

# Todd D. Krauss

Professor and Chair, Department of Chemistry

Professor, Institute of Optics

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## Professional Experience

**Chair, Department of Chemistry**, University of Rochester, Rochester, NY (2013-present)

**Professor of Optics**, University of Rochester, Rochester, NY (2010-present)

**Director of the Rochester Advanced Materials and Materials Science Graduate Program**, University of Rochester, Rochester, NY (2010-2013)

**Professor of Chemistry**, University of Rochester, Rochester, NY (2010-present)

**Member of the Biophysics, Structural and Computational Biology Cluster**, University of Rochester, Rochester, NY (2008-present)

**Associate Professor of Optics**, University of Rochester, Rochester, NY (2008-2010)

**Associate Professor of Chemistry**, University of Rochester, Rochester, NY (2006-2010)

**Assistant Professor of Chemistry**, University of Rochester, Rochester, NY (2000-2006)

**Current Research:** Studies of the electronic, optical and photoinduced charge transfer properties of isolated single-walled carbon nanotubes (SWNTs) through single molecule and ultrafast optical spectroscopy; single molecule optical and electrostatic force microscopy (EFM) investigations of the relation between charge and fluorescence of aliovalently doped CdSe quantum dots (QDs) and quantum rods; synthetic mechanistic studies of II-VI and IV-VI colloidal semiconductor nanocrystal QDs; semiconductor colloidal QDs as efficient photoredox catalysts for forming carbon-carbon bonds, folding of single proteins of the cytochrome *c* family; biologically-inspired photochemical hydrogen production; studies of molecular polariton ultrafast coherence and the use of polaritons in photochemical transformations; developing colloidal QDs as biological mimics and super-resolution imaging agents in order to better understand possible origins of disease.

## **Education**

*Ph.D. in Applied Physics*, Cornell University, Ithaca, New York (1998)

Thesis Title: *Vibrational Properties and Exciton-Phonon Interactions in PbS Nanocrystallites*

Committee Chair and Research Advisor: Professor Frank W. Wise, Ph.D.

**Research:** (1991-1997) Studied the vibrational modes of PbS nanocrystals (NCs) and their coupling to electronic states using ultrafast four-wave mixing spectroscopy. Used several home-built excitation sources including mode-locked Ti:sapphire, Cr:forsterite, and dye lasers, optical parametric amplifiers, and a Ti:sapphire regenerative amplifier. Modeled the aforementioned four-wave mixing experiments and the quantum confined vibrational modes of a PbS NC. Performed spontaneous Raman scattering measurements and wet chemical synthesis of PbS NCs.

*M.S. in Applied Physics*, Cornell University, Ithaca, New York (1994)  
Committee Chair: Professor Frank W. Wise, Ph.D.

*B.S. with distinction in Applied and Engineering Physics*  
Cornell University, College of Engineering, Ithaca, New York (1991)  
Research Advisor: Professor John Silcox, Ph.D.

**Research:** Investigated the interface between bonded InP and GaAs semiconductor wafers. Prepared samples for study by Scanning Transmission Electron Microscopy (STEM) including use of a dimpler machine, an ion mill, and preparation of STEM samples in cross section.

**Postdoctoral Research Fellow**, Columbia University, New York, NY (1997-2000)  
Post-doctoral Advisor: Professor Louis E. Brus, Ph.D.

**Research:** Determination of the charge, polarizability, and photoionization properties of CdSe nanocrystals both individually and in self-assembled monolayers using electrostatic force microscopy (EFM). Investigated concurrent EFM and single CdSe nanocrystal luminescence spectroscopy experiments. Modified atomic force microscope tips with carbon nanotubes.

### **Teaching Experience**

#### **Lecturer:**

University of Rochester, Chemistry 451, Quantum Chemistry (2000-2004)

University of Rochester, Chemistry 131, *Introduction to Chemistry Concepts, Systems and Practices I* (2003-2011)

University of Rochester, Chemistry 232, *Molecular Spectroscopy Laboratory* (2006-2007)

University of Rochester, Chemistry 456, *Chemical Bonds: from Molecules to Materials* (2009-2012, 2014-present)

University of Rochester, Chemistry 457, *Chemical Bonds: from Molecules to Materials* (2012)

#### **Course Development:**

Development of a nanomaterials scanning probe microscopy experiment for Chemistry 232, Molecular Spectroscopy Laboratory, University of Rochester (2002).

Development of a nanomaterials synthesis experiment for Chemistry 234, Advanced Laboratory Techniques, University of Rochester (2002).

Designed and implemented peer-led workshops for Chemistry 131, Chemical Concepts, Systems, and Practices I, University of Rochester (2002-present).

Used the web-based software program WebCT to assist in course management and evaluation of student understanding and performance for Chemistry 131, Chemical Concepts, Systems, and Practices I, University of Rochester (2002-2006).

Used the web-based software program Blackboard to assist in course management and evaluation of student understanding and performance for Chemistry 131, Chemical Concepts, Systems, and Practices I, University of Rochester (2007-2012).

Designed and implemented 12 demonstrations connecting "real life" chemistry to the course content for Chemistry 131, Chemical Concepts, Systems, and Practices I, University of Rochester (2004-2012).

Developed a new course at the University of Rochester on the chemical bonding of solids with an emphasis on the electronic structure of metal and semiconductor nanoparticles, carbon nanotubes, and other nanometer scale structures (2007-2009).

Developed in collaboration with Computer Science faculty MATLAB modules for visualization of crystal lattices, electronic band structures, and density of states for crystals of all dimensions based on tight binding/linear combination of atomic orbitals codes.

### **Additional Professional Experience**

#### **Maintenance Control Officer**, Rockaway, NY (1998-1999)

Employer: United States Army Reserve

Responsible for the overall maintenance productivity and performance of a maintenance unit comprised of over 130 soldiers. Duties include management and allocation of maintenance personnel and resources, and teaching of individual and collective maintenance tasks to soldiers of all skill levels.

#### **Platoon Leader/Detachment Commander**, Horseheads, NY and Webster, NY (1992-1997)

Employer: United States Army Reserve

Responsible for the overall performance of a maintenance unit comprised of more than 50 soldiers. Duties include personnel management, planning, execution and evaluation of various training activities.

### **Awards and Honors**

Fellow, American Association for the Advancement of Science (2019)

Crano Memorial Lecturer, Akron Section of the American Chemical Society (2015)

Fellow, Optical Society of America (2014)

Fellow, American Physical Society (2012)

University of Rochester Goergen Award for Distinguished Achievement and Artistry in Undergraduate Teaching (2009)

Camille Dreyfus Teacher-Scholar Award (2005)

Alfred P. Sloan Research Fellow (2004)

James D. Watson Investigator Award (2002)

Army Young Investigator Award (2002)

Research Innovation Award (2001)

New Focus Research Award (1995-1997) (Cornell University - Graduate)

Armed Forces Communications and Electronics Fellowship (1995) (Cornell University - Graduate)

Department of Education Fellowship (1992-1995) (Cornell University - Graduate)

Xerox Fellowship (1992-1993) (Cornell University - Graduate)

Army ROTC Armed Forces Communications and Electronics Award (1991) (Cornell University - Undergraduate)

Army ROTC Highest Cumulative GPA Award (1991) (Cornell University - Undergraduate)

Cornell Tradition Fellow (1987-1988) (Cornell University - Undergraduate)

Tau Beta Pi Honor Society (1988-1991) (Cornell University - Undergraduate)

### **Service and Professional Activities**

#### **Affiliations:**

Fellow, American Physical Society

Member, American Chemical Society

Fellow, Optical Society of America

Member, Materials Research Society

Fellow, American Association for the Advancement of Science

**Service: Chemistry Department**

Member, Graduate Recruiting Committee (2000-2004, 2005-2006)  
 Member, Space and Services Committee (2004-2007)  
 Member, Graduate Studies Committee (2004-2005, 2006-2008)  
 Member, Faculty Recruiting Committee (2006-2013)  
 Chair, Faculty Awards Committee (2013-present)  
 Chair, Research Grants and Contracts Committee (2013-present)  
 Founder and Chair, Safety Committee (2016-present)  
 Member, Faculty Awards Committee (2007-present)  
 Chair, Graduate Recruiting Committee (2008-2010)  
 Member, Chemistry Department Chair Search Committee (2008)  
 Head, Department of Chemistry Nanomolecular and Optical Materials Cluster (2008-present)  
 Chair, Faculty Development Committee (2013-present)

**Service: The College and the University of Rochester**

Member, University Electron Microscope Facility Committee (2003-2004)  
 Faculty Advisor, Women's Ice Hockey Team (2003-2015)  
 Member, Enrollment Working Group (2006)  
 Member, Nano-Facilities Working Group (2006)  
 Member, Energy Strategic Initiative Working Group (2007-2010)  
 Member, Nano-Medicine Initiative Working Group (2007)  
 Review committee for Sproull Fellowships (2008)  
 Executive committee member for the University of Rochester Biomedical Nanotechnology Center (2007)  
 Committee Member for the UR Institute for Nanotechnology Center (2007-present)  
 Chair, University Committee on Restructuring the Graduate Program in Materials Science (2009)  
 Member, Steering Committee for URNano (2013-present)  
 Chair, Research Advisory Committee to AS&E Dean of Research (2018-2020)  
 Member, Dean's Advisory Budget Committee (2020-2022)

**Peer Review: Reviewer of Journal Manuscripts in the last 6 years for:**

ACS Applied Energy Materials, ACS Applied Materials and Interfaces, ACS Energy Letters, ACS Nano, ACS Photonics, ACS Sensors, Accounts of Chemical Research, Analytical Chemistry, Carbon, Chemical Communications, Chemical Physics, Chemical Science, Chemistry of Materials, ChemSusChem, Journal of the American Chemical Society, Journal of Chemical Physics, Journal of Physical Chemistry Letters, B and C, Nano Letters, Nano, Nanoscale, Nanotechnology, Nature, Nature Chemistry, Nature Communications, Nature Materials, Nature Nanotechnology, Optics Letters, Physical Review Letters, Proceedings of the National Academy of Sciences, Science.

**Reviewer of Proposals in the last 4 years for:**

National Science Foundation, American Chemical Society PRF, Air Force Office of Scientific Research, Department of Energy, ETH Zürich, German Research Foundation, RCSA

**Leadership in Scientific Field (Selected):**

- Member, QD 2020 Conference International Program Committee (2019-2020)
- Co-Organizer of the Solar Photochemical Fuels session at the Fall meeting of the American Chemical Society in Boston, MA (2018)
- Member, QD 2018 Conference International Program Committee (2017-2018)
- Chair, OSA Stephen D. Fantone Distinguished Service Award Committee (2017-2018)
- Member, QD 2016 Conference International Program Committee (2015-2016)
- Co-Organizer of the "Frontiers in Solar Light Harvesting Processes" session at the Spring

- meeting of the American Chemical Society in San Diego, CA (2016)
- Member, OSA Stephen D. Fantone Distinguished Service Award Committee (2015-2017)
- Editorial Board Member for the Journal of Physical Chemistry (2014-2017)
- Editorial Board Member for the Journal of Physical Chemistry Letters (2014-2017)
- Member, Scientific Committee for the E-MRS 2014 Spring Meeting
- Member, QD Conference International Advisory Committee (2012-2014)
- Co-Organizer of the "Synthesis, Spectroscopy, Theory and Applications of Nanocrystals and Nanowires" Symposium in the Division of Physical Chemistry at the ACS National Meeting in Philadelphia (2012)
- Member of the Proposal Study Panel at The Molecular Foundry at Lawrence Berkeley National Laboratory (2010-2012)
- Program Co-chair for the American Physical Society Division of Laser Science Conference at the Annual Meeting of the Optical Society of America (2010)
- Co-Chair, Gordon Research Conference on Clusters, Nanocrystals & Nanoclusters (2011 – 2013)
- Vice co-Chair, Gordon Research Conference on Clusters, Nanocrystals & Nanoclusters (2009 – 2011)
- Member of the Center for Functional Nanomaterials Proposal Review Panel at Brookhaven National Laboratory (2009-2012)
- Director, Department of Chemistry Nanomolecular and Optical Materials Cluster (2008-present)
- Session organizer for the "Spectroscopy of quantum dots and carbon nanotubes" symposium at the American Physical Society Division of Laser Science and the Optical Society of America Annual Meeting (2008)
- Co-founder and executive board member of Lighthouse Biosciences, LLC. (2006-2010)
- Organizer of and session chair for the "Quantum Dots" symposium at the Optical Society of America Annual Meeting (2006)
- Member of the Rochester Section of the American Chemical Society's Harrison Howe Awards Committee, (2005-2013)

**Current Research Support**

Title: "SISGR: Modular Nanoscale and Biomimetic Assemblies for Photocatalytic Hydrogen Generation"

Source of Support: DOE

Total Award Amount: \$1,200,000 (with Kara Bren (PI) and Ellen Matson)

Duration: 7/15/2021-07/14/2024

Role: co-PI

Title: "Single Particle Spectroscopy and Microscopy of Doped Colloidal Semiconductor Nanocrystals"

Source of Support: NSF

Total Award Amount: \$473,455

Duration: 9/01/2019-8/31/2023

Role: PI

Title: "Nanocrystals: From Size Scaling Laws to Applications: DONC2020 Conference in Germany"

Source of Support: ONR

Total Award Amount: \$5,000

Duration: 7/01/2020-6/30/2022

Role: PI

Title: "Technology Development: Tailored Nano-Molecular Systems for New Modes of Reactivity"

Source of Support: NIH

Total Award Amount: \$132,440

Duration: 4/01/2021-3/31/2023

Role: co-PI (PI Dan Weix at University of Wisconsin)

Title: "CCI Phase I: NSF Center for Quantum Electrodynamics for Selective Transformations"

Source of Support: NSF

Total Award Amount: \$1,800,000

Duration: 9/01/2021-8/31/2024

Role: PI

Title: UNLOQ:UNderstanding coherence in Light-matter interfaces fOr Quantum science

Source of Support: DOE

Total Award Amount: \$2,000,000

Duration: 09/01/2021-08/31/2024

Role: PI

Title: Investigating Polariton Mediated Electron Transfer Reactions"

Source of Support: University of Rochester

Total award amount: \$54,500  
Duration: 7/01/2021-6/30/2022  
Role: co-PI

**Pending Support:**

Title: Nanocrystal Quantum Dot Biomimetics of SARS-CoV-2 to Interrogate Neutrophil-Mediated Neuroinflammation at the Blood-Brain Barrier

Source of Support: NIH

Total Award Amount: \$423,000

Duration: 07/01/2023-06/30/2024

Role: co-PI

Title: Collaborative Research: Metal-Dielectric Mesocavities for Exceptionally Enhanced Optical Processes

Source of Support: NSF

Total Award Amount: \$ 675,459

Duration: 01/01/2023-12/31/2025

Role: PI

## **Students and Postdoctoral Fellows Trained (Krauss Group Alumni)**

### Staff Scientists:

- Dr. Sanela Lampa-Pastirk** (8/2014-8/2016) *Project:* Ultrafast spectroscopic studies of single walled carbon nanotubes. *Next Position:* Professor of Chemistry at Nazareth College.
- Dr. Jeffrey Peterson** (7/2013-8/2014) *Project:* Electrostatic force microscopy of single CdSe quantum dots. *Next Position:* Professor of Chemistry at SUNY Geneseo.

### Postdoctoral Fellows:

- Dr. Zhihui Ban** (8/2007-2/2009) *Project:* Synthesis of biologically compatible semiconductor and metal quantum dots and their cytotoxic effects. *Next Position:* Seeking employment in the Boston, Massachusetts area.
- Dr. Hui Du** (6/2001 – 10/2004) *Project:* Studies of surface immobilized molecular beacons for highly sensitive and selective DNA sensors for pathogenic organisms. *Next Position:* Research Scientist at Nanogram Corporation, San Jose, California.
- Dr. Megan Hahn** (6/2006 – 9/2008) with Eastman Kodak Corporation, Rochester, New York. *Project:* Synthesis of semiconductor quantum dots for improved solid state lighting. *Next Position:* Postdoctoral Research Fellow at the Particle Engineering Research Center at the University of Florida, Gainesville, Florida.
- Dr. Fengzhi Jiang** (3/2005 – 1/2006) *Project:* Correlating the optical properties of single CdSe quantum dots with their charge. *Next Position:* Professor of Chemistry at Yunnan University in China.
- Dr. Marat Khafizov** (12/2007-3/2010) *Project:* Ultrafast optical studies of carbon nanotube photophysics. *Next Position:* Staff scientist at Idaho National Laboratory.
- Dr. Petier Lamberg** (2/2015-8/2016) *Project:* Electrogenic energy transfer from *Schwannella* bacteria and bacterial fuel cells to CdSe quantum dots for solar fuels production. *Co-advised with Prof. Kara L. Bren.*
- Dr. Xiaoyong Wang** (11/2006-6/2010) *Project:* Single semiconductor quantum dot and carbon nanotube fluorescence studies. *Next Position:* Tenure Track Professor at Nanjing University
- Dr. Andrea Lee** (11/2008 – 8/2011) *Project:* Single protein folding studies of cytochrome *c*. *Co-advised with Prof. Kara L. Bren.* *Next Position:* Postdoctoral Research Fellow at the University of Vermont.
- Dr. Kevin McClelland** (1/2020 – 1/2022) *Project:* Photophysical studies of the electron and hole transfer from CdSe nanocrystals to molecular and cluster charge acceptors and catalysts.
- Dr. Michael Odoi** (9/2010 – 1/2014) *Project:* Single Carbon Nanotube Photophysics. *Next Position:* Senior Scientist at KLA-Tencor (Milpitas, CA).
- Dr. Sebastian Schäfer** (2/2012 – 1/2015) *Project:* Spectroelectrochemistry of individual carbon nanotubes. *Next Position:* Project Manager OCT Applications at Thorlabs, Inc. (Lübeck, Germany).
- Dr. Anni Siitonen** (2/2011-1/2012): *Project:* Vertically Aligned Carbon Nanotube Membranes for Solar Hydrogen Production. *Next Position:* Senior Scientist at Polestar Technologies (Needham Heights, MA).
- Dr. Brett Swartz** (9/2011- 1/2015) *Project:* Large scale synthesis of PbSe and CdSe semiconductor nanocrystals. *Next Position:* CTO of Advanced Quantum Imaging, LLC (Rochester, NY).

### Graduate Students:

- Amanda Amori** (12/2012-5/2018) (Ph.D. 2006), *Thesis Title:* “Photophysics of Single-Walled Carbon Nanotubes and their Applications.” *Next position:* Applications Scientist at Semrock Inc.



- Wesley Asher** (11/2007-5/2012), *Project*: Single molecule studies of the unfolding of cytochrome *c*. *Co-advised with Prof. Kara L. Bren*. *Next position*: Postdoctoral Fellow at Columbia University, New York, New York.
- Nicole Briglio-Cogan** (12/2009-present) *Thesis Title*: Photophysical Properties of (I) Single-Walled Carbon Nanotubes and (II) an Unknown Single-Photon Emitter. *Next position*: Postdoctoral Fellow at the University of Rochester.
- Beckah Burke** (12/2014-2019) (Ph.D. 2019) *Thesis Title*: "Colloidal Semiconductor Nanocrystals for Photocatalytic Proton Reduction." *Next position*: Independent science writer.
- Lisa Carlson** (11/2004 – 8/2009), (Ph.D. 2009) *Thesis Title*: "Photophysics of individual single-walled carbon nanotubes." *Next position*: Assistant Professor of Chemistry at Southern Connecticut State University, New Haven, Connecticut.
- Wesley Chiang** (1/2018 – 5/2019) (M.S. 2019) *Thesis Title*: "Super-resolution Microscopy to Examine Cellular Uptake of Micelle Encapsulated Quantum Dots." *Next Position*: Ph.D. student in the Department of Biochemistry and Biophysics, University of Rochester.
- Amy Ensign** (11/2004 – 8/2009), (Ph.D. 2009) *Thesis Title*: "Studies of Horse Heart cytochrome *c* folding." *Co-advised with Prof. Kara L. Bren*. *Next position*: Assistant Professor of Chemistry at Roberts Wesleyan College, Rochester, New York
- Christopher Evans** (11/2006-6/2011), *Project*: *Thesis Title*: "Insight into Quantum Dot Synthesis: Metal-Metal Bond Formation and Particle Growth." *Next Position*: Postdoctoral Fellow at Northwestern University, Evanston, Illinois.
- Leah Frenette** (12/2012-12/2017) (Ph.D. 2017) *Thesis Title*: "Colloidal Quantum Dot Synthesis, Mechanistic Studies, and Applications in Photocatalysis." *Next position*: Postdoctoral Fellow at Imperial College, London, UK.
- Abby Freyer** (12/2013 – 2019) (Ph.D. 2019) *Thesis Title*: "Investigation of Doped Nanocrystals Utilizing Electrostatic Force Microscopy." *Next position*: Applications Scientist at Semrock Inc.
- Li Guo** (11/2002 – 11/2007), (Ph.D. 2007) *Thesis Title*: "Energy transfer between colloidal semiconductor quantum dots." *Next position*: Staff scientist with ASML Corporation, Wilton, Connecticut.
- Megan Hahn** (11/2000 – 6/2006), (Ph.D. 2006), *Thesis title*: "Use of functionalized colloidal semiconductor nanocrystal quantum dots in selective labeling of pathogenic bacteria." *Next position*: Postdoctoral research fellow with the University of Rochester and Eastman Kodak Corporation, Rochester, New York.
- Zhentao Hou** (12/2011 – 5/2018) (Ph.D. 2018), *Thesis Title*: "Photophysical; properties of single-walled carbon nanotubes" *Next position*: Masters Program in Data Science.
- Libai Huang** (11/2001 – 7/2006), (Ph.D. 2006), *Thesis title*: "Ultrafast studies of photoexcited exciton dynamics in isolated single-walled carbon nanotubes." *Next position*: Postdoctoral research fellow at Argonne National Laboratory, Chicago, Illinois.
- Lenore Kubie** (12/2009-present), *Thesis Title*: "Metallopeptides and Metallocytochromes *c* with Single-Walled Carbon Nanotube Conjugates for Alternative Energy Applications," *Co-advised with Prof. Kara L. Bren*, *Next position*: Postdoctoral Fellow at the University of Wyoming.
- Kathryn Leach** (11/2003 – 5/2009), (Ph.D. 2009) *Thesis Title*: "The Chemistry of Single Carbon Nanotube Optics and Electronics." *Next position*: Research Scientist at Advanced Concepts and Technologies International, Crown Point, Indiana.
- Cunming Liu** (5/2010 – present) *Thesis Title*: Exciton Relaxation and Electron Transfer Dynamics of Semiconductor Quantum Dots. *Next Position*, Postdoctoral research fellow at USF, Tampa, FL.
- Hermen Pedrosa** (11/2000 – 8/2006), (Ph.D. 2007), *Thesis title*: "The optical properties of single-walled carbon nanotubes." *Next Position*, Industrial postdoctoral fellow at Church and Dwight Company Inc., Princeton, New Jersey.

- Jeffrey Peterson** (11/2002 – 7/2007), (Ph.D. 2007), *Project*: Investigations of single PbS and PbSe quantum dot fluorescence properties. *Next position*: Postdoctoral research fellow at JILA/NIST, Boulder, Colorado.
- Gregory Pilgrim** (11/2010-present), *Thesis Title*: “Electrons, Protons, and Solvents in Carbon Nanotubes,” *Next position*: JSPS Postdoctoral research fellow at the University of Kyoto, Japan.
- Amanda Preske** (11/2010-3/2016), *Project*: Applications of semiconductor quantum dots for solar energy applications. ,” *Next position*: Started Circuit Breaker Labs, a company to sell her science art and jewelry.
- Fen Qiu** (11/2008-1/2015), *Thesis Title*: “Semiconductor Nanocrystals for Photocatalytic Hydrogen Production.” *Next position*: Postdoctoral research fellow at LBNL, Berkeley, CA.
- Julie Smyder** (11/2005-5/2020), *Thesis Title*: Elucidating the Single-Molecule Fluorescence Intermittency and Quantum Yield of Nanoscale Particles with Confocal and Scanning Probe Microscopies.” *Next Position*: Lecturer for general chemistry.
- Kelly Sowers** (12/2009-present), *Thesis Title*: Synthesis, Photophysics, and Applications of Colloidal Semiconductor Quantum Dots. *Next position*: Postdoctoral Fellow at Utrecht University, Netherlands.
- Jennifer Urban** (12/2012 – 8/2019), *Project*: Engineered, responsive semiconductor quantum-dot/poly-peptide self assemblies for super-resolution imaging of neurons. *Co-advised with Prof. Bradley Nilsson*. *Next position*: Scientist position at Bausch and Lomb.
- Shujing Wang** (11/2004 – 5/2010), *Project*: Studies of multiple exciton generation in isolated single walled carbon nanotubes.
- Helen Wei** (11/2007-5/2015), *Thesis Title*: “Synthesis of Colloidal Semiconductor Quantum dots: Gradient Alloy Core and Tunable Surface Composition. *Next position*: Working at the family business in Tawain.

#### Undergraduate Student Theses:

- Austin Bailey** (5/2015 – 5/2017) *Project*: Synthesis of Polyfluorenes for solubilization of single walled carbon nanotubes with high structure specificity. *Next Position*: Take-5 Program University of Rochester.
- James Camera** (9/2004 – 5/2005), (B.S. 2005), *Project*: DNA sensing Silica Microspheres. *Next Position*: Ph.D. Candidate, Columbia University, New York, New York.
- Peter Fiala** (1/2016 – 5/2017) *Project*: Plasmon enhanced Carbon Nanotube Fluorescence. *Next Position*: Ph.D. candidate EPFL, Switzerland.
- Rulin Gao** (8/2019– 5/2020) *Project*: Synthesis and photophysical characterization of SnS and SnSe nanoplatelets.
- Jeff Hsu** (6/2005 – 9/2006), (B.S. 2007) *Project*: Improved fluorescence from DNA solubilized carbon nanotubes through plasmonics.
- Joanne Leadbetter** (5/2012 – 5/2013), (B.S. 2013) *Project*: Vertically aligned carbon nanotube membranes for photochemical water splitting. *Next Position*: FDA staff scientist.
- Kevin McClelland** (5/2014 – 5/2015), *Project*: CdTe Quantum Dots for Photochemical Water Splitting and H<sub>2</sub> production. *Next Position*: Ph.D. Candidate at Northwestern University, Chicago, Illinois.
- Mike McCoy** (6/2006 – 5/2008) (B.S. 2008) *Project*: Synthesis of water soluble CdSe quantum dots and quantum rods for biological sensing applications. *Next Position*: Ph.D. Candidate, University of Wisconsin, Madison, Wisconsin.
- Matt McKay** (8/2008 – 5/2009), *Project*: PbSe magic sized clusters for high contrast *in vivo* fluorescence imaging agents. *Next Position*: Medical School Student at the University of Pennsylvania.
- Taylor Moot** (1/2012 – 5/2013), (B.S. 2013) *Project*: Carbon nanotube solutions highly enriched in a single chirality. *Next Position*: Ph.D. Candidate, University of North Carolina, Chapel Hill, NC.

**Aiden Oi** (8/2016 – 5/2019) (B.S. 2019) *Project:* Atomic Force Microscopy and Single Molecule Fluorescence Correlation. *Next Position:* Ph.D. Candidate, Boston University.

**Donald Polaski** (8/2008 – 5/2011), *Project:* Photophysical properties of PbSe magic sized clusters and their use in molecular beacons.

**Ji Yoon Roh** (9/2015 – 5/2016), *Project:* Separation of single walled carbon nanotubes by chiral species using large scale methods.

**Sara Rupich:** (9/2006 – 5/2007), (B.S. 2007) *Project:* Improved photoluminescence of carbon nanotubes. *Next Position:* Ph.D. Candidate, University of Chicago, Chicago, Illinois.

**Caleb Whittier** (5/2015 – 5/2018) (B.S. 2018) *Project:* Synthesis of Ag-doped CdSe nanocrystals.

## **Current Group Members:**

### Staff Scientists:

None

### Postdoctoral Research Fellows

**Nicole Cogan** (10/2021-present) *Project:* Single molecule chemical transformations in an optical microcavity.

### Graduate Students

**Mitesh Amin** (12/2019-present) *Project:* Photon correlation studies of single walled carbon nanotubes.

**Farwa Awan** (12/2021 – present) *Project:* Synthesis, cation exchange and characterization of CdSe nanorings.

**Wesley Chiang** (12/2019-present) *Project:* Super-resolution imaging of quantum dots applied to understanding binding of neuropeptides.

**Erin Christensen** (12/2018-present) *Project:* AFM and Optical studies of single carbon nanotubes.

**Ovishek Morshed** (3/2019-present), *Project:* Single nanoplatelet studies of strong coupling to optical cavities.

**William Girten** (12/2019-present), *Project:* Single nanoplatelet Ag<sup>+</sup> doping studies.

**Sean O'Neil** (3/2017-present), *Project:* Photophysics of SnTe quantum dots.

**Mahilet Hailemichael** (12/2017-present), *Project:* Semiconductor quantum dots for solar fuels production.

**Elizabeth Phinney** (12/2021 – present) *Project:* CdSe nanocrystals for photocatalytic solar hydrogen production.

**Trevor Tumeil** (12/2017-present) *Project:* Photophysical studies of single carbon nanotubes.

**Jiahui Wei** (12/2019-present) *Project:* Photon correlation studies of single walled carbon nanotubes.

### Undergraduate Thesis Students

**Kaelyn McFarlane-Connelly** (9/2020-present) *Project:* CdSe photocathodes for photocatalytic solar hydrogen production.

**Peer Reviewed Publications**

- 1) T. D. Krauss and F. W. Wise, "Femtosecond measurement of nonlinear absorption and refraction in CdS, ZnSe, and ZnS," *Appl. Phys. Lett.* **65**, 1739-1741 (1994).
- 2) T. D. Krauss, J. K. Ranka, F. W. Wise, and A. L. Gaeta, "Measurements of the tensor properties of third-order nonlinearities in wide-gap semiconductors," *Opt. Lett.* **20**, 1110-1112 (1995).
- 3) I. Kang, T. D. Krauss, F. W. Wise, B. G. Aitken, and N. F. Borelli, "Femtosecond measurement of enhanced optical nonlinearities in sulfide glasses and heavy-metal doped oxide glasses," *J. Opt. Soc. Am. B* **12**, 2053-2059 (1995).
- 4) T. D. Krauss, F. W. Wise, and D. B. Tanner, "Observation of coupled vibrational modes of a semiconductor nanocrystal," *Phys. Rev. Lett.* **76**, 1376-1379 (1996).
- 5) K.C. Bretz, Y. C. Lee, T. D. Krauss, F. W. Wise, and W. H. Sachse, "Picosecond acoustics for the characterization of submicron polymeric films," *Ultrasonics* **34**, 513-515 (1996).
- 6) I. Kang, S. Smolorz, T. Krauss, F. Wise, B. G. Aitken and N. F. Borelli, "Time-domain observation of nuclear contributions to the optical nonlinearities of glasses," *Phys. Rev. B* **54**, 12641-12644 (1996).
- 7) T. D. Krauss and F. W. Wise, "Raman-scattering study of exciton-phonon coupling in PbS nanocrystals," *Phys. Rev. B* **55**, 9860-9865 (1997).
- 8) I. Kang, T. Krauss and F. Wise, "Sensitive measurement of nonlinear refraction and two-photon absorption by spectrally-resolved two-beam coupling," *Opt. Lett.* **22**, 1077-1079 (1997).
- 9) A. Lipovskii, E. Kolobkova, V. Petrikov, I. Kang, A. Olkhovets, T. Krauss, M. Thomas, J. Silcox, F. Wise, Q. Shen, and S. Kycia, "Synthesis and characterization of PbSe quantum dots in phosphate glass," *Appl. Phys. Lett.* **71**, 3406-3408 (1997).
- 10) T. D. Krauss and F. W. Wise, "Coherent acoustic phonons in a semiconductor quantum dot," *Phys. Rev. Lett.* **79**, 5102-5105 (1997).
- 11) J. M. Fox, T. J. Katz, S. V. Elshocht, T. Verbiest, M. Kauranen, A. Persoons, T. Krauss, and L. Brus, "Synthesis, self-association, and nonlinear optical properties of conjugated helical metal phthalocyanines," *J. Am. Chem. Soc.* **121**, 3453-3459 (1999).
- 12) T. D. Krauss and L. E. Brus, "Charge, polarizability, and photoionization of single Semiconductor Nanocrystals," *Phys. Rev. Lett.* **83**, 4840-4843 (1999).
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### **Book Chapters**

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4) R. Krishnan, Q. Xie, J. Kulik, X. D. Wang, T. D. Krauss, P. M. Fauchet, "Charge transport in silicon nanocrystal arrays," in Group-IV Semiconductor Nanostructures, Eds: L. Tsybeskov, D. J. Lockwood, C. Delerue, M. Ichikawa, *Mat. Res. Soc. Symp. Proc.* **832** F 3.1 (2004).

5) L. Huang, A. Hartschuh, H. N. Pedrosa, J. Peterson, M. Steiner, L. Novotny, and T. D. Krauss, "Single carbon nanotube photonics," in Sensing and Nanophotonic Devices II, Eds: M. Razeghi and G. J. Brown, *Proc. of the SPIE*, **5732**, 1-13 (2005).

6) L. Huang and T. D. Krauss, "Single carbon nanotube photonics and the role of excitons," in Physical Chemistry of Interfaces and nanomaterials V, Eds: M. Spitler and F. Willig, *Proc. of the SPIE*, **6325**, 1-7 (2006).

- 7) C. M. Strohsahl, B. L. Miller, and Todd D. Krauss, "Detection of methicillin-resistant *Staphylococcus aureus* (MRSA) using the NanoLantern™ Biosensor " in *Frontiers in Pathogen Detection: From Nanosensors to Systems*, Ed: P. M. Fauchet, *Proc. of the SPIE*, **7167**, 1-13 (2009).
- 8) L. J. Bissell, S. G. Lukishova, A. W. Schmid, M. A. Hahn, C. M. Evans, T. D. Krauss, C. R. Stroud, R. W. Boyd, "Chiral photonic bandgap microcavities doped with single colloidal semiconductor quantum dots," Eds: C. Fabre; V. Zadkov, K. Drabovich, *Proc. of the SPIE*, **7993** 1N (2011).
- 9) L. J. Bissell, S. G. Lukishova, A. W. Schmid, M. A. Hahn, C. M. Evans, T. D. Krauss, C. R. Stroud, R. W. Boyd, "Room-temperature single photon sources with definite circular and linear polarizations based on single-emitter fluorescence in liquid crystal hosts" Eds: C. Fabre; V. Zadkov, K. Drabovich, *Proc. Of the SPIE*, **7993** 1O (2011).
- 10) N. M. B. Cogan, C. Liu, F. Qiu, R. Burke, and T. D. Krauss, "Ultrafast dynamics of colloidal semiconductor nanocrystals relevant to solar fuels production," *Proc. of the SPIE*, **101930B** (2017); doi:10.1117/12.2262168.
- 11) G. Chen, R. Shrestha, A. Amori, Z. Staniszewski, A. Jukna, A. Korliov, C. Richter, M. El Fray, T. Krauss and R. Sobolewski, "Terahertz time-domain spectroscopy characterization of carbon nanostructures embedded in polymer," *J. of Phys. Conference Series*, **906**, 012002 (2017) DOI: 10.1088/1742-6596/906/1/012002
- 12) W. Chiang, J. Urban, A. Litzburg, B. Nilsson, H. Gelbard, T.D. Krauss, "Elucidating the neuropathophysiology of COVID-19 using quantum dot biomimetics of SARS-CoV-2", *Proc. SPIE* 11977: Colloidal Nanoparticles for Biomedical Applications XVIII, 1197702 (2022).

### **Inventions Disclosed and Patents Filed**

- 1) T. D. Krauss, L. Guo, J. J. Peterson, and C. Evans, "Magic Size Nanoclusters and Methods of Preparing Same," Patent Number 8,617,707 (2013).
- 2) B. L. Miller, T. D. Krauss, L. J. Rothberg, and H.-I. Peng, "DNA microarray having hairpin surface probes tethered to a nanostructured metal surface," Patent Number 8,957,002 (2015).
- 3) T. D. Krauss and C. M. Evans, "Quantum Nanostructures, Compositions Thereof, and Methods of Making and Using Same," Patent Number 8,920,766 (2014).
- 4) Todd D. Krauss, Richard Eisenberg, Patrick Holland, Fen Qiu, Zhiji Han, "Methods for Producing Hydrogen Using Nanoparticle-Catalyst Mixtures," Patent Number 10,471,409.
- 5) T. D. Krauss and K. L. Bren, "Methods for Producing Hydrogen using Nanoparticle Catalyst Mixtures" Patent Number 10,047,443 (2018).
- 6) T. D. Krauss, G. Pilgrim and S. Pilgrim, "Membranes With Vertically Correlated Carbon Nanotubes, And Methods Of Making And Using Same," Patent filed (2014).
- 7) D. J. Weix, J. A. Caputo, K. L. Sowers, N. Zhao and T. D. Krauss, "Application of Nanoparticles to Photoredox Catalysis," patent filed (2016).

**Invited Technical Presentations**

- 1) T. D. Krauss and L. E. Brus, "Charge, polarizability, and photoionization of single semiconductor nanocrystals," presented at the Naval Research Laboratory, Washington D.C. (2000).
- 2) T. D. Krauss, "Charge and photoionization properties of single semiconductor nanocrystals," presented in the Chemistry Department of Saint Lawrence University, Canton, New York (2000).
- 3) T. D. Krauss, "Charge and photoionization properties of single semiconductor nanocrystals," presented in the Chemistry Department of the State University of New York at Potsdam, Potsdam, New York (2000).
- 4) T. D. Krauss, "Electrostatic force microscopy of single CdSe nanocrystals," presented at the American Physical Society March Meeting, Seattle, Washington (2001).
- 5) T. D. Krauss, "Electronic properties of single CdSe nanocrystals," presented at the New York State Section of the American Physical Society Meeting, Yorktown Heights, New York (2001).
- 6) T. D. Krauss, "Charge, photoionization, and photoluminescent properties of individual semiconductor nanocrystals," presented at Kodak Research Laboratories, Rochester, New York (2001).
- 7) T. D. Krauss, "Quantum dots: bigger, faster, brighter, smaller," presented at Evident Technologies Inc., Albany, New York (2001).
- 8) T. D. Krauss, "Quantum Dots as biological sensors," presented in the Chemistry Department of the City College of New York (CCNY), New York, New York (2001).
- 9) T. D. Krauss, "Development of nanocrystal based colorimetric sensors for detection of biological contaminants," presented at the annual symposium of the University of Rochester Chapter of the Materials Research Society, Rochester, New York (2001).
- 10) T. D. Krauss, "Quantum Dots as biological sensors," presented in the Physics Department of Colgate University, Hamilton, New York (2001).
- 11) T. D. Krauss, "Quantum dots as biological sensors," presented at the Center for Future Health, University of Rochester, Rochester, New York (2001).
- 12) T. D. Krauss, "Quantum dots as biological sensors," presented in the Chemistry Department of Moravian College, Bethlehem, Pennsylvania (2002).
- 13) T. D. Krauss, "Quantum dot based detection of biological contaminants," presented at the Particles 2002 Conference, Orlando, Florida (2002).
- 14) T. D. Krauss, "Label-free DNA microarrays," presented in the Chemistry Department of Canisius College, Buffalo, New York (2002).

- 15) T. D. Krauss, "Quantum-Dot – Carbon Nanotube Assemblies: Precursors to Nanophotonic Devices," presented in the Chemistry Department of the State University of New York at Geneseo, Geneseo, New York (2002).
- 16) T. D. Krauss, "Nanometer Scale Materials in Photonics: Why Size Matters," presented in the School of Electrical and Computer Engineering at Cornell University, Ithaca, New York (2002).
- 17) T. D. Krauss, "Nanometer Scale Materials in Biology, Electronics, and Photonics: Why Size Matters," presented in the Chemical Engineering Department of the University of Rochester, Rochester, New York (2002).
- 18) T. D. Krauss, "Label-free DNA microarrays," presented in the Chemistry Department of John Carroll University, Cleveland, Ohio (2002).
- 19) T. D. Krauss, "Nanometer Scale Materials in Photonics: Why Size Matters," presented in the Chemistry Department of Hamilton College, Clinton, New York (2002).
- 20) T. D. Krauss, "Localized Charge Properties of Individual Semiconductor Nanoparticles," presented in the Physics Department of the University of Rochester, Rochester, New York (2003).
- 21) T. D. Krauss, "Localized Charge Properties of Individual Semiconductor Nanorods," presented at the National Meeting of the American Chemical Society, New Orleans, Louisiana (2003).
- 22) T. D. Krauss, "Localized Charge Properties of Individual Semiconductor Quantum Rods," presented at the multidisciplinary NSEC colloquium, Cornell University, Ithaca, New York (2003).
- 23) T. D. Krauss, "Localized Charge Properties of Individual Semiconductor Quantum Rods," presented at the 39th IUPAC Congress and 86th Conference of The Canadian Society for Chemistry, Ottawa, Ontario, Canada (2003).
- 24) T. D. Krauss, "Localized Charge Properties of Individual Semiconductor Quantum Rods," presented at the Excited State Processes in Electronic and Biological Nanomaterials workshop, Los Alamos, New Mexico (2003).
- 25) T. D. Krauss, H. Du, M. A. Hahn, R. Krishnan, P. M. Fauchet, C. Chen, J. M. Harbold, and F. W. Wise, "Localized charge and optical properties of semiconductor nanoparticles," presented at the Fall National Meeting of the American Chemical Society, New York, New York (2003).
- 26) T. D. Krauss, "Quantum Dots for Biological Applications: Why Size Matters" presented in the Department of Environmental Medicine of the University of Rochester, Rochester, New York (2003).
- 27) T. D. Krauss, "Single Carbon Nanotube Photonics," presented in the Chemistry Department of Case Western Reserve University, Cleveland, Ohio (2004).
- 28) T. D. Krauss, "Single Carbon Nanotube Photonics," presented in the Optics Department of the University of Rochester, Rochester, New York (2004).
- 29) T. D. Krauss, "Single Carbon Nanotube Photonics," presented in the Chemistry Department of Clarkson

University, Potsdam, New York (2004).

30) T. D. Krauss, "Nanomaterials Science and Technology: Why Size Matters," presented as the Keynote address at the 49<sup>th</sup> Undergraduate awards symposium of the Rochester Section of American Chemical Society at Roberts Wesleyan College, Rochester, New York (2004).

31) T. D. Krauss, "Individual single-wall carbon nanotube photonics," presented at the 49<sup>th</sup> Annual Meeting of the SPIE, Denver, Colorado (2004).

32) T. D. Krauss, "Single carbon nanotube electronics and photonics," presented at the Nanoscale Science and Engineering Center Colloquium at Columbia University, New York, New York (2004).

33) T. D. Krauss, "Surface functionalization of semiconductor quantum dots for applications in biological sensing and nanoelectronics," presented at the Northeast Regional Meeting of the American Chemical Society, Rochester, New York (2004).

34) T. D. Krauss, "Time resolved spectroscopy of individual carbon nanotubes," presented at the Annual Meeting of the Lasers and Electro Optics Society, Rio Mar, Puerto Rico (2004).

35) T. D. Krauss, "Individual Single-Walled Carbon Nanotube Photonics," presented at Photonics West, San Jose, California (2005).

36) T. D. Krauss, "Nanotechnology: Why Size Matters," keynote address at the Annual Awards Dinner of the Rochester Section of the American Chemical Society, Rochester, New York (2005).

37) T. D. Krauss, "Single Carbon Nanotube Electronics and Photonics," presented in the Chemistry Department of the University of Illinois at Urbana-Champaign, Urbana, Illinois (2005).

38) T. D. Krauss, "Single Carbon Nanotube Electronics and Photonics," presented at the Center for Frontiers in Optical Coherent and Ultrafast Science, University of Michigan, Ann Arbor, Michigan (2005).

39) T. D. Krauss, "Single Carbon Nanotube Electronics and Photonics," presented at the National Renewable Energy Laboratory, Golden, Colorado (2005).

40) T. D. Krauss, "Single Carbon Nanotube Electronics and Photonics," presented in the Chemistry Department of Colorado State University, Ft. Collins, Colorado (2005).

41) T. D. Krauss, "Single Carbon Nanotube Electronics and Photonics," presented in the Chemistry Department of The University of Colorado, Boulder, Colorado (2005).

42) T. D. Krauss, "Single Carbon Nanotube Electronics and Photonics," presented in the Chemistry Department of the University of Chicago, Chicago, Illinois (2005).

42) T. D. Krauss, "Single Carbon Nanotube Electronics and Photonics," presented in the Chemistry Department of Cornell University, Ithaca, New York (2005).

44) T. D. Krauss, "Single Carbon Nanotube Electronics and Photonics," presented in the Chemistry Department of the University of California at Irvine, Irvine, California (2005).



- 45) T. D. Krauss, "Single Carbon Nanotube Electronics and Photonics," presented in the Chemistry Department of the University of California at Los Angeles, Los Angeles, California (2005).
- 46) T. D. Krauss, "Enhanced Fluorescence from Semiconductor Quantum Dots in Optical Microcavities," presented at the Conference on Nanoscale Devices & System Integration, Houston, Texas (2005).
- 47) T. D. Krauss, "Individual Carbon Nanotube Photonics," presented at the Quantum Electronics and Laser Science Conference, Baltimore, Maryland (2005).
- 48) T. D. Krauss, "Single Carbon Nanotube Electronics and Photonics," presented in the Chemistry Department of Stanford University, Stanford, California (2005).
- 49) T. D. Krauss, "Single Carbon Nanotube Electronics and Photonics," presented in the Chemistry Department of the University of Wisconsin, Madison, Wisconsin (2005).
- 50) T. D. Krauss, "The Photonics of Quantum Dots, Carbon Nanotubes, and other 'small' things," presented in the Chemistry Department of the University of Rochester, Rochester, New York (2005).
- 51) T. D. Krauss, "Nanometer Scale Materials for Photonics: Why Size Matters," presented in the Chemistry Department of St. Lawrence University, Canton, New York (2005).
- 52) T. D. Krauss, "Nanometer Scale Materials for Photonics: Why Size Matters," presented in the Chemistry Department of SUNY Potsdam, Potsdam, New York (2005).
- 53) T. D. Krauss, "Single Carbon Nanotube Photonics," presented at the International Chemical Conference of Pacific Basin Societies, Honolulu, Hawaii (2005).
- 54) T. D. Krauss, "Single Carbon Nanotube Electronic and Photonics," presented in the Materials Research Laboratory of the University of Illinois at Urbana-Champaign, Urbana, Illinois (2005).
- 55) T. D. Krauss, "Colloidal semiconductor quantum dots in the selective labeling of pathogenic bacteria," presented at the Particles 2006 conference, Orlando, Florida (2006).
- 56) T. D. Krauss, "The photonics of nanometer scale materials: Why size matters," presented at the annual meeting of the Rochester Chapter of the Materials Research Society, Rochester, New York (2006).
- 57) T. D. Krauss, "Individual Carbon Nanotube Photonics," presented at the 209<sup>th</sup> Meeting of the Electrochemical Society, Denver, Colorado (2006).
- 58) T. D. Krauss, "Single Carbon Nanotube Photonics and the Role of Excitons," presented at the Chemistry Department of the University of Washington, Seattle, Washington (2006).
- 59) T. D. Krauss, "Localized Charge of Single CdSe Quantum Rods and the Role of Lattice Imperfections," presented at the March Meeting of the American Physical Society, Baltimore, Maryland (2006).
- 60) T. D. Krauss, "Single Carbon Nanotube Photonics and the Role of Excitons," presented at the 51<sup>st</sup> Annual Meeting of the SPIE, San Diego, California (2006).

- 61) T. D. Krauss, "The photonics of nanometer scale materials: Why size matters," presented in the Chemistry Department of Amherst College, Amherst, Massachusetts (2006).
- 62) T. D. Krauss, "Single Carbon Nanotube Photonics," presented at the 90<sup>th</sup> Annual Meeting of the Optical Society of America, Rochester, New York (2006).
- 63) T. D. Krauss, "The photonics of nanometer scale materials: Why size matters," presented in the Chemistry Department of Alfred University, Alfred, New York (2006).
- 64) T. D. Krauss, "The photonics of nanometer scale materials: Why size matters," presented in the Chemistry Department of the State University of New York at Fredonia, Fredonia, New York (2006).
- 65) T. D. Krauss, "Single Carbon Nanotube Electronics and Photonics," presented in the Chemistry Department of the University of Georgia, Athens, Georgia (2007).
- 66) T. D. Krauss, "Single carbon nanotube photonics and the role of excitons," presented at the Spring Meeting of the American Chemical Society, Chicago, Illinois (2007).
- 67) T. D. Krauss, "Surface Induced Localized Charge of Single Imperfect CdSe Quantum Rods," presented at the Spring Meeting of the Materials Research Society, San Francisco, California (2007).
- 68) T. D. Krauss, "Direct measurement of the fluorescence quantum yield for individual single-walled carbon nanotubes," presented at the 211<sup>th</sup> Meeting of the Electrochemical Society, Chicago, Illinois (2007).
- 69) T. D. Krauss, "The photonics of nanometer scale materials: Why size matters," presented in the Chemistry Department of Fordham University, Bronx, New York (2007).
- 70) T. D. Krauss, "The photonics of nanometer scale materials: Why size matters," presented in the Chemistry Department of York College of Pennsylvania, York, Pennsylvania (2007).
- 71) T. D. Krauss, "The photonics of nanometer scale materials: Why size matters," presented at the Integrated Nanostructured Systems Workshop, the University at Buffalo, Buffalo, New York (2007).
- 72) T. D. Krauss, "Single Carbon Nanotube Optics and Photonics," presented at the Composites at Lake Louise Conference, Lake Louise, Alberta, Canada (2007).
- 73) T. D. Krauss, "Nanometer scale materials: Why size matters," presented in the Chemistry Department of the State University of New York at Brockport, Brockport, New York (2007).
- 74) T. D. Krauss, "Nanometer scale materials for Biotechnology: Why size matters," presented in the Frontiers in Biomedical Nanotechnology Symposium at the University of Rochester Medical School, Rochester, New York (2007).
- 75) T. D. Krauss, "Nanometer scale materials for Biotechnology: Why size matters," presented in the Chemistry Department of Monroe Community College, Rochester, New York (2007).
- 76) T. D. Krauss, "Nanometer scale materials: Why size matters," presented at Le Moyne College,

Syracuse, New York (2008).

77) T. D. Krauss, "Nanometer scale materials: Why size matters," presented in the Electrical and Computer Engineering Department, University of Rochester, Rochester, New York (2008).

78) T. D. Krauss, "Photophysics of Individual Carbon Nanotubes," presented at the Spring Meeting of the American Chemical Society, New Orleans, Louisiana (2008).

79) T. D. Krauss, "Are Carbon Nanotubes Useful Optical Materials, " presented in the Institute of Optics, University of Rochester, Rochester, New York (2008).

80) T. D. Krauss, " Ultrabright PbSe Quantum Dot Nanoclusters", presented at the Particles 2008 conference, Orlando, Florida (2008).

81) T. D. Krauss, "Photophysics of Individual Carbon Nanotubes," presented at the 30<sup>th</sup> Department of Energy Solar Photochemistry Conference, Wintergreen, Virginia (2008).

82) T. D. Krauss, "Are Carbon Nanotubes Useful Optical Materials, " presented at Corning Incorporated, Corning, New York (2008).

83) T. D. Krauss, "Semiconductor Nanocrystal Quantum Dots: Nonblinking and Ultrasmall," presented in the Chemistry Department, Washington University of St. Louis, St. Louis, Missouri (2008).

84) T. D. Krauss, "Semiconductor Nanocrystal Quantum Dots: Nonblinking and Ultrasmall," presented in the Department of Physics and Astronomy, University of Rochester, Rochester, New York (2008).

85) T. D. Krauss, "Semiconductor Nanocrystal Quantum Dots: Nonblinking and Ultrasmall," presented in the Department of Chemistry, Texas A&M University, College Station, Texas (2009).

86) T. D. Krauss, "Nanometer scale materials: Why size matters," presented in the Department of Chemistry at Stonehill College, Easton, Massachusetts (2009).

87) T. D. Krauss, "Non-blinking semiconductor nanocrystals," presented at the Gordon Research Conference on Clusters, Nanocrystals, and Nanostructures, Mt. Holyoke College, South Hadley, Massachusetts (2009).

88) T. D. Krauss, "Non-blinking semiconductor nanocrystals," presented at the Annual Meeting of the Optical Society of America, San Jose, California (2009).

89) T. D. Krauss, "Ultra-stable and ultra-small novel semiconductor quantum dots for nano-composites" presented at the Composites at Lake Louise Conference, Lake Louise, Alberta, Canada (2009).

90) T. D. Krauss, "Ultrabright fluorescence from individual single-walled carbon nanotubes," presented at the Eastern Analytical Symposium, Somerset, New Jersey (2009).

91) T. D. Krauss, "Nanometer scale materials: Why size matters," presented in the Department of Materials Science at Alfred University, Alfred, New York (2009).

- 92) T. D. Krauss, "Nanoscience, Nanomaterials, and Nanotechnology," presented at the inaugural TEDx program, Rochester, New York (2009).
- 93) T. D. Krauss, "Semiconductor Nanocrystals: Insights from Synthesis and Single Molecule Spectroscopy," presented in the Department of Chemistry at the University of Texas at Austin, Austin, Texas (2010).
- 94) T. D. Krauss, "Semiconductor Nanocrystals: Insights from Synthesis and Single Molecule Spectroscopy," presented in the Department of Interfacial Systems Chemistry at the Ruhr University in Bochum, Germany (2010).
- 95) T. D. Krauss, "Semiconductor Nanocrystals: Insights from Synthesis and Single Molecule Spectroscopy," presented in the Center for Applied Photonics at the University of Konstanz, Germany (2010).
- 96) T. D. Krauss, "Semiconductor Nanocrystals: Insights from Synthesis and Single Molecule Spectroscopy," presented in the Department of Materials Science and Engineering at Cornell University, Ithaca, New York (2010).
- 97) T. D. Krauss, "Semiconductor Nanocrystals: Insights from Synthesis and Single Molecule Spectroscopy," presented in the Department of Chemistry at the University of Massachusetts, Amherst, Massachusetts (2010).
- 98) T. D. Krauss, "Nanometer scale materials: Why size matters," presented in the Department of Chemistry at Miami University Ohio, Oxford, Ohio (2010).
- 99) T. D. Krauss, "Semiconductor Nanocrystals: Insights from Synthesis and Single Molecule Spectroscopy," presented in the Department of Chemistry at Dartmouth College, Hanover, New Hampshire (2010).
- 100) T. D. Krauss, "Rational mechanism for chalcogenide semiconductor nanocrystal synthesis," presented at the 239<sup>th</sup> National Meeting of the American Chemical Society, San Francisco, California (2010).
- 101) T. D. Krauss, "Are Carbon Nanotubes Useful Optical Materials," presented in the Department of Chemistry at the University of Illinois at Chicago, Chicago, Illinois (2010).
- 101) T. D. Krauss, "Are Carbon Nanotubes Useful Optical Materials," presented at Northwestern University, Evanston, Illinois (2010).
- 102) T. D. Krauss, "Insights into the Synthesis of Semiconductor Quantum Dots," presented at the Particles 2010 Conference, Orlando, Florida (2010).
- 103) T. D. Krauss, "Semiconductor Nanocrystals: Insights from Synthesis and Single Molecule Spectroscopy," presented in the Polymer and Nanoparticles Workshop, University of Toronto, Toronto, Ontario, Canada (2010).
- 104) T. D. Krauss, "Semiconductor Nanocrystals: Insights from Synthesis and Single Molecule

Spectroscopy," presented in the Department of Chemistry at Emory University, Atlanta, Georgia (2010).

105) T. D. Krauss, "Nanotechnological Approaches to Biomedicine: (Mostly) Single Molecule Protein Folding," presented in the Department of Biomedical Engineering at Rochester Institute of Technology, Rochester, New York (2010).

106) T. D. Krauss, "Nanoscience and Nanotechnology: Why Size Matters," presented at the Rochester Museum and Science Center, Rochester, New York (2011).

107) T. D. Krauss, "Multiple Exciton Generation and Fluorescence Brightening in Single-Walled Carbon Nanotubes," presented at the 219<sup>th</sup> Annual Meeting of the Electrochemical Society, Montreal, Quebec (2011).

108) T. D. Krauss, "Photophysics of Single and Multiple Excitons in Carbon Nanotubes," presented at the 33<sup>rd</sup> DOE Solar Photochemistry Meeting, Wintergreen, Virginia (2011).

109) T. D. Krauss, "Photophysics of Single and Multiple Excitons in Carbon Nanotubes," presented at the Excited State Processes Conference, Santa Fe, New Mexico (2011).

110) T. D. Krauss, "Semiconductor Nanocrystals: Insights from Synthesis and Single Molecule Spectroscopy," presented at the National Research Council, Ottawa, Ontario (2011).

111) T. D. Krauss, "Semiconductor Nanocrystals: Insights from Synthesis and Single Molecule Spectroscopy," presented to the Department of Chemistry, University of Colorado, Boulder, Colorado (2011).

112) T. D. Krauss, "Nanoscale Assemblies for Photocatalytic Hydrogen Generation," presented at the Energy for the 21<sup>st</sup> Century Symposium, University of Rochester, Rochester, New York (2011).

113) T. D. Krauss, "Getting Students (Somewhat) Interested in General Chemistry Without Teaching to the Test, Science Teachers Association of New York State Annual Meeting, Rochester New York (2011).

114) T. D. Krauss, "Single Semiconductor Nanocrystal (and Nanotube) Photophysics and their Relevance for Solar Energy", Electronic and Optical Characterization of Nanoscale Systems for Renewable Energy Symposium, Boulder, Colorado (2011).

115) T. D. Krauss, "Fundamental Insights into Semiconductor Nanocrystals from Synthesis and Single Molecule Spectroscopy," presented to the Department of Chemistry, McGill University, Montreal, Quebec (2012).

116) T. D. Krauss, "Nanoscience and Nanotechnology: Why Size Matters," presented to the Department of Chemistry, Macalester College, St. Paul, Minnesota (2012).

117) T. D. Krauss, "Nanoscience and Nanotechnology: Where Size Really Does Matter, keynote lecture at the Western New York ACS Undergraduate Symposium (2012).

- 118) K. L. Bren, T. D. Krauss, and R. Eisenberg, "Multicomponent Bio-Nano Integrated Systems for Light-Driven Hydrogen Generation," presented at the 34<sup>th</sup> DOE Solar Photochemistry Meeting, Annapolis, Maryland (2012).
- 119) T. D. Krauss, "Photophysics of Single to Multiple Excitons in Carbon Nanotubes," presented at the ICAMP-12 Meeting, Boulder, Colorado (2012).
- 120) T. D. Krauss, "Fundamental Insights into Semiconductor Nanocrystals from Synthesis and Single Molecule Spectroscopy," presented to the Department of Chemistry, University of Wisconsin, Madison, Wisconsin (2012).
- 121) T. D. Krauss, "Novel Insights Into Protein Folding from Watching Individual Molecules Dance," presented to the Department of Chemistry and Biochemistry, Nazareth College, Rochester, New York (2012).
- 122) T. D. Krauss, "Nanoscience and Nanotechnology: Why Size Matters," presented at the Science and Math colloquium, Houghton College, Houghton, New York (2012).
- 123) T. D. Krauss, "Semiconductor Nanocrystals: Insights from Synthesis and Single Molecule Spectroscopy," presented at the DOE Radiation Laboratory, University of Notre Dame, South Bend, Indiana (2013).
- 124) T. D. Krauss, "Nanoscience and Nanotechnology: Why Size Matters," presented at the Neils Colloquia on Innovative Science Series, Valparaiso University, Valparaiso, Indiana (2013).
- 125) T. D. Krauss, "Nanoscience and Nanotechnology: Why Size Matters," presented at the Chemistry Department Seminar, SUNY Potsdam, Potsdam, New York (2013).
- 126) T. D. Krauss, "Photoluminescence from Individual (Charged?) Single Walled Carbon Nanotubes," presented at the TSRC Workshop on Carbon Nanotube Defects, Telluride, Colorado (2013).
- 127) T. D. Krauss, "Semiconductor Nanocrystals: Insights from Synthesis, Catalysis, and Single Molecule Spectroscopy, with some other stories," presented at the Swiss Federal Institute of Technology in Zurich, Switzerland (2013).
- 128) T. D. Krauss, "Semiconductor Nanocrystals for Efficient and Robust Photochemical Reduction," presented at the 246<sup>th</sup> National Meeting of the American Chemical Society in Indianapolis, Indiana (2013).
- 129) T. D. Krauss, "Robust photogeneration of H<sub>2</sub> in Water Using Semiconductor Nanocrystals and a Nickel Catalyst<sub>(SEP)</sub>," presented at the 246<sup>th</sup> National Meeting of the American Chemical Society in Indianapolis, Indiana (2013).
- 130) T. D. Krauss, "Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented at the Foster Chemical Colloquia Series, University at Buffalo, Buffalo, New York (2013).

131) T. D. Krauss, "Photoexcited Excitons in Single Walled Carbon Nanotubes," presented at the Eastern Analytical Symposium, Somerset, New Jersey (2013).

132) T. D. Krauss, "Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented at the Chemistry Department Seminar, Michigan State University, East Lansing, Michigan (2013).

133) T. D. Krauss, "Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented in the Chemistry Department at the University of Illinois, Urbana-Champaign, Illinois (2013).

134) T. D. Krauss, "Nanoscience and Nanotechnology: Why Size Matters," presented at the Chemistry Department Seminar, SUNY Fredonia, Fredonia, New York (2013).

135) T. D. Krauss, "Spectroscopic Investigation of Electrochemically Charged Individual Single-Walled Carbon Nanotubes," presented at the 225<sup>th</sup> Meeting of the Electrochemical Society, Orlando, Florida (2014).

136) T. D. Krauss, "Spectroscopic Investigation of Electrochemically Charged Individual Single-Walled Carbon Nanotubes," presented at the Excited State Processes Meeting Santa Fe, New Mexico (2014).

137) T. D. Krauss, "Back to the Future: Mechanistic Insights into Quantum Dot Syntheses," presented at the International Conference on Fundamental Processes in Semiconductor Nanocrystals, Oxford, England (2014).

138) T. D. Krauss, "Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented in the Chemistry and Materials Science Departments of Rochester Institute of Technology, Rochester, New York (2014).

139) T. D. Krauss, "Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented in the Chemistry Department of Rice University (2014).

140) T. D. Krauss, "Nanoscience and Nanotechnology: Why Size Matters," presented in the Chemistry Department at SUNY Oneonta, Oneonta, New York (2014).

141) T. D. Krauss, "Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented in the Chemistry Department of the University of Pittsburgh (2014).

142) T. D. Krauss, "Nanoscience and Nanotechnology: Why Size Matters," presented in the Chemistry Department at Hope College, Holland, Michigan (2014).

143) K.L. Bren, R. E. Eisenberg and T. D. Krauss "Nanotechnological and Biological Systems for Light-Driven Solar Hydrogen Production," presented at the 36<sup>th</sup> DOE Solar Photochemistry Meeting, Annapolis, Maryland (2014).

144) T. D. Krauss, "Nanoscience and Nanotechnology: Why Size Matters," presented in the Chemistry Department at Wright State University, Dayton, Ohio (2014).

- 145) T. D. Krauss, "Semiconductor Quantum Dots for Nanomedicine: Where Size Does Matter," presented at the Friday Science Social at the University of Rochester Medical Center, Rochester, York (2015).
- 146) T. D. Krauss, "Back to the Future: Mechanistic Insights into Quantum Dot Syntheses," presented at the Spring Meeting of the Materials Research Society, San Francisco, California (2015).
- 147) T. D. Krauss, "Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented at the Northeast Region Meeting of the American Chemical Society, Ithaca, New York (2015).
- 148) T. D. Krauss, "Nanoscience and Nanotechnology: When Size Matters," presented at the Crano Memorial Award Lecture, Akron, Ohio (2015).
- 149) T. D. Krauss, "Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented in the Chemistry Department at the University of Akron, Akron, Ohio (2015).
- 150) T. D. Krauss, "Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented at the Nanomaterials: Computation, Theory, and Experiment Conference in Telluride, Colorado (2015).
- 151) T. D. Krauss, "Nanoscience and Nanotechnology for Sustainable Energy: When Size Matters," presented at the Telluride Town Talk, Telluride, Colorado (2015).
- 152) T. D. Krauss, "Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented in the Chemistry Department of Binghamton University, Binghamton, New York (2015).
- 153) T. D. Krauss, "Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented in the Electrical Engineering Department of the University of Toronto, Toronto, Ontario (2015).
- 154) T. D. Krauss, "Semiconductor Nanoparticle and Carbon Nanotube Architectures for Solar Hydrogen Production," presented at the Advanced Nanomanufacturing Workshop at the National Institute of Standards and Technology, Gaithersburg, Maryland (2015).
- 155) T. D. Krauss, "Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented in the Chemistry Department of Columbia University, New York, New York (2015).
- 156) T. D. Krauss, "Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented in the Chemistry Department of the University of Texas at Austin, Austin, Texas (2015).
- 157) T. D. Krauss, "Spectroscopic Investigation of Electrochemically Charged Individual Single-Walled Carbon Nanotubes," presented at the Pacificchem Conference, Honolulu, Hawaii (2015).
- 158) T. D. Krauss, "Charge Transfer Dynamics in Semiconductor Quantum Dots Relevant to Solar Hydrogen Production," presented at the March Meeting of the American Physical Society, Baltimore, Maryland (2016).



- 159) T. D. Krauss, "Ultrafast Dynamics of Charge Transfer in Semiconductor Quantum Dots Relevant to Solar Hydrogen Production," presented at the SPIE Defense and Commercial Sensing Conference, Baltimore, Maryland (2016).
- 160) T. D. Krauss, "Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented in the Chemistry Department of the University of Southern California, Los Angeles, California (2016).
- 161) T. D. Krauss, "Colloidal Semiconductor Nanocrystal Photocatalysts: Teaching an Old Dot New Tricks," presented in the Chemistry Department of the University of Connecticut, Storrs, Connecticut (2017).
- 162) T. D. Krauss, "Colloidal Semiconductor Nanocrystals for Robust and Efficient Solar Hydrogen Production," presented in the Chemistry Department of Marquette University, Milwaukee, Wisconsin (2017).
- 163) T. D. Krauss, "Ultrafast Dynamics of Charge Transfer in Semiconductor Quantum Dots Relevant to Solar Hydrogen Production," presented at the SPIE Defense and Commercial Sensing Conference, Anaheim, California (2017).
- 164) T. D. Krauss, "Colloidal Semiconductor Nanocrystal Photocatalysts: Teaching an Old Dot New Tricks," presented in the Chemistry Department of Valparaiso University, Valparaiso, Indiana (2017).
- 165) T. D. Krauss, "Colloidal Semiconductor Nanocrystal Photocatalysts: Teaching an Old Dot New Tricks," presented in the Chemistry Department of the University of Pennsylvania, Philadelphia, PA (2017).
- 166) T. D. Krauss, "Photoluminescence Brightening in Single-Walled Carbon Nanotubes," presented at the 231<sup>st</sup> Electrochemical Society Meeting, New Orleans, Louisiana (2017).
- 167) T. D. Krauss, "Colloidal Semiconductor Nanocrystal Photocatalysts: Teaching an Old Dot New Tricks," presented at the Fall National Meeting of the American Chemical Society, Washington, D.C. (2017).
- 168) T. D. Krauss, "Colloidal Semiconductor Nanocrystal Photocatalysts: Teaching an Old Dot New Tricks," presented at the CASP Summer School, Los Alamos National Laboratory, Los Alamos, NM (2017).
- 169) T. D. Krauss, "Interplay Between Charge and Photoluminescence of Individual Doped Semiconductor Nanocrystals," presented at the Nanomaterials: Computation, Theory, and Experiment Conference in Telluride, Colorado (2017).
- 170) T. D. Krauss, "Colloidal Semiconductor Nanocrystal Photocatalysts: Teaching an Old Dot New Tricks," presented at the National Meeting of the American Chemical Society, New Orleans, Louisiana (2018).
- 171) T. D. Krauss, "Colloidal Semiconductor Nanocrystal Photocatalysts: Teaching an Old Dot New Tricks," presented at the National Meeting of the American Chemical Society, Boston, Massachusetts (2018).

172) T. D. Krauss, “Ultrafast Dynamics of Charge Transfer in Semiconductor Quantum Dots Relevant to Solar Hydrogen Production,” presented at the SPIE Defense and Commercial Sensing Conference, Orlando Florida (2018).

173) T. D. Krauss “Uncovering Active Molecular Precursors in Colloidal Quantum Dot Synthesis” presented at the OMEL Laboratory at ETH, Zurich (2018).

174) T. D. Krauss “Colloidal Semiconductor Nanocrystal Photocatalysts: Teaching an Old Dot New Tricks” presented at the OMEL Laboratory at ETH, Zurich (2018).

175) T. D. Krauss, “Nanoscience and Nanotechnology for Solar Energy: When Size Matters,” presented in the Chemistry Department at Nazareth College, Rochester, New York (2018).

176) T. D. Krauss, “Nanoscience and Nanotechnology for Biomedical Imaging: When Size Matters,” presented in the Chemistry Department of Alfred University, Alfred, New York (2018).

177) T. D. Krauss, “Single Surface Charges on Aliovalently Doped Semiconductor Nanocrystals Govern their Photophysics,” presented in the Chemistry Department at Clarkson University, Potsdam, New York (2019).

178) T. D. Krauss, “Explaining the Unusual Photoluminescence of Semiconductor Nanocrystals Doped Via Cation Exchange,” presented at the TSRC: Nanomaterials: Computation, Theory, and Experiment Telluride, Colorado (2019).

179) T. D. Krauss “Colloidal Semiconductor Nanocrystal Photocatalysts: Teaching an Old Dot New Tricks” presented at the 236<sup>th</sup> Annual Meeting of the Electrochemical Society, Atlanta, Georgia (2019).

180) T. D. Krauss, “Explaining the Unusual Photoluminescence of Semiconductor Nanocrystals Doped Via Cation Exchange,” presented at the ACS National Meeting, San Diego, California (2019).

181) T. D. Krauss, K. L. Bren and E. M. Matson, “Modular Nanoscale and Biomimetic Systems for Photocatalytic Hydrogen Production,” presented at the 41<sup>st</sup> DOE Solar Photochemistry PI Meeting (2019).

182) T. D. Krauss, “Explaining the Unusual Photoluminescence of Semiconductor Nanocrystals Doped Via Cation Exchange,” presented in the Chemistry Department of the University of Illinois, Chicago, Chicago, Illinois (2020).

183) T. D. Krauss, “Explaining the Unusual Photoluminescence of Semiconductor Nanocrystals Doped Via Cation Exchange,” presented at the Fall Virtual NanoGe Conference, (2020).

184) T. D. Krauss, “Explaining the Unusual Photoluminescence of Semiconductor Nanocrystals Doped Via Cation Exchange,” presented at the Fall Virtual QD2020 Conference, (2020).

185) T. D. Krauss, “Nanoscience and Nanotechnology for Solar Energy: When Size Matters,” presented in the Chemistry Department at Nazareth College, Rochester, New York (2021).

186) T. D. Krauss, “Colloidal Semiconductor Nanocrystal Photocatalysts: Teaching an Old Dot New

Tricks,” presented in the Chemistry Department of the State University of New York at Geneseo, Geneseo, New York (2021).

187) T. D. Krauss, “Colloidal Semiconductor Nanocrystal Photocatalysts: Teaching an Old Dog New Tricks,” presented at the Naval Research Laboratory, Washington D.C. (2021).

188) T. D. Krauss, “Molecular Polaritons Generated from Strong Coupling between CdSe Nanoplatelets and a Dielectric Optical Cavity,” presented at the virtual Polariton Webinar Series (2021).

189) T. D. Krauss, “Molecular Polaritons Generated from Strong Coupling between CdSe Nanoplatelets and a Dielectric Optical Cavity,” presented at the University of Alabama (2021).

### **Contributed Technical Presentations**

1) A. Hartschuh, H. Pedrosa, L. Novotny, and T. D. Krauss, Photoluminescence of individual single-walled carbon nanotubes,” presented at the Fall Meeting of the Materials Research Society (2003).

2) A. Hartschuh, H. Pedrosa, L. Novotny, and T. D. Krauss, Photoluminescence of individual single-walled carbon nanotubes,” presented at the Spring Meeting of the American Chemical Society (2004).

3) J. Peterson and T. D. Krauss, "Fluorescence from Individual PbS Quantum Dots," presented at the Spring Meeting of the American Chemical Society (2005).

4) Z. Wang, H. Pedrosa, L. Rothberg, and T. D. Krauss, "Determination of the exciton binding energy in single-walled carbon nanotubes," presented at the March Meeting of the American Physical Society, Baltimore, Maryland (2006).

5) T. D. Krauss and L. Carlson, "Direct Measurement of the Fluorescence Efficiency from Individual Carbon Nanotubes," presented at the 2<sup>nd</sup> Workshop on Carbon Nanotube Optical Spectroscopy, Ottawa, Canada (2007).

6) T. D. Krauss, "Non-blinking semiconductor nanocrystals," presented at the SPIE Optics and Photonics Conference, San Diego, California (2009).

7) X. Wang, A. J. Lee, L. J. Carlson, J. A. Smyder, X. Tu, M. Zheng and T. D. Krauss, "Unusually bright fluorescence from individual single-walled carbon nanotubes," presented at the 238<sup>th</sup> National Meeting of the American Chemical Society, Washington, D.C. (2009).

8) T. D. Krauss, “Defects Enable Dark Exciton Photoluminescence in Single-Walled Carbon Nanotubes” presented at the Fall Meeting of the Materials Research Society (2018).

9) T. D. Krauss, “The Light, the Dark, and the Role of Charges and Defects in Carbon Nanotubes,” presented at the NT21 Virtual Conference (2021).

10) T. D. Krauss, “Molecular Polaritons Generated from Strong Coupling between CdSe Nanoplatelets and a Dielectric Optical Cavity,” presented at the Fall Meeting of the Materials Research Society (2021).

### **Poster Presentations**

1) J. Pero, T. D. Krauss, and B. L. Miller, “Development of nanocrystal-based colorimetric sensors for

detection of biological contaminants," presented at the Gordon Research Conference on Chemical Sensors and Interfacial Design, Il Ciocco, Italy (2001).

2) A. Hartusch, H. N. Pedrosa, L. Novotny, and T. D. Krauss, " Simultaneous Fluorescence and Raman Scattering from Individual Single-Walled Carbon Nanotubes," presented at the Gordon Research Conference on Clusters, Nanocrystals, and Nanostructures, New London, Connecticut (2003).

3) L. Huang and T. D. Krauss, "Quantized Bimolecular Auger Recombination of Excitons in Single-walled Carbon Nanotubes," presented at WONTON 05: 1st International Workshop on Nanotube Optics and Nanospectroscopy, Telluride, Colorado (2005).

4) T. D. Krauss and L. Carlson, "Direct Measurement of the Fluorescence Efficiency from Individual Carbon Nanotubes," presented at the 29th Department of Energy (DOE) Solar Photochemistry Research Conference, Airlie, Virginia (2007).

5) X. Wang, M. A. Hahn, K. Kahen, X. Ren, M. Rajeswaran, S. Maccagnano-Zacher, J. Silcox, G. E. Cragg, Al. L. Efros, C. M. Evans, L. Guo, J. J. Peterson, and T. D. Krauss, " Novel Semiconductor Quantum Dots: Nonblinking and Ultrasmall," presented at the Gordon Research Conference on Single Molecule Approaches to Biology, New London, New Hampshire (2008).

6) A. J. Lee, X. Wang, L. J. Carlson, and T. D. Krauss, "Unusually bright fluorescence from individual single-walled carbon nanotubes," presented at the 31st Department of Energy (DOE) Solar Photochemistry Research Conference, Annapolis, Maryland (2009).

7) A. J. Lee, X. Wang, L. J. Carlson, and T. D. Krauss, "Single-walled carbon nanotube photophysics," presented at the 32nd Department of Energy (DOE) Solar Photochemistry Research Conference, Annapolis, Maryland (2010).

8) N. Cogan, S. Schäfer, M. Odoi, J. A. Smyder, B. Loesch and T. D. Krauss, "Photoexcited Excitons in Charged Single Walled Carbon Nanotubes," presented at the 35<sup>th</sup> Department of Energy (DOE) Solar Photochemistry Research Conference, Annapolis, Maryland (2013).

9) A. Amori, Z. Hou, N. Cogan, S. Schäfer, M. Odoi, J. A. Smyder, and T. D. Krauss, "Photoexcited Excitons in Charged Single Walled Carbon Nanotubes," presented at the 37<sup>th</sup> Department of Energy (DOE) Solar Photochemistry Research Conference, Gaithersburg, Maryland (2015).

10) A. Amori, Z. Hou, N. Cogan, and T. D. Krauss, "Photoexcited Excitons in Charged Single Walled Carbon Nanotubes," presented at the 38<sup>th</sup> Department of Energy (DOE) Solar Photochemistry Research Conference, Gaithersburg, Maryland (2015).

11) A. Amori, Z. Hou, N. Cogan, and T. D. Krauss, "Photoexcited Excitons in Charged Single Walled Carbon Nanotubes," presented at the 39<sup>th</sup> Department of Energy (DOE) Solar Photochemistry Research Conference, Gaithersburg, Maryland (2016).

12) A. Amori, Z. Hou, N. Cogan, and T. D. Krauss, "Photoexcited Excitons in Charged Single Walled Carbon Nanotubes," presented at the 40<sup>th</sup> Department of Energy (DOE) Solar Photochemistry Research Conference, Gaithersburg, Maryland (2017).

13) A. Amori, Z. Hou, N. Cogan, and T. D. Krauss, "Photoexcited Excitons in Charged Single Walled Carbon Nanotubes," presented at the 41<sup>st</sup> Department of Energy (DOE) Solar Photochemistry Research Conference, Gaithersburg, Maryland (2018).