

Smaranda C. Marinescu

Department of Chemistry
University of Southern California
840 Downey Way, 365 LJS
Los Angeles, CA 90089

Phone: (213) 740-6075
E-mail: smarines@usc.edu
<http://marinescu.usc.edu>
<http://chem.usc.edu/faculty/Marinescu.html>

Appointments

08/2013–present Gabilan Assistant Professor, Department of Chemistry, University of Southern California (USC)

Education and Training

2011–2013 NSF Center for Chemical Innovation (CCI) Postdoctoral Fellow; California Institute of Technology (Caltech)
2007–2011 Ph.D. Inorganic Chemistry; Massachusetts Institute of Technology (MIT)
2003–2006 B.S. Chemistry and Biology; Caltech

Research experience

2011–2013 *NSF CCI Postdoctoral Fellow, Caltech – Advisor: Prof. Harry B. Gray*
2007–2011 *Graduate Research Assistant, MIT – Advisor: Prof. Richard R. Schrock*
2006–2007 *Research Assistant, Caltech – Advisor: Prof. Brian M. Stoltz*
2006 *Summer Intern, Medicinal Chemistry, Pfizer, La Jolla, Ca*
2003–2006 *Undergraduate Research Assistant, Caltech – Advisor: Prof. John E. Bercaw*
2002–2003 *Undergraduate Research Assistant, University of Bucharest, Romania – Advisor: Prof. Marius Andruh*

Honors, Fellowships, and Awards

- Alfred P. Sloan Research Fellowship in Chemistry 2019
- Rising Stars Award, 43th International Conference on Coordination Chemistry, Japan 2018
- RSC *Chemical Communications* Emerging Investigator 2017
- NSF CAREER Award 2016
- Zumberge Individual Award, USC 2014
- Gabilan Assistant Professorship, USC 2013
- NSF Center for Chemical Innovation Postdoctoral Fellowship 2011–2013
- Morse Travel Grant, MIT 2009
- Bruker/MIT poster prize, Bruker/MIT Symposium 2009
- Summer Undergraduate Research Fellowship, Caltech 2004–2005
- Merit scholarship for academic achievement, University of Bucharest 2002–2003
- Several prizes, Romanian National Chemistry Olympiad 1997–2001

Synergistic Activities

2017–present Executive Committee member for the Nanoporous Materials Genome Center phase II

2018-present Co-organizer of the following symposia:

- Through the Lens of Inorganic Chemistry: Understanding Heterogeneous Processes in Energy Conversion and Storage – 257th ACS National Meeting, Orlando, FL, March 2019; Co-organizers: Prof. Jenny Yang, Prof. V. Sara Thoi

- Electrochemical Society Satellite Meeting, Glasgow, UK, July 2019; Co-organizers: Prof. Sanjeev Mukerjee, Prof. Keith Stevenson, Prof. Vincent Artero
- 2016–present Discussion leader for the following conferences:
- Inorganic Chemistry GRC, Biddeford, ME, June 2018
 - 3rd International Conference on Proton Coupled Electron Transfer (PCET 2018); Blowing Rock, NC, June 2018
 - MOF-2016, Long Beach, CA, September 2016
 - Organometallic Chemistry GRC, Newport, RI, July 2016

Publications (* corresponding author; advised graduate[‡] or undergraduate^{UG} student)

Independent peer reviewed journal articles from USC – Manuscripts in press or published

- [32] Orchanian, N. M.[‡]; Hong, L. E.^{UG}; Skrainka, J. A.^{UG}; Esterhuizen, J. A.^{UG}; Popov, D. A.[‡]; Marinescu, S. C.* “Surface-Immobilized Conjugated Polymers Incorporating Rhenium Bipyridine Motifs for Electrocatalytic and Photocatalytic CO₂ Reduction”, *ACS Appl. Energy Mater.*, **2019**, 2, 110–123.
- **New Chemistry to Advance the Quest for Sustainable Solar Fuels Special Issue**
- [31] Popov, D. A.[‡]; Luna, J. M.^{UG}; Orchanian, N. M.[‡]; Haiges, R.; Downes, C. A.[‡]; Marinescu, S. C.* “Synthesis of a Bipyridine-Containing Covalent Organic Framework Bearing Rhenium (I) Tricarbonyl Moieties for CO₂ Reduction”, *Dalton Trans.*, **2018**, 47, 17450–17460.
- [30] Johnson, E. M.[‡]; Haiges, R.; Marinescu, S. C.* “Covalent Organic Frameworks Composed of Rhenium Bipyridine and Metal Porphyrins: Designing Heterobimetallic Frameworks with Two Distinct Metal Sites”, *ACS Appl. Mater. Interfaces*, **2018**, 10, 37919–37927.
- [29] Chapovetsky, A.^{‡†}; Welborn, M.[‡]; Luna, J. M.^{UG}; Haiges, R.; Miller III, T. F.*; Marinescu, S. C.* “Pendant Hydrogen-Bond Donors in Cobalt Catalysts Independently Enhance CO₂ Reduction”, *ACS Cent. Sci.* **2018**, 4, 397–404.
- † equal contribution
- Highlighted by Chabolla, S. and Yang, J. "For CO₂ Reduction. Hydrogen-Bond Donors Do the Trick", *ACS Cent. Sci.* **2018**, 4, 315–317.
- [28] Downes, C. A.[‡]; Clough, A. J.[‡]; Chen, K.[‡]; Yoo, J. W.^{UG}; Marinescu, S. C.* “Evaluation of the H₂ Evolving Activity of Benzenehexathiolate Coordination Frameworks and the Effect of Film Thickness on H₂ Production”, *ACS Appl. Mater. Interfaces* **2018**, 10, 1719–1727.
- [27] Downes, C. A.[‡]; Marinescu, S. C.* “Understanding Variability in the Hydrogen Evolution Activity of a Cobalt Anthracenetetrathiolate Coordination Polymer”, *ACS Catal.* **2017**, 7, 8605–8612.
- [26] Downes, C. A.[‡]; Marinescu, S. C.* “Electrocatalytic Metal–Organic Frameworks for Energy Applications”, *ChemSusChem* **2017**, 10, 4374–4392.
- [25] Clough, A. J.[‡]; Skelton, J. M.; Downes, C. A.[‡]; De la Rosa, A. A.^{UG}; Yoo, J. W.^{UG}; Walsh, A.; Melot, B. C.*; Marinescu, S. C.* “Metallic Conductivity in a Two-Dimensional Cobalt Dithiolene Metal–Organic Framework” *J. Am. Chem. Soc.* **2017**, 139, 10863–10867.
- **Highlighted by USC News**
- [24] Downes, C. A.[‡]; Yoo, J. W.^{UG}; Orchanian, N. M.[‡]; Haiges, R.; Marinescu, S. C.* “H₂ evolution by a Cobalt Selenolate Electrocatalyst and Related Mechanistic Studies” *Chem. Commun.*, **2017**, 53, 7306–7309.
- **Emerging Investigators Special Issue**
- [23] Downes, C. A.[‡]; Marinescu, S. C.* “Bioinspired Metal Selenolate Polymers with Tunable Mechanistic Pathways for Efficient H₂ Evolution” *ACS Catal.*, **2017**, 7, 848–854.
- [22] Chapovetsky, A.[‡]; Haiges, R.; Marinescu, S. C.* “Synthesis and Characterization of a Tetranickel Complex Supported by a Dithiolate Framework with Pendant Ether Moieties” *Polyhedron*, **2017**, 123, 9–13.
- [21] Downes, C. A.[‡]; Marinescu, S. C.* “One Dimensional Metal Dithiolene (M = Ni, Fe, Zn) Coordination Polymers for Hydrogen Evolution Reaction” *Dalton Trans.*, **2016**, 45, 19311–19321.

- [20] Chapovetsky, A.[‡]; Do, T. H.^{UG}; Haiges, R.; Takase, M. K.; Marinescu, S. C.* “Proton Assisted Reduction of CO₂ by Cobalt Aminopyridine Macrocycles” *J. Am. Chem. Soc.* **2016**, *138*, 5765–5768.
- Highlighted in an **ACS Select Virtual Issue**, “Women in Inorganic Chemistry: Synthetic Chemistry Addressing Challenges in Energy and the Environment”, *Inorg. Chem.* **2018**, *57*, 3656–3658.
 - Highlighted in an **ACS Select Virtual Issue**, “The Way Forward in Molecular Electrocatalysis”, by Dey, A.; *Inorg. Chem.* **2016**, *55*, 10831–10834
- [19] Downes, C. A.[‡]; Marinescu, S. C.* “Efficient Electrochemical and Photoelectrochemical H₂ Production from Water by a Cobalt Dithiolene One Dimensional Metal–Organic Surface” *J. Am. Chem. Soc.* **2015**, *137*, 13740–13743.
- [18] Clough, A. J.[‡]; Yoo, J. W.^{UG}; Mecklenburg, M. H.; Marinescu, S. C.* “Two-Dimensional Metal–Organic Surfaces for Efficient Hydrogen Evolution from Water” *J. Am. Chem. Soc.* **2015**, *137*, 118–121.
- Categorized as a “**Highly Cited Paper**” by Web of Science™, receiving enough citations to place it in the top 1% of its academic field based on a highly cited threshold for the field and publication year.

Pre-independent peer reviewed journal articles

- [17] McKone, J. R.; Marinescu, S. C.; Brunshwig, B. S.; Winkler, J. R.; Gray, H. B.* “Earth-abundant hydrogen evolution electrocatalysts” *Chem. Sci.* **2014**, *5*, 865–878.
- Categorized as a “**Highly Cited Paper**” by Web of Science™, receiving enough citations to place it in the top 1% of its academic field based on a highly cited threshold for the field and publication year.
- [16] Keith, J. A.; Behenna, D. C.; Sherden, N.; Mohr, J. T.; Ma, S.; Marinescu, S. C.; Nielsen, R. J.; Oxgaard, J.; Stoltz, B. M.*; Goddard, W. A., III* “The Reaction Mechanism of the Enantioselective Tsuji Allylation: Inner-Sphere and Outer-Sphere Pathways, Internal Rearrangements, and Asymmetric C–C Bond Formation” *J. Am. Chem. Soc.* **2012**, *134*, 19050–19060.
- [15] Marinescu, S. C.; Bracher, P. J.; Winkler, J. R.; Gray, H. B.* “Solar Fuels” *AIP Conf. Proc.* **2013**, *1519*, 64–67.
- [14] Marinescu, S. C.; Winkler, J. R.; Gray, H. B.* “Molecular Mechanisms of Cobalt Catalyzed Hydrogen Evolution” *Proc. Natl. Acad. Sci. USA* **2012**, *109*, 15127–15131.
- Featured in *Science* (Yeston, J. S. “Protons coming and going” *Science* **2012**, *338*, 17), *C&E News* (Jacoby, M. “Pinning down a Cobalt-Catalyzed Hydrogen Evolution” *C&E News* **2012**, *90*, 37, 8) and a Caltech press release entitled “Showing the Way to Improved Water-Splitting Catalysts”.
- [13] Marinescu, S. C.; Ng, V. W. L.; Lichtscheidl, A. G.; Schrock, R. R.*; Müller, P.; Takase, M. K. “Syntheses of Variations of Stereogenic-at-Metal Imido Alkylidene Complexes of Molybdenum” *Organometallics* **2012**, *31*, 6336–6343.
- [12] Behenna, D. C.; Mohr, J. T.; Sherden, N. H.; Marinescu, S. C.; Harned, A. M.; Tani, K.; Seto, M.; Ma, S.; Novák, Z.; Krout, M. R.; McFadden, R. M.; Roizen, J. L.; Enquist, J. A., Jr.; White, D. E.; Levine, S. R.; Petrova, K. V.; Iwashita, A.; Virgil, S. C.; Stoltz, B. M.* “Enantioselective Decarboxylative Alkylation Reactions: Catalyst Development, Substrate Scope, and Mechanistic Studies” *Chem. Eur. J.* **2011**, *17*, 14199–14223.
- [11] Marinescu, S. C.; Levine, D. S.; Zhao, Y.; Schrock, R. R.*; Hoveyda, A. H. “Isolation of Pure Disubstituted *E* Olefins through Mo-Catalyzed *Z*-Selective Ethenolysis of Stereoisomeric Mixtures” *J. Am. Chem. Soc.* **2011**, *133*, 11512–11514.
- [10] Marinescu, S. C.; Schrock, R. R.*; Müller, P.; Takase, M. K.; Hoveyda, A. H. “Room-Temperature *Z*-Selective Homocoupling of α -Olefins by Tungsten Catalysts” *Organometallics* **2011**, *30*, 1780–1782.

- [9] Marinescu, S. C.; King, A. J.; Schrock, R. R.*; Singh, R.; Müller, P.; Takase, M. K. “Simple Molybdenum(IV) Olefin Complexes of the Type Mo(NR)(X)(Y)(olefin)” *Organometallics* **2010**, 29, 6816–6828.
- [8] Schrock, R. R.*; Jiang, A. J.; Marinescu, S. C.; Simpson, J. H.; Müller, P. “Fundamental Studies of Molybdenum and Tungsten Methylidene and Metallacyclobutane Complexes” *Organometallics* **2010**, 29, 5241–5251.
- [7] Marinescu, S. C.; Schrock, R. R.*; Müller, P.; Hoveyda, A. H. “Ethenolysis Reactions Catalyzed by Imido Alkylidene Monopyrrolide (MAP) Complexes of Molybdenum” *J. Am. Chem. Soc.* **2009**, 131, 10840–10841.
- [6] Rendon, N.; Berthoud, R.; Blanc, F.; Gajan, D.; Maishal, T.; Basset, J.-M.; Copéret, C.*; Lesage, A.; Emsley, L.; Marinescu, S. C.; Singh, R.; Schrock, R. R.* “Well-Defined Silica-Supported Mo-Alkylidene Catalyst Precursors containing one OR Substituent: Methods of Preparation and Structure-Reactivity Relationship in Alkene Metathesis” *Chem. Eur. J.* **2009**, 15, 5083–5089.
- [5] Marinescu, S. C.; Schrock, R. R.*; Li, B.; Hoveyda, A. H. “Inversion of Configuration at the Metal in Diastereomeric Imido Alkylidene Monoaryloxy Monopyrrolide Complexes of Molybdenum” *J. Am. Chem. Soc.* **2009**, 131, 58–59.
- [4] Marinescu, S. C.; Singh, R.; Hock, A. S.; Wampler, K. M.; Schrock, R. R.*; Müller, P. “Syntheses and Structures of Molybdenum Imido Alkylidene Pyrrolide and Indolide Complexes” *Organometallics* **2008**, 27, 6570–6578.
- [3] Marinescu, S. C.; Toyoki, N.; Mohr, J. T.; Stoltz, B. M.* “Homogeneous Pd-Catalyzed Enantioselective Decarboxylative Protonation” *Org. Lett.* **2008**, 10, 1039–1042.
- [2] Keith, J. A.; Behenna, D. C.; Mohr, J. T.; Ma, S.; Marinescu, S. C.; Oxgaard, J.; Stoltz, B. M.*; Goddard, W. A., III* “The Inner-Sphere Process in the Enantioselective Tsuji Allylation Reaction with (S)-*t*-Bu-phosphinoxazoline Ligands” *J. Am. Chem. Soc.* **2007**, 129, 11876–11877.
- [1] Marinescu, S. C.; Agapie, T.; Day, M. W.; Bercaw, J. E.* “Group 3 Dialkyl Complexes with Tetradentate (L, L, N, O; L = N, O, S) Monoanionic Ligands – Synthesis and Reactivity” *Organometallics* **2007**, 26, 1178–1190.

Patents

- [5] Marinescu, S. C.; Downes, C. A. “Bioinspired Metal Selenolate Polymers with Tunable Mechanistic Pathways for Efficient H₂ Evolution” provisional patent, USC 0172 PRV; filed 11/17/2016.
- [4] Marinescu, S. C.; Chapovetsky, A. “Proton Assisted Reduction of CO₂ by Cobalt Aminopyridine Macrocycles” provisional patent, USC 0151 PRV; filed 04/01/2016.
- [3] Marinescu, S. C.; Downes, C. A.; Clough, A. J. “1D- and 2D-Metal-Organic Frameworks for Efficient Hydrogen Evolution from Water” provisional patent, USC 0136 PRV; filed 10/10/2014.
- [2] Marinescu, S. C.; Clough, A. J. “2D Metal-Organic Surfaces (MOS) for Efficient Water Reduction” provisional patent, CIT-6775-P, filed 01/16/2014.
- [1] Schrock, R. R.; Marinescu, S. C.; Hoveyda, A. H. “Catalysts and Processes for the Formation of Terminal Olefins by Ethenolysis” **2009** U. S. Patent Application M0925.70258WO00.

Invited presentations

- [61] Symposium entitled “Bio-Inspired Electrocatalysis for Energy and Environment: Heme vs Non-heme - Best of both worlds”; International Conference of Porphyrin and Pthalocyanine (ICCP-11), Buffalo, NY, July 2020
- [60] Symposium entitled “Inorganic Chemistry for Sustainable Energy and the Environment”; ACS National Meeting, San Diego, CA, August 2019
- [59] DOE-BES PI meeting, Catalysis Science program, July 2019
- [58] Symposium entitled “Molecular and Materials for Solar Fuels Generation”; Canadian Society for Chemistry Meeting, Quebec, Canada, June 2019
- [57] University of Washington, Seattle, WA, May 2019
- [56] Columbia University, New York, NY, May 2019
- [55] Princeton University, Princeton, NJ, May 2019

- [54] Cornell University, Ithaca, NY, May 2019
- [53] University of Rochester, Rochester, NY, May 2019
- [52] California Institute of Technology (Caltech), Pasadena, CA, May 2019
- [51] University of California Los Angeles, Los Angeles, CA, May 2019
- [50] ACS National Meeting, Orlando, FL, March 2019
- [49] Symposium entitled "Applied Electrolysis for Renewable Energy and Synthesis"; ACS National Meeting, Orlando, FL, March 2019
- [48] Harry Gray Award Symposium in honor of Jillian Dempsey; ACS National Meeting, Orlando, FL, March 2019
- [47] University of California Irvine, Irvine, CA, February 2019
- [46] Harvey Mudd College, Claremont, CA, December 2018
- [45] University of Texas at Austin, Austin, TX, November 2018
- [44] Texas A&M University, College Station, TX, November 2018
- [43] University of Houston, Houston, TX, November 2018
- [42] Massachusetts Institute of Technology, Cambridge, MA, November 2018
- [41] North Carolina State University, Raleigh, NC, October 2018
- [40] UNC Chapel Hill, Chapel Hill, NC, October 2018
- [39] Yale University, New Haven, CT, October 2018
- [38] University of Pennsylvania, Philadelphia, PA, September 2018
- [37] John Hopkins University, Baltimore, MD, September 2018
- [36] Symposium entitled "Meeting the Challenges of Heterogeneous Catalysis Controlled at Atomic Level"; 256th ACS National Meeting, Boston, MA, August 2018
- [35] Center for Chemical Innovation Capstone Meeting, Ventura, CA, July 2018
- [34] Renewable Energy: Solar Fuels Gordon Research Conference (GRC) (poster talk), Ventura, CA, January 2018
- [33] University of California, Santa Barbara, CA, October 2017
- [32] Colorado School of Mines, Golden, CO, September 2017
- [31] National Renewable Energy Laboratory (NREL), Golden, CO, September 2017
- [30] University of Notre Dame, Notre Dame, IN, August 2017
- [29] Symposium entitled "Fundamentals of Metal Organic Framework Catalysis"; 254th ACS National Meeting, Washington, DC, August 2017
- [28] 2nd International Solar Fuels, San Diego, CA, July 2017
- [27] Gabor A. Somorjai Award Symposium in honor of John E. Bercaw; 253th ACS National Meeting, San Francisco, CA, April 2017
- [26] Symposium entitled "Sustainability in Electrocatalytic Fuel & Chemical Production"; 253th ACS National Meeting, San Francisco, CA, April 2017
- [25] Harry Gray Award Symposium in honor of Nilay Hazari; 253th ACS National Meeting, San Francisco, CA, April 2017
- [24] Sandia National Laboratory, Livermore, CA, March 2017
- [23] UC Davis, Davis, CA, March 2017
- [22] Inorganic Reaction Mechanisms GRC (poster talk), Galveston, TX, March 2017
- [21] 2016 Nanoporous Materials Genome Center, University of Minnesota, Minneapolis, MN, October 2016
- [20] MOF-2016, Long Beach, CA, September 2016
- [19] Université Paris Diderot, Paris, France, July 2016
- [18] 42th International Conference on Coordination Chemistry, Brest, France, July 2016
- [17] Inorganic Chemistry Gordon Research Conference (GRC) (poster talk), Biddeford, ME, June 2016
- [16] Stauffer Symposium, USC, Los Angeles, CA, April 2016
- [15] Electrochemistry GRC (poster talk), Ventura, CA, January 2016
- [14] California State University, Los Angeles, Los Angeles, CA, October 2015
- [13] California State University, Long Beach, CA, December 2013
- [12] Center for Chemical Innovation (CCI) Annual Retreat, Huntington Beach, CA, January 2013
- [11] Harvard University, Boston, MA, January 2013

- [10] University of Southern California, Los Angeles, CA, January 2013
- [9] University of California, Los Angeles, Los Angeles, CA, January 2013
- [8] University of Washington, Seattle, Seattle, WA, January 2013
- [7] "Princeton University, Princeton, NJ, January 2013
- [6] Yale University, New Haven, CT, December 2012
- [5] University of California, Riverside, Riverside, CA, December 2012
- [4] University of California, San Diego, San Diego, CA, November 2012
- [3] CCI Annual Retreat, Huntington Beach, CA, January 2012
- [2] Bruker-MIT Symposium, Boston, MA, January 2011
- [1] Caltech, Pasadena, CA, September 2010

Annual All-hands Meetings

- [2] 2018 Nanoporous Materials Genome Center Annual All-hands Meeting, University of Minnesota, Minneapolis, MN, September 2018
- [1] 2017 Nanoporous Materials Genome Center Annual All-hands Meeting, University of Minnesota, Minneapolis, MN, October 2017