionalized Boron Clusters", *Inorg. Chem.* **2018**, *57*, 2333-2350.
38. Kirlikovali, K. O.; Spokoyny, A. M.\* "The Long Lasting Blues: A New Record for Phosphorescent Organic Light-Emitting Diodes", *Chem (Preview)* **2017**, *3*, 385-387.
39. Serino, A. C.; Anderson, M. E.; Saleh, L. M. A.; Dziedzic, R. M.; Mills, H.; Heidenreich, L.; Dunn, B. S.; Spokoyny, A. M.\*; Weiss, P. S.\* "Work Function Control of Germanium through Carborane-Based Carboxylic Acid Ligand Surface Passivation", *ACS Appl. Mater. Interfaces* **2017**, *9*, 34592-34596.
40. Axtell, J. C.; Kirlikovali, K. O.; Dziedzic, R. M.; Gembicky, M.; Rheingold, A. L.; Spokoyny, A. M.\* "Magnesium Reagents Featuring a 1,1'-Bis(o-Carborane) Ligand Platform", *Eur. J. Inorg. Chem. (Special Issue on Boron Chemistry)* **2017**, *38-39*, 4411-4416. Cover Article. Selected as a Very Important Paper (VIP).

## Curriculum Vitae - Alexander Michael Spokoyny

41. Dzedzic, R. M.; Martin, J. L.; Axtell, J. C.; Saleh, L. M. A.; Yang, Y.; Messina, M.; Houk, K. N.; Spokoyny, A. M.\* "Cage-Walking: Vertex Differentiation by Palladium-Catalyzed Isomerization of B(9)-Bromo-*meta*-Carborane", *J. Am. Chem. Soc.* **2017**, *139*, 7729-7732.
42. Axtell, J. C.; Kirlikovali, K. O.; Jung, D.; Rheingold, A. L.; Spokoyny, A. M.\* "Metal-Free Peralkylation of the *closo*-Hexaborate Dianion, B<sub>6</sub>H<sub>6</sub><sup>2-</sup>", *Organometallics* **2017**, *36*, 1204-1210.
43. Qian, E. Q.; Wixtrom, A. I.; Axtell, J. C.; Saebi, A.; Rehak, P.; Han, Y.; Mouly, E. H.; Mosallaei, D.; Chow, S.; Messina, M.; Wang, J.-Y.; Royappa, A. T.; Rheingold, A. L.; Maynard, H. D.; Kral, P.; Spokoyny, A. M.\* "Atomically Precise Organomimetic Cluster Nanomolecules (OCNs) Assembled via Perfluoroaryl-Thiol S<sub>N</sub>Ar Chemistry", *Nature Chem.* **2017**, *9*, 333-340.
44. Axtell, J. C.; Kirlikovali, K. O.; Djurovich, P. I.; Jung, D.; Nguyen, V. T.; Munekiyo, B.; Royappa, A. T.; Rheingold, A. L.; Spokoyny, A. M.\* "Blue Phosphorescent Zwitterionic Iridium(III) Complexes Featuring Weakly Coordinating Carborane-based Ligands", *J. Am. Chem. Soc.* **2016**, *138*, 15758-15765.
45. Dzedzic, R. M.; Saleh, L. M. A.; Stevens, S. L.; Martin, J. L.; Royappa, A. T.; Rheingold, A. L.; Spokoyny, A. M.\* "B-N, B-O and B-C Bond Formation via Palladium Catalyzed Cross-Coupling of B-Bromo-Carboranes", *J. Am. Chem. Soc.* **2016**, *138*, 9081-9084.
46. Messina, M. S.; Axtell, J. C.; Wang, Y.; Chong, P.; Wixtrom, A. I.; Kirlikovali, K. O.; Upton, B. M.; Hunter, B. M.; Shafaat, O. S.; Khan, S. I.; Winkler, J. R.; Gray, H. B.; Alexandrova, A. N.; Maynard, H. D.; Spokoyny, A. M.\* "Visible-Light Induced Olefin Activation using 3D Aromatic Boron-Rich Cluster Photooxidants", *J. Am. Chem. Soc.* **2016**, *138*, 6952-6955.
47. Kirlikovali, K. O.; Axtell, J. C.; Gonzalez, A.; Phung, A. C.; Khan, S. I.; Spokoyny, A. M.\* "Luminescent Metal Complexes Featuring Photophysically Innocent Boron Cluster Ligands", *Chem. Sci.* **2016**, *7*, 5132-5138.
48. Saleh, L. M. A.; Dzedzic, R. M.; Khan, S. I.; Spokoyny, A. M.\* "Forging Unsupported Metal-Boryl Bonds with Icosahedral Carboranes", *Chem. Eur. J.* **2016**, *22*, 8466-8470.
49. Schwartz, J. J.; Mendoza, M. A.; Wattanatorn, N.; Zhao, Y.; Nguyen, V. T.; Spokoyny, A. M.; Mirkin, C. A.; Baše, T.; Weiss, P. S. "Surface Dipole Control of Liquid Crystal Alignment", *J. Am. Chem. Soc.* **2016**, *138*, 5957-5967.
50. Wixtrom, A. I.; Shao, Y.; Jung, D.; Machan, C. W.; Kevork, S. N.; Qian, E. A.; Khan, S. I.; Kubiak, C. P.; Spokoyny, A. M.\* "Rapid Synthesis of Redox-Active Dodecaborane B<sub>12</sub>(OR)<sub>12</sub> Clusters Under Ambient Conditions", *Inorg. Chem. Front.* (Emerging Investigator Issue) **2016**, *3*, 711-717.
51. Vinogradova, E. V.; Zhang, C.; Spokoyny, A. M.; Buchwald, S. L.; Pentelute, B. L. "Organometallic Palladium Reagents for Cysteine Bioconjugation", *Nature* **2015**, *526*, 687-691.
52. Thomas, J. C.; Schwartz, J. J.; Hohman, J. N.; Claridge, S. A.; Auluck, H. S.; Serino, A. C.; Spokoyny, A. M.; Tran, G.; Kelly, K. F.; Mirkin, C. A.; Gilles, J.; Osher, S. J.; Weiss, P. S. "Defect-Tolerant Aligned Dipoles within Two-Dimensional Plastic Lattices", *ACS Nano*, **2015**, *9*, 4734-4742.

### Peer-Reviewed Publications prior to UCLA Appointment

53. Zhang, C.; Dai, P.; Spokoyny, A. M.; Pentelute, B. L. "Enzyme-Catalyzed Macrocyclization of Long Unprotected Peptides", *Org. Lett.* **2014**, *16*, 3652-3655.
54. Simon, M.; Heider, P.; Adamo, A.; Li, X.; Berger, T.; Policarpo, R.; Zhang, C.; Zou, Y.; Spokoyny, A. M.; Jensen, K. F.; Pentelute, B. L. "Rapid Flow-Based Peptide Synthesis", *ChemBioChem* **2014**, *15*, 713-720.
55. Zou, Y.; Spokoyny, A. M.; Zhang, C.; Simon, M. D.; Yu, H.; Lin, Y.-S.; Pentelute, B. L. "Convergent Diversity-Oriented Side-Chain Macrocyclization Scan for Unprotected



## Curriculum Vitae - Alexander Michael Spokoyny

- Polypeptides Enabled by Perfluoroaryl-Cysteine  $S_NAr$  Chemistry”, *Org. Biomol. Chem.* **2013**, *12*, 566-573. Cover Article.
56. Zhang, C.; Spokoyny, A. M.; Zou, Y.; Simon, M. D.; Pentelute, B. L. “Enzymatic “Click” Ligation: Selective Cysteine Modification in Polypeptides Enabled by Promiscuous Glutathione S-Transferase”, *Angew. Chem., Int. Ed.* **2013**, *52*, 14001-14005.
  57. Spokoyny, A. M.; Zou, Y.; Ling, J. J.; Yu, H.; Lin, Y.-S.; Pentelute, B. L. “A Perfluoroaryl-Cysteine  $S_NAr$  Chemistry Approach to Unprotected Stapled Peptides”, *J. Am. Chem. Soc.* **2013**, *135*, 5946-5949.
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  59. Spokoyny, A. M.\* “New Ligand Platforms Featuring Boron-Rich Clusters as Organomimetic Substituents”, *Pure & Appl. Chem.* (invited review), **2013**, *85*, 903-919.
  60. Spokoyny, A. M.\*; Lewis, C. D.; Teverovskiy, G.; Buchwald, S. L. “Extremely Electron-Rich, Icosahedral Carborane-Based Phosphinoboranes”, *Organometallics* **2012**, *31*, 8478-8481.
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  63. Machan, C. W.; Spokoyny, A. M.; Jones, M.; Sarjeant, A. A.; Stern, C.; Mirkin, C. A. “The Plasticity of the Nickel(II) Coordination Environment in Complexes with Hemilabile Phosphino-Thioether Ligands”, *J. Am. Chem. Soc.* **2011**, *133*, 3023-3033.
  64. Rosen, M. S.; Spokoyny, A. M.; Machan, C. W.; Stern, C.; Sarjeant, A. A.; Mirkin, C. A. “The Chelating Effect as a Driving Force Leading to Selective Formation of Heteroligated Pt(II) Complexes with Bidentate Phosphine-Chalcoether Ligands”, *Inorg. Chem.* **2011**, *50*, 1411-1419.
  65. Pandey, P.; Farha, O. K.; Spokoyny, A. M.; Thomes, M.; Mirkin, C. A.; Kanatzidis, M. G.; Hupp, J. T.; Nguyen, S. T. “Click-Based” Porous Organic Polymers From Tetrahedral Building Blocks”, *J. Mater. Chem.* **2011**, *21*, 1700-1703.
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## Curriculum Vitae - Alexander Michael Spokoyny

- Selenoether Ligands via Halide Induced Ligand Rearrangement”, *Inorg. Chem.* **2010**, *49*, 1577-1586.
72. Farha, O. K.; Spokoyny, A. M.; Hauser, B.G.; Bae, Y.-S.; Brown, S. E.; Snurr, R. Q.; Mirkin, C. A.; T. J.; Hupp, J. T. “Synthesis, Properties and Gas Separation Studies of a Robust Diimide-based Microporous Organic Polymer”, *Chem. Mater.* **2009**, *21*, 3033-3035.
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  77. Farha, O.K.; Spokoyny, A. M.; Mulfort, K. L.; Hawthorne, M. F.; Mirkin, C. A.; Hupp, J. T. “Synthesis and Hydrogen Sorption Properties of Carborane-Based Metal-Organic Framework Materials”, *J. Am. Chem. Soc.* **2007**, *129*, 12680-12681.

### Research Highlights, Editorials and Encyclopedia Entries

78. Tolman, W. B.; Evans, W.; Spokoyny, A. M. “Mr. Inorganic Chemistry: M. Frederick Hawthorne (August 24, 1928 – July 8, 2021)”, *Inorg. Chem.* **2021**, *in press*.
79. Mu, X.; Bernier, N.; Spokoyny, A. M.\* “Mercury(II) Oxide”, *Electronic Encyclopedia of Reagents for Organic Synthesis (eEROS)* **2021**, *in press*.
80. Nelson, Y. A.; Spokoyny, A. M.\* “Designer Porous Solids Tackle Separations of Fluoroorganics”, *Matter* **2021**, *8*, 2645-2647.
81. Spokoyny, A. M.\*; Chiu, C.-W.; Bosley, B. D.; Schubert, D. M. ““Mr. Boron,” An Inorganic Chemistry Icon, Turns 90”, *Inorg. Chem.* **2019**, *58*, 5369-5374. Virtual Issue Editorial.
82. Saleh, L.; Dziedzic, R.; Spokoyny, A. M.\* “An Inorganic Twist in Nanomaterials: Making an Atomically Precise Double Helix”, (*First Reactions*) *ACS Central Sci.* **2016**, *2*, 685-686.

### Media Coverage of Research, Teaching and Honors

1. [“Periodic TableTalks”: The Elements Never Go out of Style](#)” *Inorganic Chemistry*, **2021**.
2. [“Changes in Health Care Research Protocol Provide Disruptions, Silver Linings”](#) *Daily Bruin*, **2021**.
3. [“Bruin Family Insights”](#) *UCLA Podcast*, **2020**.
4. [“Inorganic Young Investigators: Celebrating the Rising Generation of Chemists”](#) *Inorganic Chemistry*, Editorial, **2020**.
5. [“Youthful Exuberance”](#) *Inorganic Chemistry*, Editorial, **2020**.
6. [“Project-Based Learning at UCLA”](#) *Alchemie Podcast*, **2019**.
7. [“The Lewis and Clark Conspiracy”](#) *Lost Secrets*, Travel Channel, Season 1, Episode 5, **2019**.
8. [“Nucleophilic Boron Clusters Lead to New Borylation Methods”](#) *Chem Preview*, **2019**.
9. [“Bruin Day to Highlight All Campus Has to Offer to Thousands of Admitted Freshmen”](#) *UCLA Newsroom*, **2019**.
10. [“Chemist Wins NSF’s top Honor for Junior Faculty”](#) *UCLA Newsroom*, **2019**.
11. [“Experts Predict the Chemistry Advances to Watch for in 2019”](#) *Chemical and Engineering News*, **2018**.
12. [“What a Mesh”](#) *Argonne National Laboratory*, **2018**.
13. [“Novel Metal Oxide Web Held Together by Boron”](#) *Materials Today*, **2018**.
14. [“Stereo Chemistry Discusses ChemRxiv”](#) *Chemical and Engineering News*, **2018**.

## Curriculum Vitae - Alexander Michael Spokoyny

15. ["Boron Clusters Turn Titanium Oxide to the Dark Side"](#) *Chemistry World*, **2018**.
16. ["Remodeled Chemistry Course Allows for Student Research, Publishing"](#) *Daily Bruin*, **2018**.
17. ["Professor Named 2018 Cottrell Scholar Honoring Early-Career Scientists"](#) *UCLA Newsroom*, **2018**.
18. ["Some Items of Interest to Process R&D Chemists and Engineers"](#) *Organic Process Research and Development*, **2018**.
19. ["Expanding the Boundaries of Organometallic Chemistry"](#) *Organometallics*, **2018**.
20. ["Precision in 3D"](#) *Nature Chemistry*, **2017**.
21. ["Reactions: Alexander Spokoyny"](#) *The Sceptical Chymist, Nature Chemistry Blog*, **2017**.
22. ["Peralkylated Hexaborate Cluster"](#) *Chemistry Views*, **2017**.
23. ["Four UCLA Faculty Members Selected for 2017 Sloan Fellowships"](#) *UCLA Newsroom*, **2017**.
24. ["Codename: Inorganic Architect"](#) *Chemical and Engineering News*, **2016**.
25. ["Photoinitiators with Boron Clusters"](#) *Science*, **2016**.
26. ["Chemist Alexander Spokoyny Receives 3M Award for New Materials Research"](#) *UCLA Newsroom*, **2016**.
27. ["Alex Spokoyny Named to "Talented Twelve" by American Chemical Society"](#) *UCLA Newsroom*, **2016**.
28. ["Students Improve Wikipedia's Science, Build Skills and Benefit All"](#) *Daily Bruin*, **2016**.
29. ["Feeling Lucky? Making d20 Dice Stand on a Vertex"](#) *Synfacts*, **2016**.
30. ["Organometallics Add Aryl Groups to Proteins Selectively"](#) *Chemical and Engineering News*, **2015**.
31. ["An Easy Way to Make Cyclic Peptides"](#) *In the Pipeline*, **2014**.
32. ["Fast Synthesis Could Boost Drug Development"](#) *MIT News*, **2014**.
33. ["Fast-Flow Peptides"](#) *Chemical and Engineering News*, **2014**.
34. ["Cross-Linking Technique Could Complement Peptide Stapling"](#) *Chemical and Engineering News*, **2013**.
35. ["The Two Faces of Carboranes"](#) *Nature Chemistry*, **2011**.
36. ["Click Chemistry Finds Its Way into Covalent Porous Organic Materials"](#) *Angew. Chem., Int. Ed.*, **2011**.
37. ["Novel Redox Couples Could Aid Solar Cells"](#) *Chemical and Engineering News*, **2010**.
38. ["Boryl-Based Pincer Systems: New Avenues in Boron Chemistry"](#) *Angew. Chem., Int. Ed.*, **2010**.
39. ["Marvelous MOFs"](#) *Nature Chemistry*, **2008**.

### Public Presentations (total given: > 100)

1. "Synthetic Reagents Featuring Boron-Rich Clusters" ACS National Meeting, ACS PRF-65, August 2021 (invited talk).
2. "Organometallic Reagents for Bioconjugation" 1<sup>st</sup> International Electronic Biological Inorganic Chemistry Meeting (eBIC), June 2021 (invited talk).
3. "Controlling the Architectures and Properties of Hybrid Materials with Boron Cluster Building Blocks" ACS DIC Periodic Table Talks, March 2021 (invited talk).
4. "Boron Cluster Building Blocks for Hybrid Materials" RASA-America Global Conference, December 2020 (invited talk).
5. "Boron Cluster Building Blocks for Hybrid Materials" Colorado School of Mines, Chemistry Department, October 2020 (invited seminar).
6. "Boron Cluster Building Blocks for Hybrid Materials" Fairfield University, Chemistry Department, October 2020 (invited seminar).
7. "Boron Cluster Building Blocks and Synthetic Reagents" University of Chicago, Chemistry Department, February 2020 (invited seminar).
8. "Atomically Precise Hybrid Nanoparticles with Multivalent Capabilities" Atomically Precise Nanochemistry Gordon Research Conference, Galveston, TX, January 2020 (invited talk).

## Curriculum Vitae - Alexander Michael Spokoyny

9. "Bonding with Boron" RASA-America Annual Conference, UNC Chapel Hill, NC, November 2019 (invited talk).
10. "Boron Cluster Building Blocks and Synthetic Reagents" Northwestern University, International Institute for Nanotechnology, November 2019 (invited seminar).
11. "Researching and Teaching Chemistry at UCLA" UCLA Open House, October 2019 (invited talk).
12. "Boron Cluster Building Blocks and Synthetic Reagents" California Institute of Technology, Chemistry Department, October 2019 (invited seminar).
13. "Nucleon Uncaging Approach for Anti-Cancer Therapeutics" European Research Council, September 2019 (invited talk).
14. "Boron Cluster Building Blocks and Synthetic Reagents" The Scripps Research Institute (TSRI), September 2019 (invited seminar).
15. "Boron Cluster Building Blocks and Synthetic Reagents" University of Michigan, Chemistry Department, September 2019 (invited seminar).
16. "Three-Dimensional Boron Nucleophiles" UCSD SMCB Symposium, September 2019, (invited talk).
17. "Boron-Centered Nucleophilicity in Clusters", 2<sup>nd</sup> International Conference on Boron Chemistry, Shanxi, China, July 2019 (keynote talk).
18. "Boron Cluster Building Blocks and Reagents" Organometallic Chemistry Gordon Research Seminar and Conference, Salve Regina, RI, July 2019 (invited talk).
19. "Atomically Precise Cluster Nanomolecules with Multivalent Capabilities" Materials Beyond Symposium, Fudan University, China, June 2019 (invited talk).
20. "Boron Cluster Building Blocks and Reagents" Santa Clara University, Chemistry Department, May 2019 (invited seminar).
21. "Boron Cluster Building Blocks and Reagents" Stanford University, Chemistry Department, May 2019 (invited seminar).
22. "Boron Cluster Building Blocks and Reagents" University of Toronto, Chemistry Department, May 2019 (invited seminar).
23. "Boron Cluster Building Blocks for Hybrid Materials" Columbia University, Materials Science and Engineering (MSE), April 2019 (invited seminar).
24. "Boron Cluster Building Blocks for Hybrid Materials" Columbia University, Materials Research Science and Engineering Center (MRSEC), April 2019 (invited seminar).
25. "Boron Cluster Building Blocks and Reagents" Rutgers University, Chemistry Department, April 2019 (invited seminar).
26. "Plan B for the Next Generation of Therapeutics" 2019 UCLA Bruinday, April 2019 (invited public talk).
27. "Boron Cluster Building Blocks and Reagents" Queens University, Chemistry Department, April 2019 (invited seminar).
28. "Boron Cluster Building Blocks and Reagents" Cornell University, Chemistry Department, April 2019 (invited seminar).
29. "Boron Cluster Building Blocks for the Development of Hybrid Materials" ACS National Meeting, Orlando, FL, April 2019 (talk).
30. "Boron Cluster-Based Approach to Nucleophilic Borylation" ACS National Meeting, Orlando, FL, April 2019 (talk).
31. "Atomically Precise Hybrid Nanoparticles with Multivalent Capabilities" ACS National Meeting, Orlando, FL, April 2019 (talk).
32. "Boron Cluster Building Blocks and Reagents" The Dow Chemical Company, Midland, MI, March 2019 (invited seminar).
33. "Boron-Centered Nucleophilicity in Clusters" Michigan State University, Department of Chemistry, March 2019 (invited seminar).

## Curriculum Vitae - Alexander Michael Spokoyny

34. "Boron Cluster Building Blocks and Reagents" UC Davis, Department of Chemistry, January 2019 (invited seminar).
35. "Atomically Precise Hybrid Nanoparticles with Multivalent Capabilities" 9<sup>th</sup> Asian Biological Inorganic Chemistry Conference (talk).
36. "Boron Cluster Building Blocks for the Development of Hybrid Materials" Carnegie Mellon University, Department of Chemistry, October 2018 (invited seminar).
37. "Boron Cluster Building Blocks for the Development of Hybrid Materials" Ohio State University, Department of Chemistry, October 2018 (invited seminar).
38. "Atomically Precise Hybrid Nanoparticles with Multivalent Capabilities" ChemTrends-2018, Moscow, Russia, September 2018 (plenary invited lecture).
39. "Atomically Precise Hybrid Nanoparticles with Multivalent Capabilities" University of Texas at El Paso, PREM Seminar Series, September 2018 (invited seminar).
40. "A Boron Cluster-Based Approach to Nucleophilic Borylation" Gordon Research Conference on Green Chemistry, Spain, July 2018 (poster).
41. "A Boron Cluster-Based Approach to Nucleophilic Borylation" Gordon Research Conference on Organic Reactions and Processes, MA, July 2018 (poster).
42. "Improving Chemistry Appreciation" Cottrell Scholar's Meeting, Tucson, AZ, July 2018 (invited talk).
43. "A Boron Cluster-Based Approach to Nucleophilic Borylation" Gordon Research Conference on Organic Reactions and Processes, MA, July 2018 (poster).
44. "A Boron Cluster-Based Approach to Nucleophilic Borylation" XVI Boron in the Americas (BORAM), June 2018 (invited talk).
45. "A Boron Cluster-Based Approach to Nucleophilic Borylation" Gordon Research Conference on Inorganic Chemistry, ME, June 2018 (poster).
46. "3D Aromatic Building Blocks and Reagents" 3M Corporation, MN, June 2018 (invited seminar).
47. "3D Aromatic Building Blocks and Reagents" University of Minnesota, MN, June 2018 (invited seminar).
48. "3D Aromatic Building Blocks and Reagents" University of California, Riverside, CA, May 2018 (invited seminar).
49. "3D Aromatic Building Blocks and Reagents" University of Washington, WA, April 2018 (invited seminar).
50. "Boron Cluster Photosensitizers and Dopants", ACS National Meeting, New Orleans, LA, March 2018 (invited talk).
51. "Boron Clusters as Dopants for Solid-State and Polymer Materials" ACS National Meeting, New Orleans, LA, March 2018 (invited talk).
52. "Boron Cluster Chromophores and Photosensitizers" University of Rengensburg, Germany, November 2017 (invited seminar).
53. "Boron Cluster Chromophores and Photosensitizers" Friedrich-Alexander University of Erlangen – Nurnberg (FAU), Germany, November 2017 (invited seminar).
54. "Atomically-Precise Multivalent Nanoparticles" Physical Sciences Faculty Lunch Talk Series, UCLA, October 2017.
55. "Organomimetic Boron Cluster Chromophores and Photosensitizers" University of Kansas, KS, September 2017 (invited seminar).
56. "Organomimetic Boron Cluster Chromophores and Photosensitizers" Baylor University, TX, September 2017 (invited seminar).
57. "Organomimetic Boron Cluster Chromophores and Photosensitizers" Texas A&M University, TX, September 2017 (invited seminar).
58. "Organomimetic Boron Cluster Chromophores and Photosensitizers" Gordon Research Conference on Photochemistry, ME, July 2017 (invited talk).

## Curriculum Vitae - Alexander Michael Spokoyny

59. "Plan B with Boron Clusters" International Conference on Boron Chemistry (IMEBORON), Hong Kong, July 2017 (invited talk).
60. "Building Atomically Precise Hybrid Nanoparticles" Bioconjugates: From Targets to Therapeutics, San Diego, CA, June 2017 (invited talk).
61. "Organomimetic Boron Cluster Chromophores and Photosensitizers" ACS National Meeting, San Francisco, CA, April 2017 (invited talk).
62. "Plan B with Boron Clusters" University of Illinois, Urbana Champaign, IL, April 2017 (invited Krug Lectureship).
63. "Organomimetic Boron Cluster Chromophores and Photosensitizers" Washington University at St. Louis (WUSTL), MO, March 2017 (invited talk).
64. "Organomimetic Boron Cluster Chromophores and Photosensitizers" Wichita State University, KS, March 2017 (invited talk).
65. "Organomimetic Chemistry" PEERs Research Talk, UCLA, February 2017 (invited talk).
66. "Organomimetic Boron Cluster Chromophores and Photosensitizers" University of Missouri, Columbia, MO, December 2016 (invited talk).
67. "Organomimetic Boron Cluster Chromophores and Photosensitizers" Virginia Tech Highlands in Chemistry Seminar Series, Blacksburg, VA, October 2016 (invited talk).
68. "Organomimetic Boron Cluster Chromophores and Photosensitizers" Argonne National Laboratory, Argonne, IL, October 2016 (invited talk).
69. "Organomimetic Boron Cluster Chromophores and Photosensitizers" KEMP Symposium, CSU Long Beach, Long Beach, CA, September 2016 (invited talk).
70. "Organomimetic Boron Cluster Chromophores and Photosensitizers" 4<sup>th</sup> International Conference on Molecular Bonding, Kauai, HI, July 2016 (invited talk).
71. "Forging Metal-Boron Bonds in Icosahedral Boron-Rich Clusters" Organometallic Chemistry Gordon Research Seminar and Conference, Salve Regina, RI, July 2016 (poster).
72. "Boron Cluster Chromophores and Photosensitizers" XV Boron in the Americas (BORAM) Meeting, Queen's University, Ontario, Canada, June 2016 (invited talk).
73. "Hybrid Metal Oxide Materials Featuring Icosahedral Boron Clusters" Inorganic Gordon Research Conference, Biddeford, ME, June 2016 (poster).
74. "Organomimetic Cluster Chemistry" The 3M Company, May 2016 (invited talk).
75. "Cluster-Based Organomimetic Pharmacophores" NIGMS New Faculty Workshop, Dallas, TX, April 2016 (invited talk).
76. "Organomimetic Boron Cluster Polymerization Photocatalysts", EMN Hawaii Meeting, Kona, HI, March 2016 (invited talk).
77. "Visible Light-Induced Olefin Activation using 3D Aromatic Organomimetic Boron-Rich Cluster Photooxidants", ACS National Meeting, San Diego, CA, March 2016 (talk).
78. "Organomimetic Cluster Chemistry", California State University, Chico, Chemistry and Biochemistry Department Seminar, October 2015 (invited talk).
79. "Organometallic Palladium Reagents for Cysteine Bioconjugation", California Institute of Technology, 2015 SoCal Organometallics Meeting, February 2015 (invited talk).
80. "Organomimetic Chemistry of Fluorine-Rich Molecules", California State University, Los Angeles, CA, October 2014 (invited seminar).
81. "Organomimetic Chemistry of Fluorine- and Boron-Rich Molecules" MIT Chemistry Student Seminar Series, Cambridge, MA, May 2014 (invited seminar).
82. "Organomimetic Chemistry of Fluorine-Rich Molecules", St. Jude Children's Research Hospital, Memphis, TN, March 2014 (invited seminar).
83. "Organomimetic Chemistry" Northwestern University, Evanston, IL, March 2014 INN Frontiers in Nanotechnology Seminars (invited seminar).
84. "Organomimetic Chemistry of Aromatic Fluorine- and Boron-Rich Molecules" University of California, Santa Barbara, Santa Barbara, CA, January 2014 (junior faculty candidate seminar).

## Curriculum Vitae - Alexander Michael Spokoyny

85. "Organomimetic Chemistry of Aromatic Fluorine- and Boron-Rich Molecules" University of California, Los Angeles, Los Angeles, CA, January 2014 (junior faculty candidate seminar).
86. "Organomimetic Chemistry of Aromatic Fluorine- and Boron-Rich Molecules" University of Rochester, Rochester, NY, January 2014 (junior faculty candidate seminar).
87. "Organomimetic Chemistry of Aromatic Fluorine- and Boron-Rich Molecules" Texas A&M University, College Station, TX, January 2014 (junior faculty candidate seminar).
88. "Organomimetic Chemistry of Aromatic Fluorine- and Boron-Rich Molecules" New York University, Manhattan, NY, January 2014 (junior faculty candidate seminar).
89. "Organomimetic Chemistry of Aromatic Fluorine- and Boron-Rich Molecules" California Institute of Technology, Pasadena, CA, December 2013 (junior faculty candidate seminar).
90. "Organomimetic Chemistry of Aromatic Fluorine- and Boron-Rich Molecules" University of Pennsylvania, Philadelphia, PA, December 2013 (junior faculty candidate seminar).
91. "Organomimetic Chemistry of Aromatic Fluorine- and Boron-Rich Molecules" Yale University, New Haven, CT, December 2013 (junior faculty candidate seminar).
92. "Organomimetic Chemistry of Aromatic Fluorine- and Boron-Rich Molecules" Brown University, Providence, RI, December 2013 (junior faculty candidate seminar).
93. "Organomimetic Chemistry of Aromatic Fluorine- and Boron-Rich Molecules" Pittsburgh University, Pittsburgh, PA, December 2013 (junior faculty candidate seminar).
94. "Organomimetic Chemistry of Aromatic Fluorine- and Boron-Rich Molecules" University of Chicago, Chicago, IL, November 2013 (junior faculty candidate seminar).
95. "Organomimetic Chemistry of Aromatic Fluorine- and Boron-Rich Molecules" University of Buffalo, Buffalo, NY, November 2013 (junior faculty candidate seminar).
96. "Peptide Stapling Enabled by Cysteine Perfluoroarylation." 2013 Fall ACS National Meeting, Indianapolis, IN, September 2013 (talk).
97. "Development and Applications of Cysteine on Unprotected Peptides." 2013 American Peptide Society Symposium, Big Island, HI, June 2013 (poster).
98. "Organomimetic Chemistry of Fluorine- and Boron-Rich Molecules." Northwestern University, Chemistry Department Colloquium, May 2013 (invited seminar).
99. "Icosahedral Carborane-Based Phosphinoboranes." ACS National Meeting, New Orleans, LA, April 2013 (talk).
100. "Extremely Electron-Rich, Icosahedral Carborane-Based Phosphinoboranes." Organometallic Chemistry Gordon Research Seminar and Conference, Salve Regina, RI, July 2012 (poster).
101. "The Fifth Element: Multipass for Unique Ligands, Materials, and Molecular Devices." Harvey Mudd, Chemistry Department Seminar, February 2012 (invited seminar).
102. "A Coordination Chemistry Dichotomy for Icosahedral Carborane-Based Ligands." Young Boron Chemist Award Symposium, IME Boron, Niagara Falls, Canada, September 2011 (invited talk).
103. "Unique and Unmatched Coordination Chemistry of Boron-Rich Ligands." Young Investigator Symposium (Inorganic Division), 2011 Fall ACS National Meeting, Denver, CO, August 2011 (invited talk).
104. "A Coordination Chemistry Dichotomy for Icosahedral Carborane-Based Ligands." Organometallic Chemistry Gordon Research Conference, Salve Regina, RI, July 2011 (poster and invited talk).
105. "Bonding with Boron." Northwestern University, Society of Fellows, Evanston, IL, April 2011 (invited seminar).
106. "Plan B: Unique and Unmatched Coordination Chemistry of Boron Rich Ligands." Wesleyan University, Chemistry Department Seminar, Middletown, CT, March 2011 (invited seminar).
107. "Unique and Unmatched Coordination Chemistry of Boron Rich Ligands." University of Tokyo, GCOE Symposium, Tokyo, Japan, January 2011 (poster).

## Curriculum Vitae - Alexander Michael Spokoyny

108. "Strategies for Making Tridentate XB<sub>X</sub> Pincer Complexes from *m*-Carborane." Organometallic Chemistry Gordon Research Seminar and Conference, Salve Regina, RI, July 2010 (poster).
109. "Abiotic Supramolecular Structures (Molecular Machines)." 2010 Nanotechnology for Defense Conference, Atlanta, GA, May 2010 (invited talk).
110. "Strategies for Designing XB<sub>X</sub>-type Pincer Complexes" 2010 Spring ACS National Meeting, San Francisco, CA, March 2010 (Main Group Chemistry section, talk).
111. "Understanding the Formation of Pt(II) Heteroligated Tweezer Structures via the Halide Induced Ligand Rearrangement (HILR)" Spring ACS National Meeting, San Francisco, CA, March 2010 (Coordination Chemistry section, talk).
112. "Generation of Weak-Link Approach (WLA) Structures via Pt(II) Chemistry." Organometallic Chemistry Gordon Research Seminar and Conference, Salve Regina, RI, July 2009 (invited talk and poster).
113. "Infinite Coordination Polymer Nano- and Micro Particles." MRS National Meeting, San Francisco, CA, April 2009 (invited talk).
114. "Metal-Organic Frameworks Materials Based on Carboranes" Applied Research Day, Northwestern University, Evanston, IL, November 2007 (poster).

### Patents and Patent Applications

1. Spokoyny, Waddington, Dziejczak, Ganley, Ewing, Bosley, "Dodecaborate-Based Weakly-Coordinating Anions and Related Materials", UCLA Provisional Patent Application (November 3, 2020).
2. Spigelman, Seltzman, Spokoyny, "Prodrugs of Peripherally-Acting Cannabinoid Receptor Agonists for Chronic Pain" UCLA Provisional Patent Application (November 17, 2019).
3. Spokoyny, Kennedy, Logan, Saebi, Dziejczak, "Carborane-Based Histone Deacetylase (HDAC) Inhibitors" UCLA Provisional Patent Application (December 5, 2018).
4. Perez, Spokoyny, Black, Teh, Bernier, "Nanoparticles for Boron Neutron Capture Therapy", UCLA/Cedar Sinai Medical Center Provisional Patent Application (April 18, 2018).
5. Spokoyny, Ramachandran, Logan, "System and Method for Making Boron Oxide Nanoparticles", UCLA Invention Disclosure (April 20, 2018).
6. Spokoyny, Maynard, Qian, Messina, Wixtrom, Axtell, Kirlikovali, Gonzalez, "Novel Three-Dimensional Boron-Rich Clusters", UCLA Provisional Patent Application (April 2, 2016), Full U.S. Patent Application (February 21, 2017), International Application (February 21, 2017).
7. Buchwald, Pentelute, Spokoyny, Vinogradova, Zhang, "Transition Metal-Based Selective Functionalization of Chalcogens in Biomolecules" U.S. Patent Applications 62/024,769 and 62/091,720 and International Application PCT/US15/040495 (July 14, 2014).
8. Pentelute, Spokoyny, Zou, Zhang "Click-Type" Modifications of Peptides via S<sub>N</sub>Ar Reaction of Thiols with Fluorinated Aromatic Molecules" United States Patent: 9,018,172; International: WO/2014/052650.
9. Hupp, Mirkin, Farha, Spokoyny, "Gas Adsorption and Gas Mixture Separations Using Porous Organic Polymer" U. S. Patent Application 20110160511.
10. Hupp, Mirkin, Farha, Spokoyny, Mulfort "Metal-organic Framework Materials Based on Icosahedral Boranes and Carboranes" U. S. Patent: 7,824,473.
11. Hupp, Snurr, Mirkin, Farha, Bae, Spokoyny "Separation of CO<sub>2</sub> from CH<sub>4</sub> Employing Carborane-Based MOFs" U. S. Patent: 7,744,842.

### Paid Technical Consulting Activities

L.E.K Consulting (2014 - 2015), The Dow Chemical Company (2017 - present), Rubin-Anders Scientific, Inc. (2018 - present), Biogix, Inc. (2019 - present), Cavea Technologies (Scientific Advisor, 2019 - present).