

# Sean T. Roberts

University of Texas at Austin ▪ Department of Chemistry  
Welch Hall, Room 3.120B ▪ 105 E. 24<sup>th</sup> St., Austin, TX 78712  
roberts@cm.utexas.edu ▪ [www.RobertsGroupUT.org](http://www.RobertsGroupUT.org)

## Education

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**Massachusetts Institute of Technology** (Cambridge, MA)

*Ph.D. in Chemistry*, Awarded February 2010

Thesis: Hydrogen Bond Rearrangements and the Motion of Charge Defects in Water Viewed using Multidimensional Ultrafast Infrared Spectroscopy.

**University of California Los Angeles** (Los Angeles, CA)

*B.S. in Chemistry, Physical Chemistry Concentration*, Completed May 2003

Highest Departmental Honors, Summa Cum Laude

## Employment & Research History

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**Associate Professor** University of Texas at Austin, Dept. of Chemistry (September 2020 – present)

**Fellow of the William H. Wade Endowed Professorship in Chemistry** (July 2021 – August 2022)

**Assistant Professor** University of Texas at Austin, Dept. of Chemistry (January 2014 – August 2020)

**Postdoctoral Research Associate** (January 2010 – November 2013)

University of Southern California, Department of Chemistry

Advisors: Stephen Bradforth & Alexander Benderskii

**Doctoral Candidate** (August 2003 – December 2009)

Massachusetts Institute of Technology, Department of Chemistry

Advisor: Andrei Tokmakoff

**Undergraduate Researcher** (August 2001 – July 2003)

University of California Los Angeles, Department of Chemistry

Advisor: Benjamin Schwartz

## Awards

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*Sloan Research Fellowship (2020)*

*Cottrell Scholars Award (2018)*

*National Science Foundation CAREER Award (2017)*

*Rom Rhone Endowed Teaching Excellence Award (2017)*

*Rom Rhone Professional Development Award (2016)*

*ACS Petroleum Research Fund Doctoral New Investigator Award (2015)*

*Natural Sciences Foundation Advisory Council Teaching Award (2014)*

### Postdoctoral:

*Adamson Postdoctoral Research Award (2012)*

*Burg Postdoctoral Teaching Fellowship (2012)*

*American Chemical Society Postdoctoral Research Award (2011)*

*NSF American Competitiveness in Chemistry Postdoctoral Fellowship (ACC-F) (2009-2011)*

### Graduate:

*Coblentz Society Student Award (2009)*

*FACSS Student Poster Award (2009)*

*Morse Travel Grant (2008)*

*Massachusetts Institute of Technology Presidential Fellowship (2003-2004)*

### Undergraduate:

*Phi Beta Kappa Graduate Fellowship (2003)*

*Ramsey Award (2003)*

*Arnold O. Beckman Undergraduate Research Fellowship (2002-2003)*

*University of California Los Angeles Summer Research Scholarship (2002)*

## Research Funding

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### Active Grants:

- 1. Center for Dynamics and Control of Materials**  
Sponsor: National Science Foundation (DMR); Grant Number: DMR-2308817  
MRSEC Center (Roberts is one of 10 co-PIs for IRG 1 & the Center Education & Outreach Director; Edward Yu (UT Austin) lead PI); \$18,000,000 (~\$594,270 to Roberts); 9/1/23 – 8/31/29
- 2. Controlling Energy Distribution Pathways in Designer Photocatalysts for Efficient Polymer Synthesis**  
Sponsor: National Science Foundation (CHE: CAT); Grant Number: CHE-2155017  
Renewable (Collaborative grant w/ Zachariah A. Page (UT Austin); Page lead PI, Roberts co-PI); \$625,000 (\$303,811 to Roberts); 9/1/22 – 8/31/25
- 3. CCI Phase I: NSF Center for Adopting Flaws as Features (CAFF)**  
Sponsor: National Science Foundation (CHE); Grant Number: CHE-2124983  
CCI Phase 1 Center (one of 8 co-PIs; Christy F. Landes (UIUC) lead PI); \$1,800,000 (\$230,526 to Roberts); 9/1/21 – 8/31/24
- 4. Manufacturing of Silicon-based Hybrid Organic:inorganic Quantum Building Blocks**  
Sponsor: National Science Foundation (CMMI); Grant Number: CMMI-2053567  
LEAP-HI Grant (one of 4 co-PIs; Lorenzo Mangolini (UC Riverside) lead PI); \$2,000,000 (\$499,844 to Roberts); 8/1/21 – 7/31/26
- 5. MRI: Development of a Sub-diffraction Limited Microscope for Imaging Ultrafast Dynamics from the Visible to Mid-infrared Spectral Range**  
Sponsor: National Science Foundation (CHE); Grant Number: CHE-2019083  
MRI Track II Development Grant (Roberts Lead PI with 2 co-PIs: Carlos R. Baiz (UT Austin) & James D. Batteas (Texas A&M)); \$1,436,577; 9/1/20 – 8/31/24
- 6. Creating Functional Nanocrystal-Molecule Interfaces for Spin-triplet Energy Transfer**  
Sponsor: National Science Foundation (CHE: MSN); Grant Number: CHE-2003735  
Renewable (single investigator); \$450,000; 9/1/20 – 8/31/24
- 7. Uncovering Design Rules for Triplet Energy Transfer at Organic/Inorganic Interfaces**  
Sponsor: W. M. Keck Foundation; Grant Number: 22605  
Science & Engineering Grant (Roberts Lead PI with 2 co-PIs: Michael J. Rose (UT Austin) & Joel D. Eaves (CU Boulder)); \$1,278,500 (\$568,295 to Roberts); 8/1/19 – 7/31/24
- 8. Designing Supramolecular Assemblies for Photon Splitting**  
Sponsor: The Welch Foundation; Grant Number: F-1885  
Renewable (single investigator); \$240,000; 6/1/21 – 5/31/24
- 9. Manipulating Light's Energy Content for Improved Solar Harvesting and 3D Printing**  
Sponsor: UT Austin College of Natural Sciences  
Spark Grant: \$200,000; 6/1/22 – 5/31/26

### Completed Projects:

- 1. Fuel-Driven Polymer and Nanocrystal Assemblies**  
Sponsor: Center for Dynamics and Control of Materials (NSF MRSEC); IRG Seed (one of 10 co-PIs; Adrienne M. Rosales (UT Austin) lead PI); \$160,000 (~\$10,000 to Roberts); 9/1/21 – 8/31/23
- 2. Understanding Electron Dynamics in Molecular Semiconductors**  
Sponsor: Sloan Foundation  
Sloan Research Fellowship; \$75,000; 9/1/20 – 8/31/23
- 3. CAREER: Tracking Charge and Energy Transfer at Buried Organic Interfaces**  
Sponsor: National Science Foundation (CHE: CSDM-A); Grant Number: CHE-1654404

NSF CAREER Award (single investigator); \$624,612; 3/15/17 – 3/14/23

- 4. Tracking Spin-Entangled Excitons Produced by Singlet Fission**  
Sponsor: Center for Dynamics and Control of Materials (UT Austin NSF MRSEC)  
Single Investigator Seed; \$100,000; 9/1/20 – 8/31/22
- 5. Engineering Quantum Dynamics of Molecular Emitters**  
Sponsor: UT Austin College of Natural Sciences  
Catalyst Grant (Roberts Lead PI w/ Xiaoqin Elaine Li co-PI): \$50,000 (\$25,000 to Roberts); 6/1/20 – 8/31/22
- 6. Cottrell Scholars Collaborative (CSC) for a Science Communication Enabled Community**  
Sponsor: Research Corporation for Science Advancement;  
Cottrell Scholars Collaborative Project (one of 10 co-PIs); \$25,000; 9/15/18 – 9/14/22;  
Purpose: Funds Support Creation of a Science Communication Workshop for Chemistry Faculty
- 7. Pulling and Pushing on Molecules: A Mechanical Platform for Discovery of Fundamental Material Properties and Design of Molecular Electronics**  
Sponsor: UT Austin Office of the Vice President for Research  
APX Seed Program (w/ Michael Cullinan co-PIs): \$100,000 (\$50,000 to Roberts); 1/1/21 – 12/31/21
- 8. Tracking Singlet Fission with Ultrafast Time-resolved Microscopy and A Focused Research Experience for Community College Students**  
Sponsor: Research Corporation for Science Advancement; Grant Number: 24489  
Cottrell Scholars Award (single investigator); \$100,000; 7/1/18 – 12/31/21
- 9. Repackaging Electronic Energy with Molecular Semiconductors**  
Sponsor: The Welch Foundation; Grant Number: F-1885  
Renewable (single investigator); \$250,000; 6/1/18 – 5/31/21
- 10. Controlling the Conductivity of Nanocrystal Solids through their Surface Chemistry**  
Sponsor: National Science Foundation (CHE: MSN); Grant Number: CHE-1610412  
Renewable (single investigator); \$437,352; 9/1/16 – 8/31/20
- 11. Mapping Singlet Exciton Fission and Energy Transport Pathways in Perylene Diimide Thin Films and Crystals with Femtosecond Time-resolved Spectroscopy**  
Sponsor: The Welch Foundation; Grant Number: F-1885  
Renewable (single investigator); \$195,000; 6/1/15 – 5/31/18
- 12. Visualizing Molecular Organization and Energy Transport Dynamics at Organic Surfaces and Heterojunctions with Interface Specific Femtosecond Spectroscopy**  
Sponsor: American Chemical Society – Petroleum Research Fund; Grant Number: 55184-DN16  
Doctoral New Investigator (single investigator); \$110,000; 1/1/15 – 5/31/17
- 13. GReen Energy At Texas (GREAT): Increasing Student Retention in the Physical Sciences**  
Sponsor: American Chemical Society  
Collaborative Research Grant (w/ Co-PI: Dr. Shawn Amorde, Austin Community College)  
\$2,500 + \$2,500 match from UT Austin; 9/1/16 – 8/31/17
- 14. Tracking Energy Relaxation within Plasmonic Metal Oxide Nanocrystals**  
Sponsor: Air Force Office of Scientific Research (RTB2); Grant Number: FA9550-15-1-0344  
Non-renewable (single investigator); \$100,000; 9/1/15 – 8/31/16
- 15. Using Surface Ligands to Electrically Wire Semiconducting Nanocrystals**  
Sponsor: UT Austin Vice Provost's Office for Research  
Faculty Research Grant; \$6,000; 10/22/15 – 8/31/16
- 16. Exciton Transport and Charge Separation in Organic Solar Cells Visualized with Interface Specific Femtosecond Spectroscopy**

Sponsor: National Science Foundation (CHE: CSDM-A); Grant Number: CHE-0937015  
American Competitiveness in Chemistry Postdoctoral Fellowship (ACC-F)  
\$200,000; 10/1/09 – 9/30/12

## **Students, Postdoctoral Researchers & Visiting Scholars Advised**

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### **Postdoctoral Scholars:**

Dr. Jussi Isokuortti (October 2022 – present)  
Dr. Dabin Kim (September 2022 – present)  
Dr. Kelly S. Wilson (Co-advised with Carlos Baiz: January 2021 – present)  
Dr. Laura Estergreen (Co-advised with Carlos Baiz: January 2021 – October 2022): Samsung  
Dr. Jacob M. Strain (Co-advised with Michael Rose: November 2020 – August 2022): Samsung  
Dr. Max A. Verkamp (September 2019 – July 2022): Assistant Professor, Hanover College  
Dr. Ravindra Pandey (October 2014 – April 2017): Assistant Professor, IIT Roorkee

### **Graduate Students:**

Rosemary Nguyen (October 2023 – present)  
Cristobal (Toby) Lopez (October 2023 – present)  
Mark C. Jones (Co-advised with Carlos Baiz: November 2022 – present)  
Xinyi Wu (October 2022 – present)  
Margaret A. Hebert (October 2022 – present)  
Celena L. Marsters (November 2021 – present)  
Seth R. Allen (October 2021 – present)  
Tanner S. Volek (October 2021 – present)  
Boxi (Cam) Li (October 2019 – present)  
Danielle M. Cadena (September 2019 – present)  
Brittany R. Pollok (Co-advised with Michael Rose: October 2018 – present)  
Honghao Wang (October 2018 – present)  
Daniel E. Cotton (October 2016 – May 2022, PhD): Postdoctoral Researcher at USC  
Emily K. Raulerson (October 2016 – May 2021, PhD): Postdoctoral Researcher at NREL  
Jon A. Bender (October 2014 – December 2020, PhD): Scientist at Nulixir Inc.  
Michelle A. Blemker (September 2015 – September 2020, PhD): Senior Integration Scientist at Illumina  
Michael S. Azzaro (December 2013 – May 2019, PhD): Process Line Engineer at Intel  
Aaron P. Moon (December 2013 – May 2019, PhD): Process Line Engineer at Tower Semiconductor  
Aaron K. Le (December 2013 – June 2019, PhD): Process Line Engineer at Tower Semiconductor  
Atlantis Frost (Co-advised with Lauren Webb: November 2016 – December 2017)

### **Undergraduate Students:**

Vladimir G. Moreno (January 2024 – present, FUSE program)  
Paulina Lopez (January 2024 – present, FUSE program)  
Aidan M. Fitzgerald (October 2023 – present)  
Ulisses D. Braga (August 2023 – present)  
Tai-Aji A. Alzona (March 2023 – present)  
Jacqueline Stamatides (August 2023 – December 2023)  
Sridevi Sai Krishnachaitanya (September 2022 – July 2023)  
Gulu (Kevin) Xiong (January 2022 – May 2023): Graduate Student at UC Berkeley, Chemistry  
Eden Chen (January 2021 – May 2022)  
Thomas Goodman (September 2021 – May 2022)  
Filippos Kallivokas (March 2019 – December 2021): Merck, Animal Health Division  
Shoshannah C. Isom (January 2021 – May 2021)  
Inki Lee (October 2017 – May 2020): Graduate Student at Columbia Univ., Chemistry  
Annie L. Zhang (January 2018 – May 2020): Graduate Student at Univ. of Michigan, Communications  
Cole Hoffman (September 2018 – May 2019): Graduate Student at CU Anschutz, Biostatistics

James J. Hall (April 2018 – August 2018)  
 Benjamin A. Renard (September 2015 – December 2017)  
 Diana Y. Zhang (July 2016 – May 2017): Graduate Student at Univ. of Minnesota, Chemical Engineering  
 Brooks T. Clingman (March 2017 – May 2017): Graduate Student at MIT, Chemical Engineering  
 Mark C. Babin (June 2014 – July 2016): PhD UC Berkeley, Chemistry; Postdoc, Harvard Univ.  
 Mirna M. Gonzalez (August 2015 – December 2016): High School Science Teacher, Pasadena, CA  
 John Gao (January 2016 – December 2016)  
 Jacob P. Anderson (June 2016 – December 2016): MD Candidate, Harvard Medical School  
 Zachary Tobin (September 2016 – December 2016): Graduate Student at Texas A&M, Chemistry

#### **NSF Research Experiences for Undergraduate (REU) Students:**

Josue Osorio (June 2022 – July 2022)  
 Alexandra Friestman (June 2021 – July 2021)  
 Kelly Biv (June 2021 – July 2021)

#### **Austin Community College Students Advised through CREATE:**

Quinci Rogers (June 2023 – July 2023)  
 Lauren Brown (June 2022 – August 2023)  
 Kathryn Wegler (June 2022 – July 2022)  
 Jessica Tanner Boette (June 2019 – May 2022): Graduate Student at Pitt, Chemistry  
 Kira Daniel (June 2019 – December 2019)  
 William Chau (June 2021 – July 2021)  
 Adam Peasley (June 2018 – July 2018): Currently Attending UT Dallas  
 Mitchell Haecker (June 2017 – July 2017): Currently Attending Texas A&M

#### **High School Students:**

Kelby Erickson (Welch Summer Scholar: June 2015 – July 2015): Currently attending UT Austin  
 Lauren Dossett (Welch Summer Scholar: June 2016 – July 2016): Currently attending MIT  
 Abhilash Potluri (Welch Summer Scholar: June 2017 – July 2017): Currently attending UT Austin  
 Benjamin Li (Welch Summer Scholar: June 2018 – July 2018): Currently attending UT Austin

#### **NSF Research Experiences for Teachers (RET) Advisees:**

Ruben Ramirez (June 2023 – July 2023)  
 Yvonne Rodriguez (June 2023 – July 2023)  
 Hollis Horton (June 2022 – July 2022)  
 Jennifer Sladek (June 2022 – July 2022)

#### **Courses Taught**

<i>Course Taught</i>	<i>Course Title</i>	<i>Enrollment</i>	<i>Instructor Rating (Course Rating)</i>	<i>% of Enrolled Students Responding</i>
CH393L/354S (Spring 2023)	Spectroscopy (Grad.) / Elements of Spectroscopy (Undergrad.)	23	NA	NA
CH354 (Fall 2023)	Quantum Mechanics & Molecular Spectroscopy	19	5.0 (4.9)	58%
CH393L/354S (Spring 2023)	Spectroscopy (Grad.) / Elements of Spectroscopy (Undergrad.)	18	4.7 (4.5)	67%
CH354 (Fall 2022)	Quantum Mechanics & Molecular Spectroscopy	36	4.5 (4.4)	64%
CH393L/354S (Fall 2021)	Spectroscopy (Grad.) / Elements of Spectroscopy (Undergrad.)	24	5.0 (4.9)	56%
CH353 (Spring 2021)	Physical Chemistry I: Thermodynamics & Kinetics	84	4.9 (4.4)	44%
CH393L/354S (Fall 2020)	Spectroscopy (Grad.) / Elements of Spectroscopy (Undergrad.)	26	4.5 (3.9)	50%

CH382M/368 (Spring 2020)	Advanced Physical Chem. (Grad.): Time-dependent Quantum Mech.	11	4.7 (4.6)	82%
CH353 (Fall 2019)	Physical Chemistry I: Thermodynamics & Kinetics	81	4.8 (4.3)	59%
CH353 (Spring 2019)	Physical Chemistry I: Thermodynamics & Kinetics	91	4.7 (4.2)	80%
CH354 (Spring 2018)	Quantum Mechanics & Molecular Spectroscopy	55	4.9 (4.6)	58%
CH353 (Fall 2017)	Physical Chemistry I: Thermodynamics & Kinetics	76	4.9 (4.6)	70%
CH354 (Spring 2017)	Quantum Mechanics & Molecular Spectroscopy	38	4.9 (4.6)	87%
CH354L (Fall 2016)	Physical Chemistry II: Quantum Mechanics	60	4.6 (4.0)	80%
CH353 (Spring 2016)	Physical Chemistry I: Thermodynamics & Kinetics	76	4.8 (4.5)	84%
CH353M (Fall 2015)	Physical Chemistry I: Thermodynamics for Life Sciences	148	4.5 (3.9)	66%
CH353 (Spring 2015)	Physical Chemistry I: Thermodynamics & Kinetics	80	4.6 (4.1)	45%
CH353 (Spring 2014)	Physical Chemistry I: Thermodynamics & Kinetics	81	4.7 (4.1)	58%

### **Educational Activities**

#### **Education/Outreach Director: Center for Dynamic Control of Materials (Spring 2022 – present)**

- Coordinates educational and outreach programs operated by the Center for Dynamic Control of Materials (CDCM), a NSF MRSEC based at UT Austin
- Key outreach activities include NSF REU and RET programs, the K-12 STUFF program, the CDCM Industry-University Nexus, and the artist in residence Arts+Sciences program.

#### **Chemical REsearch At TEexas (CREATE) (Spring 2017 – present)**

Austin Community College (ACC) & University of Texas at Austin, Department of Chemistry

Program Website: [www.CREATE-ATX.org](http://www.CREATE-ATX.org), Twitter: @Create\_ATX

- Co-created with Dr. Shawn Amorde (ACC). CREATE works to improve community college student retention in the physical sciences by building mentorship relationships between ACC students and UT faculty through summer research projects and a spring research symposium series held at ACC.
- Currently Funded by NSF awards CHE-2003735, CHE-1945401, CHE-2155017, and DMR-2308817.
- 66 program participants over 7 years, of which 2/3 to date have transferred to 4-year universities.
- News Stories Featuring CREATE: [“CREATE Program Brings Research Opportunities to Community College Students”](#) March 2023;

#### **Chemistry Honors 2125 (Spring 2019 – present)**

Austin Community College (ACC) & University of Texas at Austin, Department of Chemistry

- Honors organic chemistry course co-created with Dr. Shawn Amorde (ACC) that introduces students to research through preparation of a library of compounds with utility for solar energy production.
- Funded by Research Corporation for Science Advancement as an expansion of CREATE.

#### **Student Group Presentations & Faculty Panels**

Research Internships Discussion Panel (Austin Community College, October 2023)

Graduate School 101 Workshop (UT Austin, July 2023, June 2022)

CREATE Seminar (Austin Community College, November 2022)

ACS Texas A&M Student Chapter (Texas A&M, October 2022)

CDCM REU Faculty Presentation (UT Austin, July 2021)

CDCM REU Lunch & Learn with Faculty (UT Austin, July 2021)

Professional Development Seminar on Faculty Jobs Panel Participant (UT Austin, August 2018)  
SURE “Graduate School at UT” Faculty Panel Participant (UT Austin, September 2017)  
NSF CAREER Award Q&A Faculty Discussion Panel Participant (UT Austin, April 2017)  
Omega Chi Epsilon (OXE) Graduate School Q&A Panel Participant (UT Austin, February 2017)  
ACS UT Austin Student Chapter (UT Austin, April 2018, April 2016, May 2015)  
College of Natural Sciences Dean’s Scholars (UT Austin, November 2019, October 2015)  
Graduate School Fair “Is Graduate School for Me?” Faculty Panel Participant (UT Austin, October 2015)  
Welch Summer Scholars (UT Austin, July 2019, June 2015)  
SURGe (UT Austin, November 2014)  
College of Natural Sciences Professional Development Panel Participant (UT Austin, May 2014)

**Cerritos College Summer Research Program** (Summer 2010, Summer 2011, Summer 2012)

University of Southern California, Department of Chemistry

- Implemented an undergraduate summer research program between USC and Cerritos Community College (CCC). Led student selection and recruitment and served as a research mentor.
- Alumni are enrolled in or have finished PhD programs at Univ. of Chicago and Univ. of Washington.

**Burg Postdoctoral Teaching Fellowship** (Spring 2012)

University of Southern California, Department of Chemistry

- Co-taught Chemistry 115B, a second semester introductory honors chemistry course.

**Teaching Assistant** (Fall 2003, Spring 2005)

Massachusetts Institute of Technology Department of Chemistry

**Symposium & Workshop Organization & Editorial Work**

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**ACS PHYS Energy Subdivision Chair-Elect** (September 2021 – present)

- Responsible for identifying key symposia topics for national ACS meetings.

**Guest Editor: Journal of Chemical Physics** (xx)

- Special Issue “*Celebrating 25 Years of Two-dimensional Infrared (2D IR) Spectroscopy*”
- Co-editors: Prof. Carlos Baiz (UT Austin), Prof. Jens Bredenbeck (Goethe Univ.), Prof. Minhaeng Cho (Korea Univ.), Prof. Thomas Jansen (Univ. of Groningen), and Prof. Amber Krummel (Colorado St. Univ.); JCP Editor: Prof. Jennifer Ogilvie (Univ. of Michigan)

**Coherent Multidimensional Spectroscopy 2022** (June 20-24, 2022, University of Texas at Austin)

- Co-organizer with Prof. Carlos Baiz (UT Austin) of an international conference with >200 attendees focused on new trends in coherent time-resolved spectroscopy and microscopy.

**ACS Symposium on Energy and Charge Transfer at Nanoscale Interfaces**

American Chemical Society National Meeting, Spring 2022, San Diego, CA

- Co-organizer, with Dr. Katherine Willets (Temple) and Dr. Libai Huang (Purdue), of an ACS symposium focused on energy and charge migration in nanostructured materials. Symposium was a follow up to one organized in 2018 and focused on new developments made over the prior 4 years.

**ACS Symposium on Uncovering Chemical Structure & Dynamics with Light**

American Chemical Society Southwest Regional Meeting, Fall 2021, Austin, TX

- Co-organizer, with Dr. Carlos Baiz (UT Austin), of an ACS symposium focused on the development of spectroscopic tools and theoretical methods for viewing chemical dynamics.

**Communicating Ideas Workshop** (October 2019, Washington DC)

- Co-organized with Prof. Scott Shaw (Univ. of Iowa), Prof. Tom Markland (Stanford), Prof. Chad Risko (Univ. of Kentucky), Eric Hegg (Michigan St.), and Lauren Waters (Univ. of Wisconsin, Oshkosh), a workshop focused on improving PI science communication to the general public.

**ACS Symposium on Energy and Charge Transfer at Nanoscale Interfaces**

American Chemical Society National Meeting, Spring 2018, New Orleans, LA

- Co-organizer, with Dr. Katherine Willets (Temple) and Dr. Libai Huang (Purdue), of an ACS symposium focused on energy and charge migration in nanostructured materials.

**2016 Southwest Ultrafast Conference** (June 16-17, 2016, University of Texas at Austin)

- Co-organizer with Prof. Carlos Baiz (UT Austin) of a symposium on ultrafast nonlinear spectroscopy sponsored by Coherent, Inc. that featured 17 speakers and >100 registered attendees.

### **Journal Publications**

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1. J. K. Sowa, D. M. Cadena, A. Mehmood, B. G. Levine, S. T. Roberts, & P. J. Rossky, “IR Spectroscopy of Carboxylate-passivated Semiconducting Nanocrystals: Simulation and Experiment” *Submitted*. [ArXiv Version](#).
2. S. Adhikari, N. Gross, K. S. Wilson, O. Verma, Z. Jia, C. F. Landes, S. T. Roberts, & S. Link, “On-chip Lock-in Detection for Ultrafast Spectroscopy of Single Particles” *J. Phys. Chem. C* (2024), *Accepted*.
3. J. M. Strain, G. N. Ruiz, S. T. Roberts, & M. J. Rose, “Methylation of Si(111) Modulates Molecular Orientation in Peryleneimide (PDI) Thin Films” *Langmuir*. **40**(5), 2519-30, (2024).
4. C. J. O’Dea, J. Isokuortti, E. E. Comer, S. T. Roberts, & Z. A. Page, “Triplet Upconversion Under Ambient Conditions Enables Digital Light Processing 3D Printing” *ACS Cent. Sci.* **10**(2), 272-82, (2024). [Press Release](#).
5. C. R. Baiz, J. Brendenbeck, M. Cho, T. L. C. Jansen, A. T. Krummel, & S. T. Roberts, “Editorial: Celebrating 25 Years of 2D IR Spectroscopy” *J. Chem. Phys.* **160**, 010401, (2024).
6. T. S. Volek, Z. T. Armstrong, J. K. Sowa, K. S. Wilson, M. Bohlmann Kunz, K. Bera, M. Koble, R. R. Frontiera, P. J. Rossky, M. T. Zanni, & S. T. Roberts, “Structural Disorder at the Edges of Rubrene Crystals Enhances Singlet Fission” *J. Phys. Chem. Lett.* **14**(50), 11497-505, (2023).
7. A. Stafford, S. R. Allen, L. Estergreen, K. Kafle, S. T. Roberts, & Z. A. Page, “Efficient Near Infrared Photopolymerizations using azaBODIPYs with Electron Donating Groups and Intramolecular Charge Transfer” *Macromolecules*. **56**(23), 9804-10, (2023).
8. A. Stafford, S. R. Allen, T. A. Grusenmeyer, C. J. O’Dea, L. Estergreen, S. T. Roberts, & Z. A. Page, “Thiophene-fused Boron Dipyrromethenes as Energy Efficient Near-infrared Photocatalysts for Radical Polymerizations” *J. Mater. Chem. A*. **11**, 22259–66, (2023).
9. J. K. Sowa, S. T. Roberts, & P. J. Rossky, “Exploring Configurations of Nanocrystal Ligands Using Machine-Learned Force Fields” *J. Phys. Chem. Lett.* **14**(32), 7215–22, (2023).
10. N. Gross, C. T. Kuhs, B. Ostovar, W.-Y. Chiang, K. S. Wilson, T. S. Volek, Z. M. Faitz, C. C. Carlin, J. A. Dionne, M. T. Zanni, M. Gruebele, S. T. Roberts, S. Link, & C. F. Landes, “Progress and Prospects in Optical Ultrafast Microscopy: Transient Absorption and Two-Dimensional Spectroscopy” *J. Phys. Chem. C*. **127**(30), 14557-86, (2023).
11. K. Wang, R. P. Cline, J. Schwan, J. M. Strain, S. T. Roberts, L. Mangolini, J. D. Eaves, & M. L. Tang, “Efficient Photon Upconversion Enabled by Strong Coupling Between Silicon Quantum Dots and Anthracene” *Nat. Chem.* **15**, 1172-78, (2023), [Press Release](#). [Radio Story](#).
12. A. Uddin, S. R. Allen, A. K. Rylski, C. J. O’Dea, J. T. Ly, T. A. Grusenmyer, S. T. Roberts, & Z. A. Page, “Do the Twist: Efficient Heavy-Atom-Free Visible Light Polymerization Facilitated by Spin-Orbit Charge Transfer Intersystem Crossing” *Angew. Chem. Int. Ed.*, **62**, e202219140, (2023).
13. A. Al-Zubeidi, B. Ostovar, C. C. Carlin, B. C. Li, S. A. Lee, W.-Y. Chiang, N. Gross, S. Dutta, A. Misiura, E. K. Searles, A. Chakraborty, S. T. Roberts, J. A. Dionne, P. J. Rossky, C. F. Landes, & S. Link, “Mechanism for Plasmon-generated Solvated Electrons” *Proc. Natl. Acc. Sci. U.S.A.* **120**(3), e2217035120, (2023). [Press Release](#).
14. J. T. Boette, K. M. Daniel, J. W. Lietzke, S. M. Amorde, & S. T. Roberts, “Research-Focused Approach for Introducing Undergraduate Students to Aromatic Organic Synthesis at a Community College” *J. Chem. Educ.* **100**(2), 572-80, (2023).
15. D. M. Cadena, J. K. Sowa, D. E. Cotton, C. D. Wight, C. L. Hoffman, H. R. Wagner, J. T. Boette, E.



- K. Raulerson, B. L. Iverson, P. J. Rossky, & S. T. Roberts, "Aggregation of Charge Acceptors on Nanocrystal Surfaces Alters Rates of Photoinduced Electron Transfer" *J. Am. Chem. Soc.* **144**(49), 22676-88, (2022). [Press Release](#).
16. V. Paulino, D. M. Cadena, K. Liu, A. Mukhopadhyay, S. T. Roberts, & J.-H. Olivier, "The Length of Molecular Tethers can be used to Control the Structure and Electronic Properties of Stapled Supramolecular Polymers" *Chem. Mater.* **34**(14), 6518-28, (2022).
  17. L. Estergreen, A. R. Mencke, D. E. Cotton, N. V. Korovina, J. Michl, S. T. Roberts, M. E. Thompson, & S. E. Bradforth, "Controlling Symmetry Breaking Charge Transfer in BODIPY Pairs" *Acc. Chem. Resh.* **55**(11), 1561-72, (2022).
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  19. E. M. Rigsby, T. Miyashita, D. A. Fishman, S. T. Roberts, & M. L. Tang, "CdSe Nanocrystal Sensitized Photon Upconverting Film" *RSC Adv.*, **11**, 31042-46, (2021).
  20. T. Huang, T. T. Koh, J. Schwan, T. Tran, P. Xia, K. Wang, L. Mangolini, M. L. Tang, & S. T. Roberts, "Bidirectional Triplet Exciton Transfer Between Silicon Nanocrystals and Perylene" *Chem. Sci.*, **12**, 6737-46, (2021).
  21. D. E. Cotton & S. T. Roberts, "Sensitivity of Sum Frequency Generation Experimental Conditions to Thin Film Interference Effects" *J. Chem. Phys.*, **154**, 114704, (2021).
  22. A. Stafford, D. Ahn, E. K. Raulerson, K.-Y. Chung, K. Sun, D. M. Cadena, E. M. Forrister, S. R. Yost, S. T. Roberts, & Z. A. Page, "Catalyst Halogenation Enables Rapid and Efficient Polymerizations with Visible to Far-Red Light" *J. Am. Chem. Soc.*, **142**(34), 14733-42, (2020).
  23. B. R. Wygant, G. T. Geberth, A. Z. Ye, A. Dolocan, D. E. Cotton, S. T. Roberts, D. A. Vanden Bout, & C. B. Mullins, "Moisture-Driven Formation and Growth of Quasi-2D Organolead Halide Perovskite Crystallites" *ACS Appl. Energy Mater.* **3**(7), 6280-90, (2020).
  24. D. E. Cotton, A. P. Moon, & S. T. Roberts, "Using Electronic Sum-Frequency Generation to Analyze the Interfacial Structure of Singlet Fission-Capable Perylenediimide Thin Films" *J. Phys. Chem. C.* **124**(21), 11401-13, (2020).
  25. S. R. Suravarapu, S. P. Parvathaneni, J. A. Bender, S. T. Roberts, & M. J. Krische, "Benzannulation via Ruthenium(0)-Catalyzed Transfer Hydrogenative Cycloaddition: Precision Synthesis and Photophysical Characterization of Soluble Diindenoperlylenes" *Chem. Euro. J.* **26**(33), 7504-10 (2020).
  26. M. A. Blemker, S. L. Gibbs, E. K. Raulerson, D. J. Milliron, & S. T. Roberts, "Modulation of the Visible Absorption and Reflection Profiles of ITO Nanocrystal Thin Films by Plasmon Excitation" *ACS Photonics.* **7**(5), 1188-96, (2020).
  27. T. T. Koh, T. Huang, J. Schwan, P. Xia, S. T. Roberts, L. Mangolini, & M. L. Tang, "Low Temperature Radical Initiated Hydrosilylation of Silicon Quantum Dots" *Faraday Discuss.* **222**, 190-200, (2020).
  28. P. Xia, E. K. Raulerson, D. Coleman, C. S. Gerke, L. Mangolini, M. L. Tang, & S. T. Roberts, "Achieving Spin-triplet Exciton Transfer between Silicon and Molecular Acceptors for Photon Upconversion" *Nature Chem.* **12**, 137-44, (2020). [Press Release](#).
  29. M. S. Azzaro, A. K. Le, H. Wang, & S. T. Roberts, "Ligand-Enhanced Energy Transport in Nanocrystal Solids Viewed with Two-Dimensional Electronic Spectroscopy" *J. Phys. Chem. Lett.* **10**, 5602-08, (2019).
  30. H. Sato, M. A. Blemker, G. Hellinghausen, D. W. Armstrong, J. W. Nafie, S. T. Roberts, & M. J. Krische, "Triple Helical Ir(ppy)<sub>3</sub> Phenylene Cage Prepared via Diol-Mediated Benzannulation: Synthesis, Resolution, Absolute Stereochemistry and Photophysical Properties" *Chem. Euro. J.* **25**(37), 8719-24, (2019).
  31. Z. A. Kasun, H. Sato, J. Nie, Y. Mori, J. A. Bender, S. T. Roberts, & M. J. Krische, "Alternating oligo(o,p-Phenylenes) via Ruthenium Catalyzed Diol-Diene Benzannulation: Orthogonality to Cross-Coupling Enables De Novo Nanographene and PAH Construction" *Chem. Sci.*, **9**, 7866-73, (2018).
  32. J. A. Bender, E. K. Raulerson, X. Li, T. Goldzak, P. Xia, T. Van Voorhis, M. L. Tang, & S. T. Roberts, "Surface States Mediate Triplet Energy Transfer in Nanocrystal-Acene Composite Systems" *J. Am.*

- Chem. Soc.* **140**(24), 7543-53, (2018).
33. M. S. Azzaro, A. Dodin, D. Y. Zhang, A. P. Willard, & S. T. Roberts, "Exciton-Delocalizing Ligands Can Speed Up Energy Migration in Nanocrystal Solids" *Nano Lett.* **18**(5), 3259-70, (2018).
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  35. A. K. Le, J. A. Bender, D. H. Arias, D. E. Cotton, J. C. Johnson, & S. T. Roberts, "Singlet Fission Involves an Interplay Between Energetic Driving Force and Electronic Coupling in Perylene Diimide Films" *J. Am. Chem. Soc.* **140**(2), 814-26, (2018).
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  37. A. P. Moon, R. Pandey, J. A. Bender, D. E. Cotton, B. A. Renard, & S. T. Roberts, "Using Heterodyne-Detected Electronic Sum Frequency Generation to Probe the Electronic Structure of Buried Interfaces" *J. Phys. Chem. C.* **121**(34), 18653-64, (2017).
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**From Postdoctoral Work:**

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46. P. Dhar, P. P. Khlyabich, B. Burkhart, S. T. Roberts, S. S. Malyk, B. C. Thompson, & A. V. Benderskii, "Annealing induced changes in the molecular orientation of poly-3-hexylthiophene at buried interfaces" *J. Phys. Chem. C.* **117**(29), 15213-20, (2013).
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48. S. T. Roberts, R. E. McAnally, J. N. Mastron, D. H. Webber, M. T. Whited, R. L. Brutchey, M. E. Thompson, & S. E. Bradforth, "Efficient singlet fission discovered in a disordered acene film" *J. Am. Chem. Soc.* **134**(14), 6388-400, (2012).
49. M. T. Whited, N. M. Patel, S. T. Roberts, P. I. Djurovich, S. E. Bradforth, & M. E. Thompson, "Symmetry-breaking intramolecular charge transfer in the excited state of meso-linked BODIPY dyads" *Chem. Comm.* **48**, 284-86, (2012).
50. S. T. Roberts, C. W. Schlenker, V. Barlier, R. E. McAnally, Y. Zhang, J. N. Mastron, M. E. Thompson,

- & S. E. Bradforth, "Observation of triplet exciton formation in a platinum sensitized organic photovoltaic device" *J. Phys. Chem. Lett.* **2**(2), 49-54, (2011).
51. M. T. Whited, P. I. Djurovich, S. T. Roberts, A. C. Durrell, C. W. Schlenker, S. E. Bradforth, & M. E. Thompson, "Singlet and triplet excitation management in a bichromophoric near-infrared-phosphorescent BODIPY-benzoporphyrin platinum complex" *J. Am. Chem. Soc.* **133**(1), 88-96 (2011).

**From Graduate Work:**

52. S. T. Roberts, A. Mandal, & A. Tokmakoff, "Local and collective reaction coordinates in the transport of the aqueous hydroxide ion" *J. Phys. Chem. B.* **118**(28), 8062-69, (2014).
53. K. Ramasesha, S. T. Roberts, R. A. Nicodemus, A. Mandal, & A. Tokmakoff, "Ultrafast 2D IR anisotropy of water reveals reorientation during hydrogen-bond switching" *J. Chem. Phys.* **135**, 054509, (2011).
54. S. T. Roberts, K. Ramasesha, P. B. Petersen, A. Mandal, & A. Tokmakoff, "Proton transfer in concentrated aqueous hydroxide visualized using ultrafast infrared spectroscopy" *J. Phys. Chem. A.* **115**(16), 3957-72, (2011).
55. S. T. Roberts, J. J. Loparo, K. Ramasesha, & A. Tokmakoff, "A fast-scanning Fourier transform 2D IR interferometer" *Opt. Commun.* **284**, 1062-66, (2011).
56. R. A. Nicodemus, K. Ramasesha, S. T. Roberts, & A. Tokmakoff, "Hydrogen bond rearrangements in water probed with temperature-dependent 2D IR" *J. Phys. Chem. Lett.* **1**(7), 1068-72, (2010).
57. S. T. Roberts, P. B. Petersen, K. Ramasesha, A. Tokmakoff, I. S. Ufimtsev, & T. J. Martinez, "Observation of a Zundel-like transition state during proton transfer in aqueous hydroxide" *Proc. Natl. Acc. Sci. U.S.A.* **106**(36), 15154-59, (2009).
58. S. T. Roberts, K. Ramasesha, & A. Tokmakoff, "Structural rearrangements in water viewed through two-dimensional infrared spectroscopy" *Acc. Chem. Resh.* **42**(9), 1239-49, (2009). **Cover Article**
59. P. B. Petersen, S. T. Roberts, K. Ramasesha, D. G. Nocera, & A. Tokmakoff, "Ultrafast N-H vibrational dynamics of cyclic doubly hydrogen-bonded homo- and heterodimers" *J. Phys. Chem. B.* **112**, 13167-71, (2008).
60. J. J. Loparo, S. T. Roberts, R. A. Nicodemus, & A. Tokmakoff, "Variation of the transition dipole moment across the OH stretching band of water" *Chem. Phys.* **341**(1-3), 218-29 (2007).
61. J. R. Schmidt, S. T. Roberts, J. J. Loparo, A. Tokmakoff, M. D. Fayer, & J. L. Skinner, "Are water simulation models consistent with steady-state and ultrafast vibrational spectroscopy experiments?" *Chem. Phys.* **341**(1-3), 143-57, (2007).
62. S. T. Roberts, J. J. Loparo, & A. Tokmakoff, "Characterization of spectral diffusion from two-dimensional line shapes" *J. Chem. Phys.* **125**, 084502 (2006).
63. J. J. Loparo, S. T. Roberts, & A. Tokmakoff, "Multidimensional infrared spectroscopy of water. I. Vibrational dynamics in two-dimensional IR line shapes" *J. Chem. Phys.* **125**, 194521, (2006).
64. J. J. Loparo, S. T. Roberts, & A. Tokmakoff, "Multidimensional infrared spectroscopy of water. II. Hydrogen bond switching dynamics" *J. Chem. Phys.* **125**, 194522, (2006).
65. J. D. Eaves, J. J. Loparo, C. J. Fecko, S. T. Roberts, A. Tokmakoff, & P. L. Geissler, "Hydrogen bonds in liquid water are broken only fleetingly" *Proc. Natl. Acc. Sci. U.S.A.* **102**(37) 13019-22. (2005).
66. C. J. Fecko, J. J. Loparo, S. T. Roberts, & A. Tokmakoff, "Local hydrogen bonding dynamics and collective reorganization in water: Ultrafast infrared spectroscopy of HOD/D<sub>2</sub>O" *J. Chem. Phys.* **122**, 054506 (2005).
67. J. J. Loparo, C. J. Fecko, J. D. Eaves, S. T. Roberts, & A. Tokmakoff, "Reorientational and configurational fluctuations in water observed on molecular length scales" *Phys. Rev. B.* **70**, 180201(R), (2004).

**From Undergraduate Work:**

68. A. D. Smith, C. K.-F. Shen, S. T. Roberts, R. Helgeson, & B. J. Schwartz, "Ionic strength and solvent control over the physical structure, electronic properties and superquenching of conjugated polyelectrolytes" *Res. Chem. Intermed.* **33**(1-2), 125-42, (2007).

**Conference Proceedings**

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1. S. T. Roberts, P. B. Petersen, K. Ramasesha, & A. Tokmakoff, "The dynamics of aqueous hydroxide ion transport probed via ultrafast vibrational echo experiments," in *Ultrafast Phenomena XVI*, edited by P. Corkum, S. De Silvestri, K. A. Nelson, E. Riedle, & R. W. Schoenlein, (Springer-Verlag, Berlin, 2008).
2. J. J. Loparo, S. T. Roberts, & A. Tokmakoff, "2D IR spectroscopy of hydrogen bond switching in liquid water," in *Ultrafast Phenomena XV*, edited by P. Corkum, D. Jonas, D. Miller, & A. M. Weiner, (Springer-Verlag, Berlin, 2006).
3. C. J. Fecko, J. D. Eaves, J. J. Loparo, S. T. Roberts, A. Tokmakoff, & P. L. Geissler, "Dynamics of hydrogen bonds in water: Vibrational echoes and two-dimensional infrared spectroscopy," in *Ultrafast Phenomena XIV*, edited by T. Kobayashi, T. Okada, T. Kobayashi, K. A. Nelson, & S. De Silvestri, (Springer-Verlag, Berlin, 2004).
4. J. J. Loparo, C. J. Fecko, J. D. Eaves, S. T. Roberts, & A. Tokmakoff, "A unified analysis of ultrafast vibrational and orientational dynamics of HOD in D<sub>2</sub>O," in *Ultrafast Phenomena XIV*, edited by T. Kobayashi, T. Okada, T. Kobayashi, K. A. Nelson, & S. De Silvestri, (Springer-Verlag, Berlin, 2004).

**Invited Oral Presentations (past and future)**

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1. SPIE Optics and Photonics National Meeting, San Diego, CA, August 2024.
2. International Symposium on Singlet Fission and Photon Fusion, New York, NY, July 2024.
3. International Conference on Coherent Multidimensional Spectroscopy, York, UK, June 2024.
4. Spatio-Temporal Dynamics of Excitons Workshop, Telluride, CO, September 2024.
5. Nonlinear Optics at Interfaces Workshop, Telluride, CO, June 2024.
6. 245<sup>th</sup> Meeting of the Electrochemical Society, San Francisco, CA, May 2024.
7. 31st Winter Meeting of the Inter-American Photochemical Soc., Miramar Beach, FL, January 2024.
8. The University of Texas at Dallas, Richardson, TX, November 2023.
9. Wintergreen Meeting of Experimental Physical Chemists, Discussion Panelist, Nellysford, VA, September 2023.
10. ACS National Meeting, San Francisco, CA, August 2023.
11. Chautauqua Workshop on Nonlinear Optics, Keynote Speaker, West Lafayette, IN, June 2023.
12. Singlet Fission Workshop, Estes Park, CO, June 2023.
13. Nanomaterials: Computation, Theory, Machine Learning, & Experiment Workshop, Telluride, CO, June 2023.
14. Materials Research Society Meeting, San Francisco, CA, April 2023.
15. Tulane University, Chemistry Department Seminar, New Orleans, LA, April 2023.
16. Wayne State Univ., Physical/Analytical Chemistry Seminar, Detroit, MI, February 2023.
17. Bowling Green State Univ., Chemistry Department Seminar, Bowling Green, OH, November 2022.
18. Spatio-Temporal Dynamics of Excitons Workshop, Telluride, CO, September 2022.
19. ACS National Meeting, Chicago, IL, August 2022.
20. Nonlinear Optics at Interfaces Workshop, Telluride, CO, June 2022.
21. City University of New York, Chemistry Department Seminar, New York, NY, May 2022.
22. University of Utah, Chemistry Department Seminar, Salt Lake City, UT, April 2022.
23. Michigan State University, Chemistry Department Seminar, Lansing, MI, March 2022.
24. ACS National Meeting, San Diego, CA, March 2022.
25. University of Miami, Chemistry Department Seminar, Miami, FL, February 2022.
26. Texas State University, Chemistry Department Seminar, San Marcos, TX, January 2022.
27. University of Bristol, UK, School of Chemistry, Online Webinar, November 2021.
28. Wintergreen Meeting of Experimental Physical Chemists, Nellysford, VA, September 2021.
29. ACS National Meeting, Atlanta, GA, August 2021.
30. SPIE Optics and Photonics National Meeting, San Diego, CA, August 2021.
31. Spatio-Temporal Dynamics of Excitons Workshop, Telluride, CO, June 2021.

32. Universal Display Corporation, Virtual Format, May 2021.
33. ACS National Meeting, Virtual Format, April 2021.
34. University of Oklahoma, Inorganic/Physical Chemistry Seminar, Norman, OK, March 2021.
35. CUNY Graduate Center's Initiative for Theoretical Sciences, Virtual Workshop on Excitons, December 2020.
36. NanoGe Fall Meeting, Barcelona, Spain, October 2020. (*Moved to Online Format*)
37. California State University, Chico, Physical Chemistry Seminar, Chico, CA, September 2020
38. ACS National Meeting, San Francisco, CA, August 2020. (*Moved to Online Format*)
39. IEEE Research and Application of Photonics in Defense (RAPID), Miramar Beach, FL, August 2020
40. International Conference on Coherent Multidimensional Spectroscopy, University of Chicago, Chicago, IL, July 2020 (*Meeting Cancelled*).
41. Nonlinear Optics at Interfaces Workshop, Telluride, CO, June 2020. (*Moved to Online Format*)
42. APS March National Meeting, Denver, CO, March 2020. (*Meeting Cancelled*)
43. Pacific Conference on Spectroscopy and Dynamics, San Diego, CA, January 2020.
44. Utah State University, Physical Chemistry Seminar, Logan, UT, January 2020.
45. Florida State University, Physical Chemistry Seminar, Tallahassee, FL, January 2020.
46. Nature Conference on Functional Dynamics – Visualizing Molecules in Action, Arizona State University, Tempe, AZ, November 2019.
47. University of Rochester, Physical Chemistry Seminar, Rochester, NY, September 2019.
48. OSA/APS Frontiers in Optics/Laser Science Conference, Washington DC, September 2019.
49. Baylor University, Physical Chemistry Seminar, Waco, TX, September 2019.
50. ACS National Meeting, San Diego, CA, August 2019. (*2 Invited Presentations*)
51. The Ohio State University, Physical Chemistry Seminar, Columbus, OH, August 2019.
52. Nanomaterials: Computation, Theory, & Experiment Workshop, Telluride, CO, July 2019.
53. International Workshop on Nonlinear Optics at Interfaces, Shanghai, China, June 2019.
54. University of Washington, Materials Science & Engineering Seminar, Seattle, WA, May 2019.
55. Materials Research Society Meeting, Phoenix, AZ, April 2019.
56. University of Illinois at Urbana-Champaign, Physical Chemistry Seminar, Urbana, IL, April 2019.
57. University of Minnesota, Physical Chemistry Seminar, Minneapolis, MN, March 2019.
58. Univ. of North Carolina Chapel Hill, Physical Chemistry Seminar, Chapel Hill, NC, January 2019.
59. University of California Los Angeles, Physical Chemistry Seminar, Los Angeles, CA, January 2019.
60. University of Pennsylvania, Physical Chemistry Seminar, Philadelphia, PA, December 2018.
61. University of Chicago, Physical Chemistry Seminar, Chicago, IL, December 2018.
62. University of Houston, Chemistry Department Seminar, Houston, TX, December 2018.
63. Rice University, Physical Chemistry Seminar, Houston, TX, December 2018.
64. State University of New York Geneseo, Physical Chemistry Seminar, Geneseo, November 2018.
65. Materials Research Society Meeting, Boston, MA. November 2018.
66. Purdue University, Physical Chemistry Seminar, West Lafayette, IN, November 2018.
67. University of California San Diego, Physical Chemistry Seminar, La Jolla, CA, October 2018.
68. University of California Riverside, Physical Chemistry Seminar, Riverside, CA, October 2018.
69. University of California Berkeley, Physical Chemistry Seminar, Berkeley, CA, October 2018.
70. Texas A&M, Physical Chemistry Seminar, College Station, TX, September 2018.
71. Montana State University, Chemistry Department Seminar, Bozeman, MT, September 2018.
72. SPIE Optics and Photonics National Meeting, San Diego, CA, August 2018.
73. ACS National Meeting, Boston, MA, August 2018.
74. Electron Donor-Acceptor Interactions Gordon Research Conference, Newport, RI, August 2018.
75. Advances of Multidimensional Vibrational Spectroscopy in Water, Biology and Materials Science Workshop, Telluride, CO, July 2018.
76. Nonlinear Optics at Interfaces Workshop, Telluride, CO, June 2018.
77. Canadian Society for Chemistry Annual Meeting, Edmonton, Canada, May 2018.
78. University of Colorado, Boulder, Physical Chemistry Seminar, Boulder, CO, April 2018.

79. ACS National Meeting, New Orleans, LA, March 2018.
80. University of Southern California, Physical Chemistry Seminar, Los Angeles, CA, February 2018.
81. Atomic, Molecular, and Optical Physics Seminar, UT Austin, Austin, TX, November 2017.
82. SPIE Optics and Photonics National Meeting, San Diego, CA, August 2017.
83. 9th International Conference on Advanced Vibrational Spectroscopy, Victoria, Canada, June 2017.
84. Temple University, Physical Chemistry Seminar, Philadelphia, PA, April 2017.
85. ACS National Meeting, San Francisco, CA, March 2017.
86. Louisiana State University, Physical Chemistry Seminar, Baton Rouge, LA, November 2016.
87. ACS National Meeting, Philadelphia, PA, August 2016.
88. Nonlinear Optics at Interfaces Workshop, Telluride, CO, June 2016.
89. 2016 Southwest Ultrafast Conference, UT Austin, Austin, TX, June 2016.
90. Atomic, Molecular, and Optical Physics Seminar, UT Austin, Austin, TX, April 2016.
91. Center for Excitonics, Massachusetts Institute of Technology, Cambridge, MA, April 2016.
92. 1st Sino-German Symposium on Structures and Dynamics at Surfaces, Peking University, Beijing, China, November 2015.
93. EMN (Energy Materials Nanotechnology) Meeting, Cancun, Mexico, June 2015.
94. Nonlinear Optics at Interfaces Workshop, Telluride, CO, June 2014.
95. Atomic, Molecular, and Optical Physics Seminar, UT Austin, Austin, TX, March 2014.

**From Postdoctoral Work:**

96. International Conference on Optical Probes of Conjugated Polymers & Organic Nanostructures, Durham University, Durham, UK, July 2013.
97. Materials Research Society Meeting, Boston, MA. December 2011.

**From Graduate Work:**

98. Physical Chemistry Seminar, Kobe University. Japan. September 2008.

**Contributed Oral Presentations**

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1. ACS National Meeting, San Diego, CA, March 2022.
2. International Conference on Photochemistry, Boulder, CO, July 2019.
3. Colloidal Semiconductor Nanocrystals Gordon Research Conference, Poster Selected for Elevation to Short Presentation, Smithfield, RI, July 2018.
4. International Conference on Optical Probes of Conjugated Polymers & Organic Nanostructures, Quebec City, Canada, June 2017.
5. Singlet Fission Workshop, Estes Park, CO, June 2017.
6. International Conference on Coherent Multidimensional Spectroscopy, University of Groningen, Groningen, Netherlands, June 2016.
7. Singlet Fission Workshop, Estes Park, CO, June 2016.
8. ACS National Meeting, San Diego, CA. March 2016.
9. ACS National Meeting, Boston, MA. August 2015.
10. Singlet Fission Workshop, Estes Park, CO, June 2015.
11. Materials Research Society Meeting, San Francisco, CA. April 2015.
12. American Physical Society Meeting, San Antonio, TX. March 2015.

**From Postdoctoral Work:**

13. Singlet Fission Workshop, Estes Park, CO, June 2013.
14. Singlet Fission Workshop, Estes Park, CO, June 2012.
15. Western Spectroscopy Association Conference, Asilomar, CA. January 2012.
16. ACS National Meeting, Denver, CO. August 2011.
17. Materials Research Society Meeting, San Francisco, CA. April 2011.
18. International Conference on Electroluminescence and Organic Optoelectronics, Univ. of Michigan, Ann Arbor, MI, October 2010.

**From Graduate Work:**

19. International Conference on Time-Resolved Vibrational Spectroscopy, Meredith, NH. May 2009.
20. Coherent Multidimensional Spectroscopy Conference, Kyoto, Japan. August 2008.
21. ACS National Meeting, Philadelphia, PA. August 2008.

**Workshops Attended as an Invited Panelist or Discussion Leader**

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1. Vibrational Spectroscopy Gordon Research Conf., Discussion Leader, Smithfield, RI, August 2024.
2. NSF/UKRI Bilateral Workshop on Quantum Information Science in Chemistry, Alexandria, VA, February 2024.
3. WelchX Retreat: Chemistry for Sustainability, Discussion Panelist, Houston, TX, July 2023.

**Media Interviews & Newscasts**

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**This Materials Universe Podcast:** Interview Guest on Season 1, Episode 3. January 2024. [Episode Link](#).

**KUT News Now:** Quantum Dot Research featured on afternoon broadcast, June 16, 2023, [Episode Link](#).

**KUT ATXplained News Broadcast:** “Black houses are so hot right now. But are they hotter?” December 15, 2022. [Episode Link](#).

**Professional Affiliations & Service**

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*Journal Reviewer:* Journal of Physical Chemistry (A/B/C/Letters), Journal of the American Chemical Society, Journal of Chemical Physics, ACS Energy Letters, ACS Nano, Nano Letters, Journal of Chemical Education, Accounts of Chemical Research, Chemistry of Materials, JACS Au, Angewandte Chemie, Optics Letters, Optics Express, Nature Chemistry, Nature Materials, Nature Communications, Science Advances, Proceedings of the National Academy of Sciences, Chemical Science, Physical Chemistry Chemical Physics, Nanoscale, Advanced Functional Materials, Journal of Materials Chemistry (A/C), Chem, Journal of the Optical Society of America B, MRS Advances, Chemical Physics Letters, ChemPhotoChem, Bulletin of the Chemical Society of Japan

*Grant Reviewer:* DOE, NSF CHE, NSF DMR, NSF GRFP, AFOSR, ARO, DOD NDSEG, ACS PRF, NSERC, Canada Foundation for Innovation, DFG, Dutch Research Council, Research Corporation for Science Advancement, UT Austin Undergraduate Research Fellowship (URF) Program

*Member:* Phi Beta Kappa (inducted 2003), ACS (since 2003), Materials Research Society (since 2018), Sigma Xi (inducted 2020)

*College/University Committees:* Texas Materials Institute Executive Committee (2016 – present), University Laser Safety Committee (2018 – present), COVID-19 Task Force on Traditional Graduate Programs (2020), 21<sup>st</sup> Century Curriculum Implementation Task Force (2016 – 2017), Welch Hall Renovation Research Advisory Committee (2015 – 2016), Ad Hoc Committee for Academic and Research Opportunities in Materials Science and Engineering (2017 – 2018), College of Natural Sciences Graduate Education Advisory Committee (2018 – 2019), Center for Nano & Molecular Science Advisory Committee (2016)

*Departmental Committees:* Building Space Allocation Committee (2021 – present), Chemistry Department Core Facilities Committee (2020 – present), Analytical/Physical Chemistry Seminar Organizer (2019 – 2023), Chemistry Course & Curriculum Committee (2018 – 2022), Senior/mid-Career Faculty Hiring Committee (2018 – 2019, 2019 – 2020, 2021 – 2022), Junior Faculty Hiring Committee (2014 – 2015, 2015 – 2016, 2020 – 2021), Graduate Admissions (co-chair, 2014 – 2018), Graduate Program Committee (2016), Faculty Advisory Committee (2016), Chemical Safety Committee (2014 – 2020)