

David F. Zigler Assistant Professor of Chemistry and Biochemistry

California Polytechnic State University, San Luis Obispo, CA 93405

Office: Building 180 – Room 306A

Phone: (805) 756-2661

Email: dfzigler-at-calpoly.edu

1. EDUCATIONAL PREPATION

Ph.D. (Inorganic Chemistry) Virginia Tech, Blacksburg, VA 24061 **December 18, 2008**

Dissertation Title: *Synthesis and Study of Polyazine Bridged Mixed Metal Dyads: Electrochemical, Photophysical, and Photochemical Properties of a New Supramolecular Architecture*

Research Mentor: Karen J. Brewer

B.S. (Chemistry) Eastern Illinois University, Charleston, IL 61920 **December 21, 2003**

Research Mentors: Edward M. Treadwell (Organic Synthesis) (September 2002–December 2003)

Richard L. Keiter (Organometallic Electrochemistry) (May 2004–August 2004)

2. ACADEMIC APPOINTMENTS

Assistant Professor of Chemistry, The Department of Chemistry & Biochemistry **September 2016 - Present**
California Polytechnic State University, San Luis Obispo, CA 93405

Visiting Lecturer, UNC Chapel Hill, NC 27599-3290 **April 2011 –May 2012 & May 2013– July 2016**
Supervisors: Marcy Waters and Erik Alexanian

Postdoctoral Fellow, UNC Chapel Hill, NC 27599-3290 **April 2011 –May 2012 & May 2013– July 2016**
Research Directors: Malcolm D. E. Forbes (EPR and Radical Photoproducts) (April 2011–May 2012)
John M. Papanikolas (Ultrafast Interfacial Dynamics) (Jan 2012-May 2012, May 2013–July 2016)

NRC Research Associate, ARO, Research Triangle Park, NC 27703 **May 2012 – May 2013**
Research Director: James K. Parker (Nanomaterials Ultrafast microscopy, work performed at UNC)

Postdoctoral Scholar, University of California, Santa Barbara, CA 93106 **November 2008 – June 2010**
Research Director: Peter C. Ford (Quantum dots, Phototherapeutics)

3. TEACHING RELATED ACTIVITIES

TEACHING: At Cal Poly

CHEM 484	Inorganic Chemistry Lab	Fall 2017 (1 section), Fall 2018 (1 section)
CHEM 481	Inorganic Chemistry	Fall 2019 (1 section), Fall 2021 (1 section)
SCM 302	Learn By Doing Lab	Spring 2017 (1 section), Spring 2018 (1 section) Spring 2019 (1 section)
CHEM 126/129	General Chemistry III (4 instructors)	Spring 2020 (virtual asynchronous, 400 students)
CHEM 129L	General Chemistry for Life Sci-III Lab	Spring 2017 (2 sections), Spring 2018 (1 section)
CHEM 128	General Chemistry for Life Sci-II	Winter 2018 (1 Section), Winter 2019 (2 sections), Winter 2020 (2 sections), Winter 2021 (1 core, 3 virtual discussion sections)
CHEM 127	General Chemistry for Life Sci-I	Fall 2021 (1 Section)
CHEM 126	General Chemistry for Phys Sci-III	Spring 2019 (1 Lecture, 3 Labs), Spring 2021(1 core, 3 virtual discussion sections) Spring 2022 (1 Lecture, 3 Labs)
CHEM 125	General Chemistry for Phys Sci-II	Winter 2017 (1 section)

CHEM 124	General Chemistry for Phys Sci-I	Fall 2016 (2 sections), Fall 2017 (1 section) Fall 2018 (1 Section), Fall 2019 (1 section) Fall 2020 (1 core, 2 virtual discussion sections of 32 each) Winter 2022 (2 sections)
CHEM 461/463	Senior Research Projects	Winter 2017 (2 students), Fall 2018 (1 student), Winter 2020 (3 students), Winter 2021 (1 student)
CHEM 200/201 400/401	By arraignment (Research)	As of Fall 2021 (20 students, many more than once)

Undergraduate and High School Research: 22 UG and 3 HS students

**Prior to Appointment at Cal Poly,
UNC-Chapel Hill:**

Teaching

Chem 101	General Descriptive Chemistry-I	Fall 2015 (1 section, 165 students), Spring 2012 (1 section, 175 students), Fall 2011 (1 section, 380 students)
Chem 481	Physical Chemistry I	Fall 2014 (6 Lectures, ~65 students)

Undergraduate and High School Research: 6 UG and 1 HS students

UCSB:

Teaching

Chem 173/263	Advanced Inorganic Chemistry	2 lectures	Winter 2010	50 students
Chem 276	Photochemistry and Photophysics Inorganic and Organometallic Compounds and Materials	Invited speaker for 1 lecture	Spring 2009	20 students

Undergraduate and High School Research: 2 HS students

Virginia Tech:

Teaching

Chem 1084	General Chemistry Laboratory Chemistry for Engineers	Fall 2004 (3 Sections, 76 students)
-----------	---------------------------------------------------------	-------------------------------------

Undergraduate and High School Research: 8 UG and 2 HS students

Teaching Professional Development While at Cal Poly

- Attended IONiC VIPeR - SLiThEr (Inorganic and General Chemistry Instructors) March 2021 – Present
- Mastery Based Grading Slack Workspace: Channels #Chemistry, #California June 2021 – Present
Related Twitter hashtags: #BlackInChem, #BlackInSTEM, #Ungrading #Grading4Growth
- Participant in Professional Learning Community (led by Joe Grimes, CTLT) Fall 2020 – June 2021
- Attended “Assessing Student Learning Outcomes in Undergraduate STEM Courses” June 10, 2020
- Participant in Educating Today’s College Student Learning Community Fall 2018 – June 2019
- Attended CHEM 481 taught by Assistant Professor Haynes Fall 2018
- Attended 10 lectures of CHEM 126 taught by Associate Professor Scott Spring 2018
- Participated in CTLT book circle, “The Distracted Mind” Winter 2018
- Participated in CTLT Writers Colloquium September 11, 2017
- Participated in CTLT book circle, “Slow Professor,” Summer 2017
- Attended the Newer Faculty Community Breakfast, CTLT June 9, 2017
- Participated in the Cal Poly General Chemistry Studio Teaching Workshop Fall 2016, Fall 2017, Fall 2018
- Participant in General Chemistry Meetings, including:
book clubs; teaching demos (several attended, 2 given); September 2016 - present
- Classroom visits (observed. John Hagen 10/13/2017, Greg Scott Spring 2018, Taylor Haynes Fall 2018)
- Asked faculty from inside and outside CHEM/BCHM to visit my classroom and asked for feedback
Prof. Stamatis Vokos, Physics, visited 1/27/2017; Prof. John Hagen, visited winter 2019

Other Professional Development Training and Workshops

“An Introduction to Evidence Based Undergraduate STEM Teaching” Certificate of Completion	Coursea & CIRTL	Fall 2014
Attendee: Postdoc to PUI Professor; P3 Workshop Sponsored by: ACS and NSF	Hope College	4/13
Certificate: Summer Teaching and Pedagogy Series Sponsored by: UNC Center for Faculty Excellence and TIBBS	UNC-Chapel Hill	5/11-8/11
Attendee: Future Professoriate Graduate Certificate	Virginia Tech	8/04

4. SCHOLARSHIP

Work After Joining Cal Poly

Publications - Undergraduate contributors are in bold

- 4) “At-Home Microscale Paper-Based Quantitative Analysis Activity with External Standards”. **Schmuck, Viktoria (BIO), Romine, Isabelle (BCHM), Sisley, Tyler (BCHM)**, Immoos, Chad, Scott, Gregory, Zigler, David, Martinez, Andres. *J. Chem. Educ.*, **Accepted**
- 3) “Substituent Effects on the UV-Visible Spectrum and Excited Electronic States of Dithiocarboxylates” **A.K. Newman (CHEM), J.P. Madriaga (CHEM), J.M. Sieffert (CHEM), A.M. Henry (CHEM), S.E. Heinrich (CHEM), V.M. Swift (CHEM), A.Y.Y. Cheong (CHEM)**, M.T. Haynes,* D.F. Zigler* *Photochemical and Photobiological Sciences*. **Accepted**.
- 2) “Ultrafast Relaxations in Ruthenium Polypyridyl Chromophores Determined by Stochastic Kinetics Simulations” T.P. Cheshire, M.K. Brennaman, P.G. Giokas, D.F. Zigler, A.M. Moran, J.M. Papanikolas, G.J. Meyer, T.J. Meyer, F.A. Houle *J. Phys. Chem. B* 2020, 124, 5971-5985. <http://dx.doi.org/10.1021/acs.jpcc.0c03110>
- 1) “Carbon disulfide. Just toxic or also bioregulatory and/or therapeutic?” A.W. DeMartino, D.F. Zigler, J.M. Fukuto, P.C. Ford, *Chem. Soc. Rev.* **2017**, 46, 21-39. <http://dx.doi.org/10.1039/C6CS00585C>

Presentations

Presenter underlined, Undergraduate co-authors in bold

External Presentations

- 10) INVITED TALK: “Using the Dye-Semiconductor Interface to Guide Dye Design” David Zigler, Open Science Presentations, https://www.twitch.tv/open_science, October 29, 2021. <https://youtu.be/8qLPVLwFf3k>
- 9) INVITED TALK: “Disentangling Electron Transfer at the Dye-Semiconductor Interface to Guide Strategies in Dye Design.” David F. Zigler, 28th Inter-American Photochemical Society Winter Conference, Sarasota, FL, **2020**.
- 8) POSTER: “Assignment of Electronic Transitions of Dithiocarboxylates” **Abraham K. Newman** (B.S. CHEM), **Jose M. Madriaga** (B.S. CHEM), **Monica G. Aichouri** (B.S. CHEM), **Michael Sieffert** (B.S. CHEM), **Ava M. Henry** (B.S. CHEM), **Shannon E. Heinrich** (B.S. CHEM), **Vincent M. Swift** (B.S. CHEM), **Alicia Y. Y. Cheong** (B.S. CHEM), M. Taylor Haynes and David F. Zigler 28th Inter-American Photochemical Society Winter Conference, Sarasota, FL, **2020**.
- 7) POSTER: “Theoretical investigation on the Electronic Properties of the Dithiocarboxylate Functional Group, R-CS₂” **Jose Madriaga** (B.S. CHEM), David Zigler. SoCal Undergraduate Research Symposium, UC-Irvine, CA, July **2019**.
- 6) POSTER: “Synthesis and Electronic State Investigation of Dithiocarboxylate Salts” **Abraham K. Newman** (B.S. CHEM), **J. Michael Sieffert** (B.S. CHEM), **Ava M. Henry** (B.S. CHEM), **Jose M. Madriaga** (B.S. CHEM), **Alicia Cheong** (B.S. CHEM), M. Taylor Haynes, David F. Zigler. SoCal Undergraduate Research Symposium, UC-Irvine, CA, July **2019**.
- 5) POSTER: “Theoretical investigation on the Electronic Properties of the Dithiocarboxylate Functional Group, R-CS₂” **Jose Madriaga** (B.S. CHEM), Ashley Ringer McDonald, and David Zigler. 17th Annual MERCURY conference, Furman University, Greenville, SC, **July 2019**.
- 4) INVITED SEMINAR: “Electronic State Tuning through Metal-Ligand Covalency: First row transition metals are worth exciting!” **David F. Zigler**, Department of Chemistry and Biochemistry, Montana State University, **January 18, 2019**.
- 3) POSTER: “Salts and Co(III) complexes of 1,1-dithiocarboxylic acids: An experimental and computational study.” **Mark C. Mattison** (B.S. Chem), **Vincent M. Swift** (B.S. Chem), **Terry Wong** (B.S. Chem), **Shannon E. Heinrich** (‘18), and David F. Zigler, SoCal Undergraduate Research Symposium, UC-Irvine, CA, July **2018**.
- 2) INVITED SEMINAR: “Applying Thermally Equilibrated Models to Non-Equilibrium States: Disentangling Interfacial Electron Transfer Dynamics” **David F. Zigler**, Biomedical and Electrical Engineering Graduate Seminar, College of Engineering, Cal Poly. **June 2018**.
- 1) POSTER: “A Spectrochemical Series of tris-(dithiocarboxylate)cobalt(III) Complexes” **Shannon E. Heinrich** (B.S. CHEM), **Mark C. Mattison** (B.S. CHEM), Peter C. Ford, David F. Zigler, 26th Inter-American Photochemical Society Winter Conference, Sarasota, FL, **2018**.

Cal Poly Presentations

- 20) TALK: "Light and Brimstone: Modeling Dithiocarboxylate Electronic Spectra" David Zigler, Department of Chemistry & Biochemistry Seminar, Cal Poly- San Luis Obispo, October 8, 2021
- 19) TALK: "Photoexcitation of Dithiocarboxylate Functional Group, R-CS₂⁻: Reaction Mechanisms and Free Energetics" An Pham (B.S. BCHM), David Zigler, 7th Annual Frost Summer Research Symposium, Department of Chemistry & Biochemistry (virtual), Cal Poly- San Luis Obispo, **2020**
- 18) TALK: "Investigating the Reactions of Cr(NN)₃³⁺ Complexes in Their Doublet Excited State and The Mechanism of Quenching by Stable Nitroxyl Radicals." Monica G. Aichouri (B.S. CHEM), David Zigler, 7th Annual Frost Summer Research Symposium, Department of Chemistry & Biochemistry (virtual), Cal Poly- San Luis Obispo, **2020**
- 18) TALK: "An Investigation into Dithiocarboxylates" Ava M. Henry, Abe K. Newman, Jose M. Madriaga, Monica G. Aichouri, An V. Pham, Shannon E. Heinrich, Vincent M. Swift, M. Taylor Haynes, David Zigler, 7th Annual Frost Summer Research Symposium, Department of Chemistry & Biochemistry (virtual), Cal Poly- San Luis Obispo, **2020**
- 17) TALK: "Building a Library of Stable Dithiocarboxylate Salts." J. Michael Sieffert, Ava M. Henry, Abe K. Newman, Jose M. Madriaga, Alicia Cheong, M. Taylor Haynes II, David Zigler, 6th Annual Frost Summer Research Symposium, Department of Chemistry & Biochemistry, Cal Poly- San Luis Obispo, **2019**
- 16) TALK: "Experimental and Computational Spectroscopy of Dithiocarboxylates". Abraham K. Newman, Jose M. Madriaga, David Zigler, 6th Annual Frost Summer Research Symposium, Department of Chemistry & Biochemistry, Cal Poly- San Luis Obispo, **2019**
- 15) POSTER: "Theoretical investigation on the Electronic Properties of the Dithiocarboxylate Functional Group, R-CS₂⁻" Jose Madriaga, David Zigler. 6th Annual Frost Summer Research Symposium, Department of Chemistry & Biochemistry, Cal Poly- San Luis Obispo, **2019**
- 14) POSTER: "Synthesis and Electronic State Investigation of Dithiocarboxylate Salts" Abraham K. Newman, J. Michael Sieffert, Ava M. Henry, Jose M. Madriaga, Alicia Cheong, M. Taylor Haynes, David F. Zigler. . 6th Annual Frost Summer Research Symposium, Department of Chemistry & Biochemistry, Cal Poly- San Luis Obispo, **2019**
- 13) POSTER: "Electrochemical: Study of the Redox Potentials Study of Cobalt (III) Complexes" Terry Wong, David F. Zigler, 5th Annual Frost Summer Research Symposium, Department of Chemistry & Biochemistry, Cal Poly- San Luis Obispo, **2018**
- 12) POSTER: "Photochemistry and Photophysics of Chromium(III) Polypyridyl Complexes" Mark Mattison, Keyan Patel(A.G.H.S.), David F. Zigler, 5th Annual Frost Summer Research Symposium, Department of Chemistry & Biochemistry, Cal Poly- San Luis Obispo, **2018**
- 11) POSTER: "Developing new tris(dithiocarboxylate) cobalt(III) complexes and experimental synthetic pathways" Vincent M. Swift, David F. Zigler, 5th Annual Frost Summer Research Symposium, Department of Chemistry & Biochemistry, Cal Poly- San Luis Obispo, **2018**
- 10) POSTER and TALK: "Stabilization of electronic transitions in cobalt(III) trisdithiocarboxylate complexes" Shannon Heinrich, Mark Mattison, David Zigler, CSM Student Research Conference, Cal-Poly- Can Luis Obispo, CA, **2018**
- 9) POSTER: "A Spectrochemical Series of tris-(dithiocarboxylate)cobalt(III) Complexes" Shannon E. Heinrich(B.S. CHEM), Mark C. Mattison(B.S. CHEM), Peter C. Ford, David F. Zigler, Alpha Chi Sigma Research 101, Cal Poly- San Luis Obispo, **2018**
- 8) POSTER: "A Spectrochemical Series of tris-(dithiocarboxylate)cobalt(III) Complexes" Shannon E. Heinrich(B.S. CHEM), Mark C. Mattison(B.S. CHEM), Peter C. Ford, David F. Zigler, Department of Chemistry and Biochemistry Program Review, Cal Poly- San Luis Obispo, **2018**
- 7) INVITED TALK: "Earth Abundant Photosensitizers: Making first-row transition metals into useful sensitizing dyes" David F. Zigler, Undergraduate Research Association, Cal Poly- San Luis Obispo, **Nov 2017**.
- 6) TALK: "Synthesis of a Spectrochemical series of Co(III) complexes," Shannon Heinrich(B.S. CHEM), Mark Mattison(B.S. CHEM), David F. Zigler, 4th Annual Frost Summer Research Symposium, Department of Chemistry & Biochemistry, Cal Poly- San Luis Obispo, **2017**
- 5) POSTER: "A benchmarking study of Cr(0) transition metal complex with carbonyl ligands using Density Functional Theory," José Marc Madiaga(B.S. CHEM), David F. Zigler, 4th Annual Frost Summer Research Symposium, Department of Chemistry & Biochemistry, Cal Poly- San Luis Obispo, **2017**
- 4) POSTER: "Synthesis of a Spectrochemical series of Co(III) complexes," Mark Mattison(B.S. CHEM), Shannon Heinrich(B.S. CHEM), David F. Zigler, 4th Annual Frost Summer Research Symposium, Department of Chemistry & Biochemistry, Cal Poly- San Luis Obispo, **2017**
- 3) POSTER: "Exciting Potential of Different Excited Iron Ion," Terry Wong(B.S. CHEM), David F. Zigler, 4th Annual Frost Summer Research Symposium, Department of Chemistry & Biochemistry, Cal Poly- San Luis Obispo, **2017**

- 2) INVITED TALK: "From Femtoseconds to Hours: Studying photon/electron interactions at interfaces" David F. Zigler, Alpha Chi Sigma, Cal Poly- San Luis Obispo, **May 2017**.
- 1) INVITED TALK: "From Femtoseconds to Hours: Studying photon/electron interactions at interfaces" David F. Zigler, Undergraduate Research Association, Cal Poly- San Luis Obispo, **Feb 2017**.

Community Presentations –After Joining Cal Poly

Presenter, Organizer, Chemistry Magic Show, Poly Open House	'19
Presenter, Organizer, Science Demo, Bright Life Preschool 30 2-5 year olds	'18
Learn by Doing Lab, Closing Remarks, at Cal Poly 9 sessions per quarter, ~16 schools, 500+ grade 5-8 students	Spring '17,'18,'19
Presenter, Learn by Doing Lab, Summer Camp Lab Tour 8 sessions, ~7 grade 5 students each	Summer '17,'18,'19

Grants and Contracts – After Joining Cal Poly

Funded - PI/co-PI

- 1) External – ACS-PRF (2021): "Light and Brimstone: Sulfur-based chromophores for photochemical synthesis" co-PIs David Zigler (CP), M. Taylor Haynes (CP), Funds Requested: \$70,000 over 3 years (Funded)

Work Prior to Joining Cal Poly

Publications - Undergraduate contributors are in bold

- 20) "Ultrafast Photophysics of Mixed-Metal Polyazine Supramolecules: Os(II) or Ru(II) with Rh(III)" D.F. Zigler,* Z.A. Morseth, T. Canterbury, J. Rodriguez Corrales, K.J. Brewer, and J.M. Papanikolas, *Inorg. Chim. Acta* (Invited article for K.J. Brewer Memorial Issue) **2017**, 454, 266-274. <http://dx.doi.org/10.1016/j.ica.2016.06.034>
- 19) "Disentangling the Physical Processes Responsible for the Kinetic Complexity in Interfacial Electron Transfer of Excited Ru(II) Polypyridyl Dyes on TiO₂" D.F. Zigler, Z.A. Morseth, L. Wang, D.L. Ashford, M.K. Brennaman, E.M. Grumstrup, E.C. Brigham, M.K. Gish, R.J. Dillon, L. Alibabaei, G.J. Meyer, T.J. Meyer, and J.M. Papanikolas *J. Am. Chem. Soc.* **2016**, 138, 4426-4438. <http://dx.doi.org/10.1021/jacs.5b12996>
- 18) "Kinetic Analysis of Nitroxide Radical Formation under Oxygenated Photolysis: Toward Singlet Oxygen Topology" D.F. Zigler, **E.C. Ding**, L.E. Jarocha, R. Khatmullin, **V. DiPasquale**, **R.B.A. Sykes**, V.R. Tarasov, M.D.E. Forbes *Photochem. Photobiol. Sci.* **2014**, 13, 1804-1811. <http://dx.doi.org/10.1039/C4PP00318G>
- 17) "Photophysical properties of 2,3-dihydroquinazolin-4(1H)-one derivatives" F.A. Cabrera-Rivera, J. Escalante, H. Morales-Rojas, D.F. Zigler, R.D. Schmidt, L. Jarocha, M.D.E. Forbes *J. Photochem. Photobiol. A: Chem.* **2014**, 294, 31-37. <http://dx.doi.org/10.1016/j.jphotochem.2014.07.005>
- 16) "Imaging Charge Separation and Carrier Recombination in Nanowire p-n Junctions Using Ultrafast Microscopy" M. Gabriel, E.M. Grumstrup, J.R. Kirschbrown, C.W. Pinion, J.D. Christesen, D.F. Zigler, E.E.M. Cating, J.F. Cahoon, J.M. Papanikolas *Nano Lett.* **2014**, 14, 3079–3087. <http://dx.doi.org/10.1021/nl5012118>
- 15) "Photocatalytic Carbon Disulfide Production through Charge Transfer Quenching of Quantum Dots" C.M. Bernt, P.T. Burks, A. E. Pierri, E.S. Levy, A.X. DeMartino, D.F. Zigler, P.C. Ford *J. Am. Chem Soc.* **2014**, 136, 2192-5 <http://dx.doi.org/10.1021/ja4083599>
- 14) "Direct Imaging of Free Carrier and Trap Carrier Motion in Silicon Nanowires by Spatially-Separated Femtosecond Pump-Probe Microscopy" M.M. Gabriel, J.R. Kirschbrown, J.D. Christesen, C.W. Pinion, D.F. Zigler, E.M. Grumstrup, B.P. Mehl, E. Cating, J.F. Cahoon, J.M. Papanikolas *Nano Lett.* **2013**, 13, 1336-1340. <http://dx.doi.org/10.1021/nl400265b>
- 13) "A new, bioactive structural motif: Visible light induced DNA photobinding and oxygen independent photocleavage by Ru^{II}, Rh^{III} bimetallics" J. Wang, D.F. Zigler, N. Hurst, H. Othee, B.S.J. Winkel, K.J. Brewer *J. Inorg. Biochem.* **2012**, 116,135-139. <http://dx.doi.org/10.1016/j.jinorgbio.2012.06.015>
- 12) "Mononuclear copper(I) complexes of *O*-*t*-butyl-1,1-dithiooxalate and of *O*-*t*-butyl-1-perthio-1-thiooxalate," D.F. Zigler, E. Tordin, G. Wu, A. Iretski, P.C. Ford, *Inorg. Chim. Acta* **2011**, 374, 261-268 <http://dx.doi.org/10.1016/j.ica.2011.02.037>
- 11) "Design Considerations for a System for Photocatalytic Hydrogen Production from Water Employing Mixed-Metal Photochemical Molecular Devices for Photoinitiated Electron Collection," S. M. Arachchige, J. R. Brown, **E. Chang**, A. Jain, D. F. Zigler, K. Rangan, K. J. Brewer *Inorg. Chem.* **2009**, 48, 1989-2000. <http://dx.doi.org/10.1021/ic8017387>
- 10) "Toward Photodynamic Therapy of Cancer with Platinum Group Metal Polyazine Complexes," Chapter in Metal Complexes—DNA Interactions, David F. Zigler, Karen J. Brewer Wiley-Blackwell, Oxford, **2009**.
- 9) "Ruthenium(II)-Polyazine Light Absorbers Bridged to Reactive *cis*-Dichlororhodium(III) Centers in a Bimetallic Molecular Architecture," D. F. Zigler, J. Wang, K. J. Brewer *Inorg. Chem.* **2008**, 47,11342-50. <http://dx.doi.org/10.1021/ic8007602>
- 8) "Photochemical Molecular Devices Incorporating Reactive Metals as Supramolecular Solar H₂ Photocatalysts," D. F.

Zigler, S. M. Arachchige, J. Brown, K. Rangan, **E. Chang**, K. J. Brewer *Preprints-Am. Chem. Soc., Div. Petr. Chem.* **2008**, 53, 1-3.

- 7) "Photochemical Methods to Assay DNA Photocleavage using Supercoiled pUC18 DNA and LED or Xenon Arc Lamp Excitation," **A. J. Prussin II**, D. F. Zigler, A. Jain, J. R. Brown, B. S. J. Winkel, K. J. Brewer *J. Inorg. Biochem.* **2008**, 102, 731-9. <http://dx.doi.org/10.1016/j.jinorgbio.2007.10.018>
- 6) "Photobiological Impact of $[(bpy)_2Ru(dpp)]_2RhCl_2Cl_5$ and $[(bpy)_2Os(dpp)]_2RhCl_2Cl_5$ [bpy = 2,2'-bipyridine, dpp = 2,3-bis(2-pyridyl)pyrazine] on Vero Cells," A. A. Holder, D. F. Zigler, M. T. Tarrago-Trani, B. Storrie, K. J. Brewer *Inorg. Chem.* **2007**, 46, 4760-2. <http://dx.doi.org/10.1021/ic0619916>
- 5) "A Trimetallic Supramolecular Complex of Osmium(II) and Rhodium(III) Displaying MLCT transitions in the Near-IR," D. F. Zigler, M. T. Mongelli, **M. Jeletic**, K. J. Brewer *Inorg. Chem. Commun.* **2007**, 10, 295-8. <http://dx.doi.org/10.1016/j.inoche.2006.10.024>
- 4) "Supramolecular Complexes as Photoinitiated Electron Collectors: Applications in Solar Hydrogen Production," M. Elvington, J. R. Brown, D. F. Zigler, K. J. Brewer *Proc. SPIE* **2006**, 6340, 63400W/1. <http://dx.doi.org/10.1117/12.680982>
- 3) "Analytical Methods Development for Supramolecular Design in Solar Hydrogen Production," J. R. Brown, M. Elvington, M. T. Mongelli, D. F. Zigler, K. J. Brewer *Proc. SPIE* **2006**, 6340, 634017/1. <http://dx.doi.org/10.1117/12.680961>
- 2) "A Multifunctional Tetrametallic Ru-Pt Supramolecular Complex Exhibiting Both DNA Binding and Photocleavage," R. Miao, M. T. Mongelli, D. F. Zigler, B. S. J. Winkel, K. J. Brewer *Inorg. Chem.* **2006**, 45,10413-5. <http://dx.doi.org/10.1021/ic061252p>
- 1) "Luminescently Tagged 2,2'-Bipyridine Complex of Fe^{II}: Synthesis and Photophysical Studies of 4-[N-(2-anthryl)carbamoyl]-4'-methyl-2,2'-bipyridine," D. F. Zigler, M. C. Elvington, **J. Heinecke**, K. J. Brewer *Inorg. Chem.* **2006**, 45, 6565-7. <http://dx.doi.org/10.1021/ic060207e>

External Presentations – Work Prior to Joining Cal Poly

- 19) TALK: "A Manifold of Excited States and Density of Acceptors: Disentangling Excited State Electron Injection into Nanoporous Titania" David F. Zigler, Zachary A. Morseth, Li Wang, Dennis L. Ashford, Matthew K. Brennaman, Erik M. Grumstrup, Erinn C. Brigham, Melissa K. Gish, Robert J. Dillon, Leila Alibabaei, Gerald J. Meyer, Thomas J. Meyer, and John M. Papanikolas, 251st ACS National Meeting, San Diego, CA, **2016**.
- 18) TALK: "Ultrafast Photophysics of Mixed-Metal Polyazine Supramolecules: Os(II) or Ru(II) with Rh(III)" David F. Zigler, Zachary A. Morseth, Theodore Canterbury, José Rodriguez Corrales, Karen J. Brewer, John M. Papanikolas, 251st ACS National Meeting, San Diego, CA, **2016**.
- 17) POSTER: "Disentangling the Photophysical Processes Responsible for the Kinetic Complexity in Interfacial Electron Transfer of Excited Ru(II) Polypyridyl Dyes on Titanium Dioxide" David F. Zigler, Zachary A. Morseth, Li Wang, Dennis L. Ashford, Matthew K. Brennaman, Erik M. Grumstrup, Erinn C. Brigham, Melissa K. Gish, Robert J. Dillon, Leila Alibabaei, Gerald J. Meyer, Thomas J. Meyer, and John M. Papanikolas. **2015** Solar Energy Research Conference (SERC), Chapel Hill, NC.
- 16) TALK: "Mechanisms of Injection and Recombination at Metal Oxide-Chromophore Interfaces" Thomas Cheshire, David Zigler, Robin Knauf, Andrew Moran, John Papanikolas, Jillian Dempsey. Energy Frontier Research Center (EFRC) Executive Advisory Board Meeting, **2015**, Chapel Hill, NC
- 15) POSTER: Disentangling the Physical Processes Responsible for the Kinetic Complexity in Interfacial Electron Transfer of Excited Ru(II) Polypyridyl Dyes on TiO₂. David F. Zigler, Zachary A. Morseth, Li Wang, Dennis L. Ashford, Erik M. Grumstrup, Melissa K. Gish, Robert J. Dillon, M. Kyle Brennaman, Thomas J. Meyer, John M. Papanikolas. Energy Frontier Research Center (EFRC) Executive Advisory Board Meeting, **2015**, Chapel Hill, NC
- 14) INVITED SEMINAR: "Dynamics of Excited Dyes Injection Electrons Below the Bandgap" Physical Chemistry Seminar, Department of Chemistry, The University of North Carolina at Chapel Hill, Chapel Hill, NC, March **2015**
- 13) POSTER: "Injection Dynamics of Thermally Equilibrated Chromophores on TiO₂: Origin of the Biexponential Kinetics From 1 to 1500 ps." David F. Zigler, Li Wang, Erik M. Grumstrup, Robert J. Brown, Zachary A. Morseth, Melissa K. Gish, Stephanie E. Bettis, Robert J. Dillon, Dennis L. Ashford, Michael R. Norris, Leila Alibabaei, M. Kyle Brennaman, David W. Thompson, Thomas J. Meyer, John M. Papanikolas, 24th Inter-American Photochemical Society Winter Conference, Sarasota, FL, **2015**.
- 12) TALK & POSTER: "Photo-initiated Electron Injection in TiO₂: Using Ancillary Ligands to Tune Injection Kinetics" David F. Zigler, Li Wang, Erik M. Grumstrup, Robert J. Brown, Zachary A. Morseth, Melissa K. Gish, Stephanie E. Bettis, Robert J. Dillon, Dennis L. Ashford, Michael Norris, Leila Alibabaei, M. Kyle Brennaman, David W. Thompson, Thomas J. Meyer, John M. Papanikolas. Energy Frontier Research Center (EFRC) Executive Advisory Board Meeting, **2014**, Chapel Hill, NC
- 11) POSTER: "Ultrafast Microscopy of Quantum Dot Thin Films" David F. Zigler, Michelle M. Gabriel, Erik M. Grumstrup, Emma E. M. Cating, Justin R. Kirshbrown, James K. Parker, John M. Papanikolas, 22nd Winter Meeting of the Inter-American Photochemical Society, Sarasota, FL, **2013**.

- 10) POSTER: "C-CCNE Pilot Project-- Photodynamic Cancer Therapy: Putting the High Beams On" **Vanessa DiPasquale, Sean Miller, R. Brendan Sykes, David F. Zigler**, Robert D. Schmidt, Lauren Jarocho, Malcolm D. E. Forbes, Carolina Center of Cancer Nanotechnology Excellence Meeting, **2012**, Chapel Hill, NC
- 9) TALK: "Toward Photochemical Release of CS₂" **David F. Zigler**, Elisa Tordin, Peter C. Ford, Southern California Inorganic Photochemistry Conference, Catalina Island, CA, **2009**
- 8) INVITED SEMINAR: "Polyazine Bridged Mixed Metal Dyads Including a *cis*-Rh^{III}Cl₂ Center: A New Supramolecular Architecture" Invited Seminar, Department of Chemistry and Biochemistry, University of California, Santa Barbara, CA, **2008**.
- 7) TALK: "Photochemical Molecular Devices Incorporating Reactive Metals as Supramolecular Solar H₂ Photocatalysts" **David F. Zigler**, Shamindri M. Arachchige, Jared Brown, Krishnan Rangan, **Eric Chang, Karen J. Brewer**, 235th ACS National Meeting, New Orleans, LA, **2008**.
- 6) TALK: "Competing Photochemical Pathways of Mixed-Metal Supramolecules: Tuning Interstate Dynamics," **David F. Zigler**, Karen J. Brewer 235th ACS National Meeting, New Orleans, LA, **2008**.
- 5) POSTER: "Tuning the Electronic Excited States of Mixed-Metal Supramolecules to Favor Intramolecular Energy and Electron Transfer: Competing Pathways with Interesting Photochemistry," **David F. Zigler**, Karen J. Brewer 18th Winter Meeting of the Inter-American Photochemical Society, St. Pete Beach, FL, **2008**.
- 4) TALK: "Tuning the Electronic Excited States of Mixed-Metal Supramolecules to Photocleave and Photobind DNA," **David F. Zigler**, Brenda S. J. Winkel, Karen J. Brewer, Departmental Seminar, Department of Chemistry, Virginia Polytechnic Institute & State University, Nov. **2007**.
- 3) TALK: "Photobinding and Photocleavage Studies of Mixed-Metal Supramolecules," **David F. Zigler**, Jared R. Brown, **Aaron J. Prussin II**, Brenda S. J. Winkel, Karen J. Brewer 233rd ACS National Meeting, Chicago, IL, **2007**.
- 2) TALK: "Interesting Photophysical Properties of Fe(II) and Ru(II) Complexes of 4-[N-(2-anthryl)carbamoyl]-4'-methyl-2,2'-bipyridine: An Anthracene Tagged Analog of 2,2'-bipyridine," **David F. Zigler**, Mark C. Elvington, **Julie Heinecke**, Karen J. Brewer 57th Southeast/61st Southwest Regional Meeting of the American Chemical Society, Memphis, TN, **2006**.
- 1) POSTER: "Luminescence Tagging of 2,2'-bipyridine Complexes of Fe(II): Synthesis and Metal Binding Studies of 4-[N-(2-anthryl)amido]-4'-methyl-2,2'-bipyridine," **David F. Zigler**, Mark Elvington, **Julie Heinecke**, Brenda S. J. Winkel, Karen J. Brewer 230th ACS National Meeting, Washington D.C., **2005**.

Community Presentations –Prior to Joining Cal Poly

First Look UNC, STEM Outreach Coordinator

1/15-8/16

First Look is a program at UNC-Chapel Hill that brings middle school students from across North Carolina to meet with college students, see a college campus, and get guidance on study plans in high school to promote their success at the post-secondary level. As STEM Outreach Coordinator, I organized with graduate and faculty researchers to present stories of undergraduate research. Middle school students met real scientists that they could use as role models as they envision their own path through college.

Presenter 1st Annual Karen J. Brewer Memorial Chemistry Magic Show
Virginia Tech, Blacksburg, VA 24060

6/16

STEM Outreach Coordinator for the First Look Program, Visitors' Center at UNC
Presenter for North Carolina section of the American Chemical Society at
36th Annual Festival for the Eno River, Durham, NC

6/15-7/16
7/15

Presenter for Honor Student Lab Tour, Representing Papanikolas Lab
Presenter for North Carolina section of the American Chemical Society at
34th Annual Festival for the Eno River, Durham, NC

6/14, 6/15
7/13

Presenter for the Energy Frontier Research Center at Triangle BEST Fest,
Science Festival, Natural History Museum, Raleigh, NC

4/12, 4/13

Presenter for the EFRC at the Science Festival, UNC-Chapel Hill, NC

4/12

Presenter at San Roque High School, hosted by John Gomm, Santa Barbara, CA
1 session for 20 high school students

12/09

Presenter at Ventura Unified School District HS, hosted by Karen Reynosa Ventura, CA
5 sessions for approx. 35 high school students each

10/09

Presenter at Science Night at La Colina Intermediate School, Santa Barbara, CA 93110
Presenter at "Chemistry Illusions Show", Chemistry, Virginia Tech,
Blacksburg, VA, 24060

1/09

10/08

Organizer and Presenter at Alumni Event "Summer Around the Drillfield,"
Chemistry, Virginia Tech, Blacksburg, VA 24061

7/08

Organizer and Presenter VT Stars, Chemistry, Virginia Tech, Blacksburg, VA 24061

7/07, 8/07

Organizer and Presenter to 5th graders at Lincoln Elementary, Sterling IL 61081

9/06

Presenter for Blacksburg Middle School, Blacksburg, VA 24060

3/05, 11/05, 3/06

Presenter at Belview Elementary Science Night, Radford, VA 24141

10/05

3 sessions for K-6 and parents	
Presenter at Kipps Science Night, Blacksburg, VA 24060	10/05
Presenter at Kipps Summer Science Camp, Blacksburg, VA 24060	5/05, 6/05, 7/05, 8/05
Organizer and Presenter at Carl Sandburg Elementary, Charleston, IL 61920	12/03
Organizer and Presenter at Greenville Junior High School, Greenville, IL 62246	11/03
8 sessions for grades 6-8 and faculty	
Organizer and Presenter at Charleston Middle School, Charleston, IL 61920	10/03

Awards – Prior to Joining Cal Poly

- National Research Council Research Associateship (\$60,000, 12 months) “Spatially-Separated Pump-Probe Microscopy for Tuning Nanocrystalline Charge-Carrier Dynamics”	5/12-5/13
- Virginia Tech Chemistry Graduate Research Award	4/08

5. SERVICE AND UNIVERSITY CITIZENSHIP

Department

- Organizer and Coordinator for Department Seminar Series	Sp '20-present
- Organizer and driver to UC-Irvine (w/ Prof. Kantorowski, and 13 CHEM and BCHM majors)	Su '19
- Driver to UC-Irvine (w/ Prof. Haynes, and 19 CHEM and BCHM majors)	Su '18
- Assessment Committee (member)	Fa '17-present
- Co-Faculty advisor (w/ Shanju Zhang), Student Affiliates American Chemical Society	Fa '17-present
- Seminar Speakers (hosted):	
Prof. Erik M. Grumstrup, Montana State University (Invited, Hosted)	April 7, 2017
Prof. John O'Connell, Research Scholar in Residence (Invited, Hosted)	April, 2019
Met with 12 other speakers	
- Technology Corner during Departmental Meeting, “Avogadro” (Presenter)	Wi '17
- Seminar Planning Committee (member)	Wi '17-Sp '17
- Department RPT Gathering (attendee)	Su '17, '18
- Department Banquet (attendee)	Sp '18
- Department End of Year Picnic (attendee)	Sp '17, '18, '19
- Alpha Chi Sigma/Student Affiliates American Chemical Society, Pie-A-Professor	5/17, 6/18
- Tour guide, New CHEM/BCHM major orientation, Week of Welcome	Fa '16, '18

College

- Attendee, College of Science and Math, Awards Banquet	Sp '18
- Attendee, College of Science and Math, Fall Conference	Fa '16, '17, '18, '20

University

- Spring Commencement, College of Science and Math (Attendee)	'17, '18
- Tour Guide, Department Tour for Prospective Undergraduates during PolyCultural Weekend,	'17
- Fall Commencement (Attendee)	'16
- California Faculty Association (CFA) (Member)	'16-present

Profession

- Reviewer – American Chemical Society Petroleum Research Fund	
- Reviewer – <i>Journal of Physical Chemistry (A & C)</i>	
- Reviewer – <i>Photochemical and Photobiological Sciences</i>	
- Member – American Chemical Society, Division of Inorganic Chemistry	9/05 - present
- Member – Inter-American Photochemical Society	1/08 - present

Community

- Research mentor for high school researchers participating in the Templeton High School Internship Program
- A short video posted to Twitter (@ZiglerLab) was picked up and featured in Chemical and Engineering News (American Chemical Society Publication) Chemistry in Pictures: <https://cen.acs.org/materials/inorganic-chemistry/Chemistry-Pictures-Colorful-chromium/96/web/2018/05>