

## Curriculum Vitae

# William A. Tisdale

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### Education

2010-2011 *Postdoc*, Research Laboratory of Electronics, MIT, Cambridge, MA.  
2005-2010 *Ph.D.*, Chemical Engineering, University of Minnesota, Minneapolis, MN.  
2001-2005 *B.ChE.*, Chemical Engineering, University of Delaware, Newark, DE  
*Honors, with Distinction, Magna Cum Laude.*

### Professional Appointments

2023- Warren K. Lewis Professor, Department of Chemical Engineering,  
Massachusetts Institute of Technology, Cambridge, MA.  
2023-2024 Visiting Scholar, Rowland Institute, Faculty of Arts and Sciences,  
Harvard University, Cambridge, MA.  
2019-2023 Associate Professor, with Tenure, Department of Chemical Engineering,  
Massachusetts Institute of Technology, Cambridge, MA.  
2017-2019 Associate Professor, without Tenure, ARCO Career Development Chair, Department  
of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA.  
2012-2017 Assistant Professor, Charles & Hilda Roddey Career Development Chair, Department  
of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA.  
2010-2011 Postdoctoral Associate with Prof. Vladimir Bulović, Research Laboratory of  
Electronics, Massachusetts Institute of Technology, Cambridge, MA.  
2005-2010 Graduate Research Assistant with Profs. Xiaoyang Zhu, David Norris, and Eray Aydil,  
University of Minnesota, Minneapolis, MN.

### Honors and Awards

2023 Bose Award for Excellence in Teaching  
2023 C. Michael Mohr Undergraduate Teaching Award  
2022 C. Michael Mohr Undergraduate Teaching Award  
2021 C. Michael Mohr Undergraduate Teaching Award  
2020 [MacVicar Faculty Fellow](#)  
2019 C. Michael Mohr Undergraduate Teaching Award  
2018 AIChE Delaware Valley Section Outstanding Alumni Award  
2017 C. Michael Mohr Undergraduate Teaching Award  
2017 AIChE Nanoparticle Science & Engineering Forum Young Investigator Award

2017	Camille Dreyfus Teacher-Scholar Award
2016	Presidential Early Career Award for Scientists and Engineers (PECASE)
2016	Alfred P. Sloan Fellowship
2015	NSF CAREER Award
2015	C. Michael Mohr Undergraduate Teaching Award
2014	<a href="#">Everett Moore Baker Award</a> for Excellence in Undergraduate Teaching
2014	3M Non-Tenured Faculty Award
2013	DOE Office of Science Early Career Award

## Teaching

2019-2024	<p><u>10.213 – Thermodynamics. Average Instructor Rating 6.8/7.0</u> Led redesign of curriculum for sophomore year thermodynamics subject in Chemical Engineering at MIT.</p> <ul style="list-style-type: none"> <li>- Selected student comments:           <ul style="list-style-type: none"> <li>o <i>“The best professor I’ve ever had. Super engaging, highly knowledgeable, and was so easily able to explain complex concepts in simple terms.”</i></li> <li>o <i>“Tisdale is by far one of the best, most personable professors I’ve had at MIT. He explains concepts so well and is very interactive with the class.”</i></li> <li>o <i>“Best professor at MIT. Not much else to say.”</i></li> </ul> </li> </ul>
2021-2022	<p><u>10.UAR – Individual Laboratory Experience. Average Instructor Rating 7.0/7.0</u> New subject offering to augment undergraduate research experience at MIT.</p>
2012-2014, 2016-2017, 2020, 2022	<p><u>10.302 – Transport Phenomena. Average Instructor Rating 6.8/7.0</u> Junior-level chemical engineering core lecture subject in heat &amp; mass transfer.</p> <ul style="list-style-type: none"> <li>- Selected student comments:           <ul style="list-style-type: none"> <li>o <i>“Literally the greatest teacher I have had in my 15 years of schooling.”</i></li> <li>o <i>“Amazing lecturer who always makes the subject interesting. If I could have Prof. Tisdale for every single ChemE class, I would.”</i></li> <li>o <i>“Favorite professor I’ve had my entire time at MIT. Very good at explaining content in an interesting and clear way and very good at organizing boards/notes. Very good at interpreting and answering questions and making sure you actually understand the answer. I wish he taught more classes in course 10 so I could take them.”</i></li> </ul> </li> </ul>
2012-2018	<p><u>10.27 – Energy Projects Lab. Average Instructor Rating 6.8/7.0</u> Junior/Senior-level chemical engineering laboratory subject.</p> <ul style="list-style-type: none"> <li>- Created 7 new semester-long projects, including:           <ul style="list-style-type: none"> <li>o Hybrid Organic-Inorganic Perovskite Nanoplatelets: Advanced Materials for Next-Generation Optoelectronic Technologies</li> <li>o Optimization of an Organic Solar Cell</li> <li>o Engineering Quantum-Dot Materials for Energy-Efficient Lighting</li> <li>o Heat Transport in Nanostructured Materials</li> </ul> </li> </ul>

2015 10.51 – Nanoscale Energy Transport Processes. *Average Instructor Rating 6.7/7.0*  
Newly developed graduate elective subject.

### Department and Institute Service

2022-2026 Graduate Admissions Chair, Department of Chemical Engineering  
 2022-2024 MIT Committee on the Undergraduate Program (CUP)  
 2021 MIT Task Force 2021 and Beyond – Grad Student Funding Refinement and Implementation Committee (RIC15)  
 2020-2022 Subcommittee on the Communications Requirement (SOCR) – School of Engineering Representative  
 2020-2021 First Year Advising Seminar Leader (10.A14)  
 2019- Institute Faculty Meeting Representative – Chemical Engineering  
 2019-2021 NEET “Renewable Energy Machines” thread leadership team  
 2019-2020 MIT “Preparing Future Faculty” Workshop Organizer  
 2018-2019 Member, NEET “Renewable Energy Machines” *ad hoc* advisory committee  
 2018-2019 Led renewal of MIT ChemE undergraduate thermodynamics sequence  
 2018- Faculty Host, MIT First-Year Student Lunch Series  
 2018-2024 Faculty Advisor, MIT Everett Moore Baker Memorial Foundation Advisory Board  
 2017-2019 Member, MIT Chemical Engineering Undergraduate Curriculum Task Force  
     - Chair, *Transport Sequence* focus group  
 2016- Member, ChemE Graduate Program Committee  
 2015- Member, ChemE Undergraduate Program Committee  
 2014-2018 Member, Steering Committee, *EFRC Center for Excitonics*  
 2013- ChemE undergraduate advisor  
 2013-2016 Chemical Engineering seminar series coordinator  
 2012- ChemE graduate admissions committee

### Outreach

2012-2024 Supervised >27 undergraduate student researchers  
 2018- Faculty Host and Discussion Leader, MIT “Rising Stars” workshop for aspiring women faculty  
 2013- Faculty Advisor, MIT ACCESS Program for students from underrepresented groups considering graduate school in Chemistry, Chemical Engineering, and Materials Science  
 2020 DOE Early Career Network – Career Panelist  
 2014 Hosted 55 6<sup>th</sup> graders from a Boston Public School in an underserved community at MIT for a day of exposure to scientific research. Students performed a hands-on lab activity and toured campus destinations.  
 2014 Hosted local community college student for summer research experience.  
 2012 Hosted local middle school science teacher for summer research experience.

## Scientific Leadership

- 2021 General Organizer, *nanoGe Spring Meeting* [virtual]
- 2020 General Organizer, *E<sub>3</sub>S: Exciton Engineering in Emerging Semiconductors*, Madrid, Spain
- 2019 NSF MRSEC site visit team, University of Pennsylvania
- 2018-2019 Member, *AIChE NSEF Awards Committee*
- 2015-2018 Member, Steering Committee, *EFRC Center for Excitonics*
- 2012- Programming Advisor, Session Chair, Area 8E (*MESD, AIChE*)
- 2016 Discussion Leader, *Gordon Research Conference on Quantum Dots*, Mt. Snow, VT
- 2014 Discussion Leader, *Gordon Research Conference on Quantum Dots*, Smithfield, RI
- 2013 Symposium Organizer; *MRS Spring Meeting*, San Francisco, CA

## Supervised PhD Theses

### *In progress*

- 2020- Narumi Wong, *Chemical Engineering, MIT, PhD*
- 2020- Woo Seok Lee, *Materials Science & Engineering, MIT, PhD*
- 2021- Eliza Price, *Chemical Engineering, MIT, PhD*
- 2021- Thomas Sheehan, *Chemical Engineering, MIT, PhD*
- 2021- Niamh Brown, *Physical Chemistry, MIT, PhD*
- 2022- Nick Samulewicz, *Chemical Engineering, MIT, PhD*
- 2022- Maya Chattoraj, *Inorganic Chemistry, MIT, PhD*
- 2023- Jimin Kwag, *Chemical Engineering, MIT, PhD*
- 2023- Justin Griffith, *Chemical Engineering, MIT, PhD*

### *Completed*

- 2016 A. Jolene Mork, *Physical Chemistry, MIT, PhD*
- 2016 Mark Weidman, *Chemical Engineering, MIT, PhD*
- 2017 Rachel Gilmore, *Chemical Engineering, MIT, PhD*
- 2018 Aaron Goodman, *Physical Chemistry, MIT, PhD*
- 2018 Elizabeth M. Y. Lee, *Chemical Engineering, MIT, PhD*
- 2019 Nabeel Dahod, *Chemical Engineering, MIT, PhD*
- 2019 Matthew Ashner, *Chemical Engineering, MIT, PhD*
- 2019 Katherine Shulenberger, *Physical Chemistry, MIT, PhD*
- 2020 Sam Winslow, *Chemical Engineering, MIT, PhD*
- 2021 Seung Kyun Ha, *Chemical Engineering, MIT, PhD*
- 2021 Watcharaphol "Oat" Paritmongkol, *Physical Chemistry, MIT, PhD*
- 2022 Wenbi Shcherbakov-Wu, *Physical Chemistry, MIT, PhD*
- 2022 Eric Powers, *Chemical Engineering, MIT, PhD*
- 2023 Ruomeng Wan, *Inorganic Chemistry, MIT, PhD*

## Supervised Master's Theses

### Completed

2013	Lisa Poulidakos, <i>ETH, Zurich (MS thesis research performed at MIT)</i>
2015	Robert Keitel, <i>ETH, Zurich (MS thesis research performed at MIT)</i>
2016	Michael Seitz, <i>ETH, Zurich (MS thesis research performed at MIT)</i>
2017	Leo Spiegel, <i>ETH, Zurich (MS thesis research performed at MIT)</i>
2017	Deepankur Thureja, <i>ETH, Zurich (MS thesis research performed at MIT)</i>
2018	Alexia Stollmann, <i>ETH, Zurich (MS thesis research performed at MIT)</i>
2019	Alex Hernandez-Oendra, <i>ETH, Zurich (MS thesis research performed at MIT)</i>
2022	Abigail Taussig, <i>Chemical Engineering, MIT, S.M.</i>
2023	Tejas Deshpande, <i>ETH, Zurich (MS thesis research performed at MIT)</i>

## Supervised Postdoctoral Associates

### In progress

2018-	Nannan Mao, <i>PhD, Physical Chemistry – Peking University, China</i>
2022-	Chana Honick, <i>PhD, Physical Chemistry – Johns Hopkins University</i>
2023-	Seryio Saris, <i>PhD, Materials Chemistry – EPFL Lausanne, Switzerland</i>
2024-	Stefano Toso, <i>PhD, Chemistry – Istituto Italiano di Tecnologia, Italy</i>

### Completed

2012-2014	Ferry Prins, <i>Current position: Assistant Professor, IFIMAC, Autonoma de Madrid</i>
2014-2015	Pooja Tyagi, <i>Current position: unknown</i>
2015-2016	Dan Congreve, <i>Current position: Assistant Professor, Stanford University</i>
2014-2017	Yunan Gao, <i>Current position: Assistant Professor, Applied Physics, Peking University</i>
2017-2019	Catherine Mauck, <i>Current position: Assistant Professor, Chemistry, Kenyon College</i>
2018-2019	Dahin Kim, <i>Current position: Postdoc, University of Pennsylvania</i>
2017-2020	Kristopher Williams, <i>Current position: unknown</i>

## Visiting Scientists

2018	Makhsud Saidaminov, <i>University of Toronto, Canada</i>
2022	Fabio Marangi, <i>Politecnico di Milano, Italy</i>
2020-2022	Tomoaki Sakurada, <i>AGC Chemical Company, Japan</i>
2024	Giulia Lo Gerfo Morganti, <i>ICFO Barcelona, Spain</i>

## Patents

6. "Metal Organic Chalcogenolates;" W. Paritmongkol, T. Sakurada, [W.A. Tisdale](#); *pending* (2024).
5. "Nonlinear optical imaging;" Y. Gao, A.J. Goodman, [W.A. Tisdale](#); US 10,855,046 (2020).
4. "Tunable light emitting diodes utilizing quantum-confined layered perovskite emitters;" D.N. Congreve, M. Seitz, M.C. Weidman, [W.A. Tisdale](#); US 10,825,996 (2020).
3. "Highly tunable colloidal perovskite nanoplatelets;" M.C. Weidman, M. Seitz, [W. A. Tisdale](#); US 10,273,405 (2019).
2. "Nanocrystal synthesis;" M.C. Weidman, M.E. Beck, F. Prins, [W. A. Tisdale](#); US 9,481,582 (2016).

1. “Device and method for luminescence enhancement by resonant energy transfer from an absorptive thin film,” G.M. Akselrod, M.G. Bawendi, V. Bulović, J.R. Tischler, W.A. Tisdale, B.J. Walker; US 8,908,261 (2014).

**Publications** – see <https://tisdalelab.mit.edu/publications/> for continuously updated list

Publications as an independent PI:

99. “All-Perovskite Multicomponent Nanocrystal Superlattices”  
T. Sekh, I. Cherniukh, E. Kobiyama, T. Sheehan, A. Manoli, C. Zhu, M. Athanasiou, M. Sergides, O. Ortikova, M. Rossell, F. Bertolotti, A. Guagliardi, N. Masciocchi, R. Erni, A. Othonos, G. Itskos, W.A. Tisdale, T. Stöferle, G. Raino, M. Bodnarchuk, M. Kovalenko  
*ACS Nano* 18, 8423-8436 (2024).
98. “Coherent Exciton-Lattice Dynamics in a 2D Metal Organochalcogenolate Semiconductor”  
E.R. Powers, W. Paritmongkol, D.C. Yost, W.S. Lee, J.C. Grossman, W.A. Tisdale  
*Matter* 7, 1-19 (2024).
97. “Persistent Enhancement of Exciton Diffusivity in CsPbBr<sub>3</sub> Nanocrystal Solids”  
W. Shcherbakov-Wu, S. Saris, T. Sheehan, N.N. Wong, E.R. Powers, F. Krieg, M.V. Kovalenko, A.P. Willard, W.A. Tisdale  
*Science Adv.* 10, eadj2630 (2024).
96. “Bright Excitonic Fine Structure in Metal Halide Perovskites: From 2D to Bulk”  
K. Posmyk, N. Zawadzka, L. Kipczak, M. Dyksik, A. Surrente, D. Maude, T. Kazimierzuk, A. Babiński, M. Molas, W. Bumrungsan, C. Chooseng, W. Paritmongkol, W.A. Tisdale, M. Baranowski, P. Plochocka,  
*J. Am. Chem. Soc.* 146, 4687-4694 (2024).
95. “Dipole-Dependent Waveguiding in an Anisotropic Metal-Organic Framework”  
R. Wan, D. Mankus, W.S. Lee, A.K.R. Lytton-Jean, W.A. Tisdale, M. Dincă  
*J. Am. Chem. Soc.* 145, 19042-19048 (2023).
94. “Discovery of enhanced lattice dynamics in a single-layered hybrid perovskite”  
Z. Zhang, J. Zhang, Z.-J. Liu, N.S. Dahod, W. Paritmongkol, N. Brown, A. Stollmann, W.S. Lee, Y.-C. Chien, Z. Dai, K.A. Nelson, W.A. Tisdale, A.M. Rappe, E. Baldini  
*Science Adv.* 9, eadg4417 (2023).
93. “Exciton Fine Structure in 2D Perovskites: The Out-of-Plane Excitonic State”  
K. Posmyk, M. Dyksik, A. Surrente, D.K. Maude, N. Zawadzka, A. Babiński, M.R. Molas, W. Paritmongkol, M. Mączka, W.A. Tisdale, P. Plochocka, M. Baranowski  
*Adv. Opt. Mater.* 2300877 (2023).
92. “Giant Nonlinear Optical Response *via* Coherent Stacking of in-Plane Ferroelectric Layers”  
N. Mao, Y. Luo, M.-H. Chiu, C. Shi, X. Ji, T.S. Pieshkov, Y. Lin, H.-L. Tang, A.J. Akey, J.A. Gardener, J.-H. Park, V. Tung, X. Ling, X. Qian, W.L. Wilson, Y. Han, W.A. Tisdale, J. Kong  
*Adv. Mater.* 2210894 (2023).
91. “Fine Structure Splitting of Phonon-Assisted Excitonic Transition in (PEA)<sub>2</sub>PbI<sub>4</sub> Two-Dimensional Perovskites”  
K. Posmyk, M. Dyksik, A. Surrente, K. Zalewska, M. Smiertka, E. Cybula, W. Paritmongkol, W.A. Tisdale, P. Plochocka, M. Baranowski  
*Nanomaterials* 13, 1119 (2023).

90. "1D Hybrid Semiconductor Silver 2,6-difluorophenylselenolate"  
T. Sakurada, Y. Cho, W. Paritmongkol, W.S. Lee, R. Wan, A. Su, W. Shcherbakov-Wu, P. Müller, H.J. Kulik, W.A. Tisdale  
*J. Am. Chem. Soc.* 145, 5183-5190 (2023).
89. "Lead Halide Perovskite Nanocrystals with Low Inhomogeneous Broadening and High Coherent Fraction through Dicationic Ligand Engineering"  
M. Ginterseder, W. Sun, W. Shcherbakov-Wu, A.R. McIsaac, D.B. Berkinsky, A.E.K. Kaplan, L. Wang, C. Krajewska, T. Sverko, C.F. Perkinson, H. Utzat, W.A. Tisdale, T. van Voorhis, M.G. Bawendi  
*Nano Letters* 23, 1128-1134 (2023).
88. "Nanocrystal Phononics"  
M. Jansen, W.A. Tisdale, V. Wood  
*Nature Materials* 22, 161-169 (2023).
87. "Light Emission in 2D Silver Phenylchalcogenolates"  
W.S. Lee, Y. Cho, E.R. Powers, W. Paritmongkol, T. Sakurada, H.J. Kulik, W.A. Tisdale  
*ACS Nano* 16, 20318-20328 (2022).
86. "Uniaxial Strain Engineering via Core Position Control in CdSe/CdS Core/Shell Nanorods and Their Optical Response"  
D. Kim, W. Shcherbakov-Wu, S.K. Ha, W.S. Lee, W.A. Tisdale  
*ACS Nano* 16, 14713-14722 (2022).
85. "Robust estimation of charge carrier diffusivity using transient photoluminescence microscopy"  
N.N. Wong, S.K. Ha, K. Williams, W. Shcherbakov-Wu, J.W. Swan, W.A. Tisdale  
*J. Chem. Phys.* 157, 104201 (2022).
84. "Dipole-mediated exciton management strategy enabled by reticular chemistry"  
R. Wan, D.-G. Ha, J.-H. Dou, W.S. Lee, T. Chen, J.J. Oppenheim, J. Li, W.A. Tisdale\*, M. Dincă\*  
*Chem. Sci.* 10.1039/D2SC01127A (2022).
83. "Prediction of PbS Nanocrystal Superlattice Structure with Large-Scale Patchy Particle Simulations"  
S.W. Winslow, W.A. Tisdale\*, J.W. Swan\*  
*J. Phys. Chem. C* 126, 14264-14274 (2022).
82. "Quantification of exciton fine structure splitting in a two-dimensional perovskite compound"  
K. Posmyk, N. Zawadzka, Mateusz Dyksik, A. Surrante, D.K. Maude, T. Kazimierczuk, A. Babinski, M.R. Molas, W. Paritmongkol, M. Maczka, W.A. Tisdale, Paulina Plochocka, M. Baranowski  
*J. Phys. Chem. Lett.* 13, 4463-4469 (2022).
81. "Busting through quantum dot barriers"  
N.S. Ginsberg & W.A. Tisdale  
*Nature Materials* 21, 497-499 (2022).
80. "Super-resolved Second Harmonic Generation Imaging by Coherent Image Scanning Microscopy"  
D. Raanan, M.S. Song, W.A. Tisdale, D. Oron  
*Appl. Phys. Lett.* 120, 071111 (2022).
79. "Morphological Control of 2D Hybrid Organic-Inorganic Semiconductor AgSePh"  
W. Paritmongkol, W.S. Lee, W. Shcherbakov-Wu, S.K. Ha, T. Sakurada, S.J. Oh, W.A. Tisdale  
*ACS Nano* 16, 2054-2065 (2022).

78. "Healing of donor defect states in monolayer molybdenum disulfide using oxygen-incorporated chemical vapour deposition"  
P.C. Shen, Y. Lin, C. Su, C. McGahan, A.Y. Lu, X. Ji, X. Wang, H. Wang, N. Mao, Y. Guo, J.H. Park, Y. Wang, W.A. Tisdale, J. Li, X. Ling, K.E. Aidala, T. Palacios, J. Kong  
*Nature Electronics* 5, 28-36 (2022).
77. "Size and Quality Enhancement of 2D Semiconducting Metal Organic Chalcogenolates by Amine Addition"  
W. Paritmongkol, T. Sakurada, W.S. Lee, R. Wan, P. Müller, W.A. Tisdale  
*J. Am. Chem. Soc.* 143, 20256-20263 (2021).
76. "Power-Dependent Photoluminescence Efficiency in Manganese-Doped 2D Hybrid Perovskite Nanoplatelets"  
S.K. Ha, W. Shcherbakov-Wu, E.R. Powers, W. Paritmongkol, W.A. Tisdale  
*ACS Nano* 15, 20527-20538 (2021).
75. "Revealing the Brønsted-Evans-Polanyi Relation in Halide-Activated Fast MoS<sub>2</sub> Growth Towards Millimeter-Sized 2D Crystals"  
Q. Ji, C. Su, N. Mao, X. Tian, J.-C. Idrobo, J. Miao, W.A. Tisdale, A. Zettl, J. Li, J. Kong  
*Science Adv.* 7, eabj3274 (2021).
74. "Temperature-Independent Dielectric Constant in CsPbBr<sub>3</sub> Nanocrystals Revealed by Linear Absorption Spectroscopy"  
W. Shcherbakov-Wu, P.C. Sercel\*, F. Krieg, M.V. Kovalenko, W.A. Tisdale\*  
*J. Phys. Chem. Lett.* 12, 8088-8095 (2021).
73. "State of the Art and Prospects for Halide Perovskite Nanocrystals"  
A. Dey *et al.* (multi-author review)  
*ACS Nano.* 15, 10775-10981 (2021).
72. "Resonance-Enhanced Excitation of Interlayer Vibrations in Atomically-Thin Black Phosphorous"  
N. Mao, Y. Lin, Y.-Q. Bie, T. Palacios, L. Liang, R. Saito, X. Ling, J. Kong,\* W.A. Tisdale;  
*Nano. Lett.* 21, 4809-4815 (2021).
71. "Repulsive, Densely Packed Ligand-Shells Mediate Interactions between PbS Nanocrystals in Solution"  
S.W. Winslow, Y. Liu, J.W. Swan,\* W.A. Tisdale;  
*J. Phys. Chem. C.* 125, 8014-8020 (2021).
70. "Colloidal Nano-MOFs Nucleate and Stabilize Ultra-Small Quantum Dots of Lead Bromide Perovskites"  
L. Protesescu, J. Calbo, K. Williams, W.A. Tisdale, A. Walsh, M. Dinca;  
*Chem. Sci.* 12, 6129-6135 (2021).
69. "Tuning the Excitonic Properties of the 2D (PEA)<sub>2</sub>(MA)<sub>n-1</sub>Pb<sub>n</sub>I<sub>3n+1</sub> Perovskite Family via Quantum Confinement"  
M. Dyksik, S. Wang, W. Paritmongkol, D.K. Maude, W.A. Tisdale,\* M. Baranowski,\* P. Plochocka\*;  
*J. Phys. Chem. Lett.* 12, 1638-1643 (2021).
68. "Unconventional Ferroelectricity in Moiré Heterostructures"  
Z. Zheng, Q. Ma, Z. Bi, S. de la Barrera, M.-H. Liu, N. Mao, Y. Zhang, N. Kiper, K. Watanabe, T. Taniguchi, J. Kong, W.A. Tisdale, R. Ashoori, N. Gedik, L. Fu, S.-Y. Xu, P. Jarillo-Herrero;  
*Nature* 588, 71-76 (2020).
67. "Optimal Loading for Injection"  
J.W. Swan\*, S.W. Winslow, W.A. Tisdale;



- AICHE. J.* 66, e17102 (2020).
66. "Two Origins of Broadband Emission in Multilayered 2D Lead Iodide Perovskites"  
W. Paritmongkol, E.R. Powers, N.S. Dahod, W.A. Tisdale;  
*J. Phys. Chem. Lett.* 11, 8565-8572 (2020).
  65. "Low-Frequency Raman Spectrum of 2D Layered Perovskites: Local Atomistic Motion or Superlattice Modes?"  
N.S. Dahod, A. France-Lanord, W. Paritmongkol, J.C. Grossman, W.A. Tisdale;  
*J. Chem. Phys.* 153, 044710 (2020).
  64. "Tunable Exciton Binding Energy in 2D Hybrid Layered Perovskites through Donor-Acceptor Interactions within the Organic Layer"  
J.V. Passarelli, C.M. Mauck, S.W. Winslow, C.F. Perkinson, J.C. Bard, H. Sai, K.W. Williams, A. Narayanan, D.J. Fairfield, M.P. Hendricks, W.A. Tisdale\*, S.I. Stupp\*;  
*Nature Chemistry* 12, 672-682 (2020).
  63. "Reversible Temperature-Induced Structural Transformations in PbS Nanocrystal Superlattices"  
S.W. Winslow, D.-M. Smilgies, J.W. Swan, \*W.A. Tisdale;  
*J. Phys. Chem. C* 124, 13456-13466 (2020).
  62. "Substrate-Dependent Exciton Diffusion and Annihilation in Chemically Treated MoS<sub>2</sub> and WS<sub>2</sub>"  
A.J. Goodman, D.H. Lien, G.H. Ahn, L.L. Spiegel, M. Amani, A.P. Willard, A. Javey, \*W.A. Tisdale;  
*J. Phys. Chem. C* 124, 12175-12184 (2020).
  61. "The Importance of Unbound Ligand in Nanocrystal Superlattice Formation"  
S.W. Winslow, J.W. Swan, W.A. Tisdale;  
*J. Am. Chem. Soc.* 142, 9675-9685 (2020).
  60. "A Time-Domain View of Charge Carriers in Semiconductor Nanocrystal Solids"  
W. Shcherbakov-Wu & W.A. Tisdale;  
*Chem. Sci.* 11, 5157-5167 (2020).
  59. "Spatially Resolved Photogenerated Exciton and Charge Transport in Emerging Semiconductors"  
N.S. Ginsberg\* & W.A. Tisdale;  
*Ann. Rev. Phys. Chem.* 71, 1-30 (2020).
  58. "Multi-Cation Perovskites Prevent Carrier Reflection from Grain Surfaces"  
M.I. Saidaminov, K. Williams, M. Wei, A. Johnston, R. Quintero-Bermudez, M. Vafaie, J.M. Pina, A.H. Proppe, Y. Hou, G. Walters, S.O. Kelley, W.A. Tisdale\*, E.H. Sargent\*;  
*Nature Materials* 19, 412-418 (2020).
  57. "Direct Observation of Symmetry-Dependent Electron-Phonon Coupling in Black Phosphorous"  
N. Mao, X. Wang, Y. Lin, B.G. Sumpter, Q. Ji, T. Palacios, S. Huang, V. Meunier, M.S. Dresselhaus, W.A. Tisdale, L. Liang, X. Ling, J. Kong;  
*J. Am. Chem. Soc.* 141, 18994-19001 (2019).
  56. "Inorganic Cage Motion Dominates Excited State Dynamics in 2D Layered Perovskites (C<sub>x</sub>H<sub>2x+1</sub>NH<sub>3</sub>)<sub>2</sub>PbI<sub>4</sub> (x = 4-9)"  
C.M. Mauck, A. France-Lanord, A.C. Hernandez Oendra, N.S. Dahod, J.C. Grossman, W.A. Tisdale;  
*J. Phys. Chem. C* 123, 27904-27916 (2019).
  55. "Size-Dependent Biexciton Spectrum in CsPbBr<sub>3</sub> Perovskite Nanocrystals"  
M.N. Ashner, K.E. Shulenberg, F. Krieg, E.R. Powers, M.V. Kovalenko, M.G. Bawendi\*, W.A. Tisdale;

- ACS Energy Lett.* 4, 2639-2645 (2019).**
54. “Facile Synthesis of Colloidal Lead Halide Perovskite Nanoplatelets *via* Ligand-Assisted Reprecipitation”  
S.K. Ha & W.A. Tisdale;  
***J. Vis. Exp.* 152, e60114 (2019).**
53. “Setting an Upper Bound to the Exciton Binding Energy in CsPbBr<sub>3</sub> Perovskite Nanocrystals”  
K.E. Shulenberger, M.N. Ashner, S.K. Ha, F. Krieg, M.V. Kovalenko, W.A. Tisdale,\* M.G. Bawendi;\*  
***J. Phys. Chem. Lett.* 10, 5680-5686 (2019).**
52. “Quantification of a PbCl<sub>x</sub> Shell on the Surface of PbS Nanocrystals”  
S.W. Winslow, Y. Liu, J.W. Swan,\* W.A. Tisdale;\*  
***ACS Mater. Lett.* 1, 209-216 (2019).**
51. “Characterization of Colloidal Nanocrystal Surface Structure Using Small Angle Neutron Scattering and Efficient Bayesian Parameter Estimation”  
S.W. Winslow, W. Shcherbakov-Wu, Y. Liu, W.A. Tisdale,\* J.W. Swan;\*  
***J. Chem. Phys.* 150, 244702 (2019).**
50. “Synthetic Variation and Structural Trends in Layered Two-Dimensional Alkylammonium Lead Halide Perovskites”  
W. Paritmongkol, N.S. Dahod, A. Stollmann, N. Mao, C. Settens, S.-L. Zheng, W.A. Tisdale;  
***Chem. Mater.* 31, 5592-5607 (2019).**
49. “Epitaxial Dimers and Auger-Assisted Detrapping in PbS Quantum Dot Solids”  
R.H. Gilmore, Y. Liu, W. Shcherbakov-Wu, N.S. Dahod, E.M.Y. Lee, M.C. Weidman, H. Li, J. Jean, V. Bulović, A.P. Willard, J.C. Grossman, W.A. Tisdale;  
***Matter* 1, 250-265 (2019).**
48. “Excitons in 2D Organic-Inorganic Halide Perovskites”  
C.M. Mauck & W.A. Tisdale;  
***Trends in Chemistry* 1, 380-393 (2019).**
47. “Melting Transitions of the Organic Subphase in Layered Two-Dimensional Halide Perovskites”  
N.S. Dahod, W. Paritmongkol, A. Stollmann, C. Settens, S.-L. Zheng, W.A. Tisdale;  
***J. Phys. Chem. Lett.* 10, 2924-2930 (2019).**
46. “Markov Chain Monte Carlo Sampling for Target Analysis of Transient Absorption Spectra”  
M.N. Ashner, S.W. Winslow, J.W. Swan, W.A. Tisdale;  
***J. Phys. Chem. A* 123, 3893-3902 (2019).**
45. “Towards Stable Deep-Blue Luminescent Colloidal Lead Halide Perovskite Nanoplatelets: Systematic Photostability Investigation”  
S.K. Ha, C.M. Mauck, W.A. Tisdale;  
***Chem. Mater.* 31, 2486-2496 (2019).**
44. “Synthetic Lateral Metal-Semiconductor Heterostructures of Transition Metal Disulfides,”  
W.S. Leong, Q. Ji, N. Mao, Y. Han, H. Wang, A. Goodman, A. Vignon, C. Su, Y. Guo, P.-C. Shen, Z. Gao, D. Muller, W.A. Tisdale, J. Kong;  
***J. Am. Chem. Soc.* 140, 12354-12358 (2018).**

43. "Perspective: Nonequilibrium Dynamics of Localized and Delocalized Excitons in Colloidal Quantum Dot Solids,"  
E.M.Y. Lee, W.A. Tisdale\*, A.P. Willard\*;  
**J. Vac. Sci. Technol. A** 36, 068501 (2018).
42. "Ideal Bandgap in a Ruddlesden-Popper Chalcogenide for Single-Junction Solar Cells,"  
S. Niu, D. Sarkar, K. Williams, Y. Zhou, Y. Li, E. Bianco, H. Huyan, S.B. Cronin, M. McConney, R. Haiges, R. Jaramillo, D.J. Singh, W.A. Tisdale, R. Kapadia, J. Ravichandran;  
**Chem. Mater.** 30, 4882-4886 (2018).
41. "Inverse Temperature Dependence of Charge Carrier Hopping in Quantum Dot Solids,"  
R.H. Gilmore, S.W. Winslow, E.M.Y. Lee, M.N. Ashner, K.G. Yager, A.P. Willard, W.A. Tisdale;  
**ACS Nano** 12, 7741-7749 (2018).
40. "Ultrafast Charge Transfer at a Quantum Dot/2D Materials Interface Probed by Second Harmonic Generation,"  
A.J. Goodman, N.S. Dahod, W.A. Tisdale;  
**J. Phys. Chem. Lett.** 9, 4227-4232 (2018).
39. "High Repetition-Rate Femtosecond Stimulated Raman Spectroscopy with Fast Acquisition,"  
M.N. Ashner and W.A. Tisdale;  
**Optics Express** 26, 18331-18340 (2018).
38. "Phase-Modulated Degenerate Parametric Amplification Microscopy,"  
Y. Gao, A.J. Goodman, P.C. Shen, J. Kong, W.A. Tisdale;  
**Nano Lett.** 18, 5001-5006 (2018).
37. "Impact of Size Dispersity, Ligand Coverage, and Ligand Length on the Structure of PbS Nanocrystal Superlattices,"  
M.C. Weidman, Q. Nguyen, D.-M. Smilgies, W.A. Tisdale;  
**Chem. Mater.** 30, 807-816 (2018).
36. "Obtaining Structural Parameters from STEM-EDX Maps of Core/Shell Nanocrystals for Optoelectronics,"  
J. Held, K. Hunter, N. Dahod, B. Greenberg, D. Hickey Reifsnnyder, W.A. Tisdale, U. Kortshagen, K. Mkhoyan;  
**ACS Appl. Nano Mater.** 1, 989-996 (2018).
35. "A Nanobionic Light Emitting Plant,"  
S.-Y. Kwak, J.P. Giraldo, M.H. Wong, V. Koman, T. Lew, J. Ell, M. Weidman, R. Sinclair, M.P. Landry, W.A. Tisdale, M.S. Strano;  
**Nano Lett.** 17, 7951-7961 (2017).
34. "Exciton Trapping is Responsible for the Long Apparent Lifetime in Acid-Treated MoS<sub>2</sub>,"  
A.J. Goodman, A.P. Willard, W.A. Tisdale;  
**Phys. Rev. B** 96, 121404(R) (2017).
33. "Including Surface Ligand Effects in Continuum Elastic Models of Nanocrystal Vibrations,"  
E.M.Y. Lee, A.J. Mork, Adam P. Willard, W.A. Tisdale;  
**J. Chem. Phys.** 147, 044711 (2017).
32. "CdSe Nanoplatelet Films with Controlled Orientation of Their Transition Dipole Moment,"  
Y. Gao, M.C. Weidman, W.A. Tisdale;  
**Nano Lett.** 17, 3837-3843 (2017).

31. "Colloidal Halide Perovskite Nanoplatelets: An Exciting New Class of Semiconductor Nanomaterials," M.C. Weidman, A.J. Goodman, W.A. Tisdale; **Chem. Mater.** 29, 5019-5030 (2017).
30. "Tunable Light-Emitting Diodes Utilizing Quantum-Confined Layered Perovskite Emitters," D.N. Congreve, M.C. Weidman, M. Seitz, W. Paritmongkol, N.S. Dahod, W.A. Tisdale; **ACS Photonics** 4, 476-481 (2017).
29. "Chare Carrier Hopping Dynamics in Homogeneously Broadened PbS Quantum Dot Solids," R.H. Gilmore, E.M.Y. Lee, M.C. Weidman, A.P. Willard, W.A. Tisdale; **Nano Lett.** 17, 893-901 (2017).
28. "Temperature Dependence of Acoustic Vibrations of CdSe and CdSe-CdS Core-Shell Nanocrystals Measured by Low-Frequency Raman Spectroscopy," A.J. Mork, N.S. Dahod, W.A. Tisdale; **Phys. Chem. Chem. Phys.** 18, 28797-28801 (2016).
27. "Near-Infrared Photoluminescence and Thermal Stability of PbS Nanocrystals at Elevated Temperatures," R.C. Keitel, M.C. Weidman, W.A. Tisdale; **J. Phys. Chem. C** 120, 20341-20349 (2016).
26. "Efficient Nanosecond Photoluminescence from Infrared PbS Quantum Dots Coupled to Plasmonic Nanoantennas," G.M. Akselrod, M.C. Weidman, Y. Li, C. Argyropoulos, W.A. Tisdale, M.H. Mikkelsen; **ACS Photonics** 3, 1741-1746 (2016).
25. "Highly Tunable Colloidal Perovskite Nanoplatelets through Variable Cation, Metal, and Halide Composition," M.C. Weidman, M. Seitz, S.D. Stranks, W.A. Tisdale; **ACS Nano** 10, 7830-7839 (2016).
24. "Modulation of Low-Frequency Acoustic Vibrations in Semiconductor Nanocrystals through Choice of Surface Ligand," A.J. Mork, E.M.Y. Lee, N.S. Dahod, A.P. Willard, W.A. Tisdale; **J. Phys. Chem. Lett.** 7, 4213-4216 (2016).
23. "Kinetics of the Self-Assembly of Nanocrystal Superlattices Measured by Real-Time *in situ* X-ray Scattering," M.C. Weidman, D.-M. Smilgies, W.A. Tisdale; **Nature Materials** 15, 775-781 (2016).
22. "Reply to Comment on Enhancement of Second-Order Nonlinear Optical Signals by Optical Stimulation," A.J. Goodman and W.A. Tisdale; **Phys. Rev. Lett.** 116, 059402 (2016).
21. "Can Disorder Enhance Incoherent Exciton Diffusion?" E.M.Y. Lee, W.A. Tisdale, Adam Willard; **J. Phys. Chem. B** 119, 9501-9509 (2015).

20. "Constructing Multifunctional Virus-Templated Nanoporous Composites for Thin Film Solar Cells: Contributions of Morphology and Optics to Photocurrent Generation,"  
N.-M. Dorval Courchesne, M.T. Klug, K.J. Huang, M.C. Weidman, V.J. Cantu, P.-Y. Chen, S.E. Kooi, D.S. Yun, W.A. Tisdale, N.X. Fang, A.M. Belcher, P.T. Hammond;  
*J. Phys. Chem. C* 119, 13987-14000 (2015).
19. "Colloidal Organohalide Perovskite Nanoplatelets Exhibiting Quantum Confinement,"  
P. Tyagi, S.M. Arveson, W.A. Tisdale;  
*J. Phys. Chem. Lett.* 6, 1911-1916 (2015).
18. "Enhancement of Second-Order Nonlinear Optical Signals by Optical Stimulation,"  
A.J. Goodman and W.A. Tisdale;  
*Phys. Rev. Lett.* 114, 183902 (2015).
17. "Determination of Exciton Diffusion Length by Transient Photoluminescence Quenching and its Application to Quantum Dot Films,"  
E.M.Y. Lee and W.A. Tisdale;  
*J. Phys. Chem. C* 119, 9005-9015 (2015).
16. "Interparticle Spacing and Structural Ordering in Superlattice PbS Nanocrystal Solids Undergoing Ligand Exchange,"  
M.C. Weidman, K.G. Yager, W.A. Tisdale;  
*Chem. Mater.* 27, 474-482 (2015).
15. "Reduced Dielectric Screening and Enhanced Energy Transfer in Single- and Few-Layer MoS<sub>2</sub>,"  
F. Prins, A.J. Goodman, W.A. Tisdale;  
*Nano Lett.* 14, 6087-6091 (2014).
14. "Magnitude of the Förster Radius in Colloidal Quantum Dot Solids,"  
A.J. Mork, M.C. Weidman, F. Prins, W.A. Tisdale;  
*J. Phys. Chem. C* 118, 13920-13928 (2014).
13. "Monodisperse, Air-Stable PbS Nanocrystals *via* Precursor Stoichiometry Control,"  
M.C. Weidman, M.E. Beck, R.S. Hoffman, F. Prins, W.A. Tisdale;  
*ACS Nano* 8, 6363-6371 (2014).
12. "Subdiffusive Exciton Transport in Quantum Dot Solids,"  
G.M. Akselrod\*, F. Prins\*, L.V. Poulidakos, E.M.Y. Lee, M.C. Weidman, A.J. Mork, A.P. Willard, V. Bulović, W.A. Tisdale;  
*Nano Lett.* 14, 3556-3562 (2014).
11. "Visualization of Exciton Transport in Ordered and Disordered Molecular Solids,"  
G.M. Akselrod, P.B. Deotare, N.J. Thompson, J. Lee, W.A. Tisdale, M.A. Baldo, V.M. Menon, V. Bulović;  
*Nature Commun.* 5, 3646 (2014).
10. "Transition from Thermodynamic to Kinetic-Limited Excitonic Energy Migration in Colloidal Quantum Dot Solids,"  
L.V. Poulidakos, F. Prins, W.A. Tisdale;  
*J. Phys. Chem. C* 118, 7894-7900 (2014).
9. "Spatially Resolved Energy Transfer in Patterned Colloidal Quantum Dot Heterostructures,"  
F. Prins, A. Sumitro, M.C. Weidman, W.A. Tisdale;  
*ACS Appl. Mater. Interfaces.* 6, 3111-3114 (2014).

8. "Highly Efficient, Dual State Emission from an Organic Semiconductor,"  
S. Reineke, N. Seidler, S.R. Yost, F. Prins, W.A. Tisdale, M.A. Baldo;  
*Appl. Phys. Lett.* 103, 093302 (2013).

#### Publications originating from PhD and postdoctoral work:

7. "Origin of Efficiency Roll-Off in Colloidal Quantum-Dot Light-Emitting Diodes,"  
Y. Shirasaki, G.J. Supran, W.A. Tisdale, V. Bulović;  
*Phys. Rev. Lett.* 110, 217403 (2013).
6. "Twenty-Fold Enhancement of Molecular Fluorescence by Coupling to a J-Aggregate Critically Coupled Resonator,"  
G.M. Akselrod, B.J. Walker, W.A. Tisdale, M.G. Bawendi, V. Bulović;  
*ACS Nano* 6, 467 (2012).
5. "Artificial Atoms and Molecules on Semiconductor Surfaces,"  
W.A. Tisdale, X.-Y. Zhu;  
*Proc. Nat. Acad. Sci. USA* 108, 965 (2011).
4. "Hot-Electron Transfer from Semiconductor Nanocrystals,"  
W.A. Tisdale, K.J. Williams, B.C. Timp, D.J. Norris, X.-Y. Zhu;  
*Science* 328, 1543 (2010).
3. "Strong Electronic Coupling in Two-Dimensional Assemblies of Colloidal PbSe Quantum Dots,"  
K.J. Williams, W.A. Tisdale, K.S. Leschkies, G. Haugstad, D.J. Norris, E.S. Aydil, X.-Y. Zhu;  
*ACS Nano* 3, 1532 (2009).
2. "Coulomb Barrier for Charge Separation at an Organic Semiconductor Interface,"  
M. Muntwiler, Q. Yang, W.A. Tisdale, X.-Y. Zhu;  
*Phys. Rev. Lett.* 101, 196403 (2008).
1. "Electron Dynamics at the ZnO (10-10) Surface,"  
W.A. Tisdale, M. Muntwiler, D.J. Norris, E.S. Aydil, X.-Y. Zhu;  
*J. Phys. Chem. C* 112, 14682 (2008).

### Talks, Seminars, and Presentations

#### Talks, seminars, and presentations as an independent PI:

126. "Colloidal Quantum Dot Surfaces and Self-Assembly," **invited** contribution at the *DOE Neutron Scattering PI Meeting*; Gaithersburg, MD; January, 2024.
125. "PbS Quantum Dot Surfaces and their Assemblies," **invited** talk at the *MRS Fall Meeting*; Boston, MA; November, 2023.
124. "Charge and Exciton Transport in Halide Perovskite Nanomaterials," **invited** talk at the *MRS Fall Meeting*; Boston, MA; November, 2023.
123. "Charge and Exciton Transport in Halide Perovskite Nanomaterials," **invited** talk at the *2023 Sungkyun Solar Energy Forum*; Seoul, South Korea; November, 2023.
122. "Hybrid Semiconductor Nanomaterials," **invited** seminar at the *Rowland Institute at Harvard*; Cambridge, MA; September, 2023.
121. "Silver Organochalcogenolates: an Emerging Family of Low-Dimensional Excitonic Materials," **invited** talk at the workshop of *Exciton Transport in 2D Materials*; San Sebastian, Spain; May, 2023.

120. "Light-Emitting Organochalcogenolates," **invited** talk at the *MRS Spring Meeting*; San Francisco, CA; April, 2023.
119. "Persistent Enhancement of Exciton Diffusivity in CsPbBr<sub>3</sub> Nanocrystal Solids," **invited** talk at the *MatSus 2023 Conference*; Valencia, Spain; March, 2023.
118. "Excitons, Disorder, and Nonequilibrium Transport in Hybrid Semiconductor Nanomaterials," **invited** seminar at the *Department of Chemical Engineering at the University of Florida*; Gainesville, FL; January, 2023.
117. "Persistent Enhancement of Exciton Diffusivity in CsPbBr<sub>3</sub> Nanocrystal Solids," **invited** talk at the *MRS Fall Meeting*; Boston, MA; Dec, 2022.
116. "Persistent Enhancement of Exciton Diffusivity in CsPbBr<sub>3</sub> Nanocrystal Solids," **invited** talk at the *AIChE Annual Meeting*; Phoenix, AZ; Nov, 2022.
115. "Persistent Enhancement of Exciton Diffusivity in CsPbBr<sub>3</sub> Nanocrystal Solids," **invited** talk at *Emerging Light Emitting Materials*; Limmasol, Cyprus; Oct, 2022.
114. "Silver Organochalcogenides: An Emerging Family of Hybrid 2D Semiconductors," **invited** talk at the *MRS Spring Meeting*; Honolulu, Hawaii [virtual]; May, 2022.
113. "Extraordinary Exciton Transport Phenomena in CsPbBr<sub>3</sub> Nanocrystal Solids," **invited** talk at the *MRS Spring Meeting*; Honolulu, Hawaii [virtual]; May, 2022.
112. "Hybrid Semiconductor Nanomaterials: from Synthesis to Exciton Dynamics," **invited** seminar at the *Physical/Inorganic Chemistry Seminar Series at the University of Oklahoma*; Norman, OK [virtual]; April, 2022.
111. "Exciton Dynamics in Hybrid Perovskite Nanomaterials," **invited** talk at the *ACS Spring Meeting*; San Diego, CA; March, 2022.
110. "Excitons, Disorder, and Nonequilibrium Transport in Hybrid Semiconductor Nanomaterials," **invited** seminar at the *Physical Chemistry Seminar Series at Wayne State University*; Detroit, MI [virtual]; January, 2022.
109. "Revealing the Molecular Origin of Interactions between Nanocrystals," poster presented at the *DOE Neutron Scattering Principle Investigators' Meeting*; Online Meeting [virtual]; December, 2021.
108. "Excitonic Phenomena in 2D Hybrid Perovskites," **invited** talk presented at the *MRS Fall Meeting*; Boston, MA; December, 2021.
107. "Interlayer Vibrational and Thermal Transport Phenomena in 2D Hybrid Perovskites," **invited** talk at the *AIChE Annual Meeting*; Boston, MA; November, 2021.
106. "Metal-Organic Chalcogenolates," **invited** talk at the *ARO Physical Properties of Materials Principle Investigators' Meeting*; Online Meeting [virtual]; October, 2021.
105. "Interfacial Exciton Dynamics in Atomically Thin Semiconductors," **invited** talk at the *ACS Spring Meeting*; Online Meeting [virtual]; April, 2021.
104. "Energy Transport Processes in Halide Perovskite Nanomaterials," **invited** talk at the *ACS Spring Meeting*; Online Meeting [virtual]; April, 2021.
103. "Excitonic Properties and Excited State Dynamics in Halide Perovskite Nanomaterials," **invited** talk at the *DOE BES Physical Behavior of Materials Principle Investigator's Meeting*; Gaithersburg, MD [virtual]; March, 2021.
102. "Visualizing Spatiotemporal Dynamics in Semiconductor Nanomaterials," **invited** seminar at the *Photonics Seminar Series at the University of California*; Irvine, CA [virtual]; February, 2021.
101. "Excitons, Disorder, and Nonequilibrium Transport in Hybrid Semiconductor Nanomaterials," **invited** seminar at the *Optoelectronics Seminar Series at the University of Cambridge*; Cambridge, UK [virtual]; December, 2020.
100. "Hybrid Semiconductor Nanomaterials: from Soft Matter to Ultrafast Dynamics," **invited** seminar at the *Centennial & Jubilee Alumni Lecture Series at the Department of Chemical Engineering and Materials Science at the University of Minnesota*; Minneapolis, MN [virtual]; November, 2020.

99. "Excitonic and Vibrational Phenomena in Emerging 2D Light-Emitting Materials," **invited** talk at the *MRS Fall Meeting*; Boston, MA [virtual]; November, 2020.
98. "Spatially Resolved Spectroscopies for Semiconductor Nanomaterials," **invited** talk at the *AIChE Annual Meeting*; San Francisco, CA [virtual]; November, 2020.
97. "Nonequilibrium Transport of Excitons and Charges in Low-Dimensional Semiconductors," **invited** talk at the *CUNY Institute for the Theoretical Sciences*; New York, NY [virtual]; November, 2020.
96. "Hybrid Semiconductor Nanomaterials: from Soft Matter to Ultrafast Dynamics," **invited** seminar at the *Soft Material Seminar Series at Purdue University*; West Lafayette, IN [virtual]; October, 2020.
95. "Visualizing Spatiotemporal Dynamics in Semiconductor Nanomaterials," **invited** talk at the *OMEL Summer School*; ETH, Zurich [virtual]; July, 2020.
94. "Surface Morphology of Infrared-Active Lead Sulfide Nanocrystals," **invited keynote** talk presented at *iCQD: the Internet Conference on Quantum Dots*; online meeting [virtual]; July, 2020.
93. "Exciton transport in nanoscale semiconductors," **invited** talk to be presented at the *Telluride Workshop on Spatiotemporal Dynamics of Excitons*; Telluride, CO; August, 2020 (canceled due to COVID-19).
92. "Structure and Dynamics in Perovskite Nanomaterials," **invited** talk to be presented at the *ACS Spring Meeting*; Philadelphia, PA; March, 2020 (canceled due to COVID-19).
91. "Interfacial Exciton Dynamics in Atomically Thin Semiconductors," **invited** talk to be presented at the *ACS Spring Meeting*; Philadelphia, PA; March, 2020 (canceled due to COVID-19).
90. "Energy Transport Processes in Halide Perovskite Nanomaterials," **invited** talk to be presented at the *ACS Spring Meeting*; Philadelphia, PA; March, 2020 (canceled due to COVID-19).
89. "Excitons, Phonons, and Excited State Dynamics in Low-Dimensional Halide Perovskites," **invited** talk presented at *E<sub>3</sub>S 2020: Exciton Engineering in Emerging Semiconductors*; Madrid, Spain; January, 2020.
88. "Excitons, Phonons, and Excited State Dynamics in Low-Dimensional Halide Perovskites," **invited** talk presented at the *MRS Fall Meeting*; Boston, MA; December, 2019.
87. "Energy Transport Processes in Hybrid Perovskite Nanomaterials," **invited plenary** speaker at the *AIChE Annual Meeting*; Orlando, FL; November, 2019.
86. "Exciton-Exciton and Exciton-Lattice Interactions in 2D and 0D Perovskites," contributed talk at the *nanoGe Fall Meeting*; Berlin, Germany; November, 2019.
85. "Nonequilibrium Dynamics of Excitons and Charges in Semiconductor Nanomaterials," **invited plenary** speaker at the *nanoGe Fall Meeting*; Berlin, Germany; November, 2019.
84. "Hybrid Semiconductor Nanomaterials: from Soft Materials to Ultrafast Dynamics," **invited** seminar at the *Materials Science & Engineering Colloquium at Boston University*; Boston, MA; October, 2019.
83. "Exciton, Phonon, and Charge Carrier Dynamics in Hybrid Perovskite Nanomaterials," **invited** seminar presented at the *Institute for Energy Efficiency at the University of California at Santa Barbara*; Santa Barbara, CA; April, 2019.
82. "Excitons in Low-Dimensional Perovskites," **invited** poster at the *Physical Behavior of Materials Principle Investigators Meeting, U.S. Department of Energy, Basic Energy Sciences*; Gaithersburg, MD; March, 2019.
81. "Excitons, Entropy, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Department of Chemistry at the University of Chicago*; Chicago, IL; March, 2019.
80. "Visualizing Ultrafast Interfacial Phenomena in 2D Materials," contributed talk presented at the *MRS Fall Meeting*; Boston, MA; November, 2018.
79. "Ordered and Disordered Assemblies of Colloidal Nanomaterials," **invited** seminar presented at the *Department of Chemical Engineering at the University of Michigan*; Ann Arbor, MI; November, 2018.
78. "2D Lead Halide Perovskite Nanomaterials," **invited** poster presentation at the *Dreyfus Teacher-Scholar Symposium*; New York, NY; October, 2018.



77. "Excitons in Low-Dimensional Perovskites," **invited** talk presented at the *14<sup>th</sup> Meeting of the Condensed Phase and Interfacial Molecular Sciences Program, Department of Energy, Office of Basic Energy Sciences*; Gaithersburg, MD; October, 2018.
76. "Excitons, Entropy, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Department of Chemistry at Texas A&M University*; College Station, TX; October, 2018.
75. "Excitons, Entropy, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Department of Chemical Engineering at Rochester Institute of Technology*; Rochester, NY; September, 2018.
74. "Nonequilibrium Dynamics in Colloidal Semiconductor Nanomaterials," **invited** seminar presented at the *Department of Chemical and Biomolecular Engineering at the University of California at Berkeley*; Berkeley, CA; September, 2018.
73. "Spatially Resolved Spectroscopies for Semiconductor Nanomaterials," **invited** talk presented at the *ACS Fall Meeting*; Boston, MA; August, 2018.
72. "The Effects of Disorder, Trapping, and Structural Transformations on Charge Carrier Dynamics in Quantum Dot Solids," **invited** talk presented at the *Gordon Research Conference on Quantum Dots*; Smithfield, RI; July, 2018.
71. "Synthesis and Optical Properties of 2D Halide Perovskites," **invited** talk presented at the *MRS Spring Meeting*; Phoenix, AZ; April, 2018.
70. "Interfacial Exciton Dynamics in Atomically Thin Semiconductors," **invited** talk presented at the *ACS Spring Meeting*; New Orleans, LA; March, 2018.
69. "Synthesis and Optical Properties of 2D Halide Perovskites," **invited** talk presented at the *ACS Spring Meeting*; New Orleans, LA; March, 2018.
68. "Excitons, Disorder, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Department of Electrical Engineering at the University of Toronto*; Toronto, CA; March, 2018.
67. "Excitons, Disorder, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Rowland Institute at Harvard University*; Cambridge, MA; February, 2018.
66. "Excitons, Disorder, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *MRSEC Center at Northwestern University*; Evanston, IL; January, 2018.
65. "Excitons, Disorder, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Department of Chemistry (Physical Chemistry) at the University of Colorado*; Boulder, CO; December, 2017.
64. "Origin of Trap States in PbS Quantum Dot Solids," **invited** talk presented at the *MRS Fall Meeting*; Boston, MA; November, 2017.
63. "Excitons, Disorder, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Department of Chemical and Biological Engineering at the University of Illinois*; Urbana, IL; November, 2017.
62. "Excitons, Disorder, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Department of Chemistry at the University of Massachusetts*; Amherst, MA; November, 2017.
61. "Disorder, Nonequilibrium Transport, and the Critical Role of Size Dispersity in Colloidal Semiconductor Nanomaterials," **invited award** talk presented at the *NSEF Plenary Session, AIChE Annual Meeting*; Minneapolis, MN; November, 2017.
60. "Origin of Deep Traps in Colloidal Quantum Dot Solids," contributed talk presented at the *AIChE Annual Meeting*; Minneapolis, MN; November, 2017.
59. "Optical Parametric Imaging and Nonequilibrium Dynamics in Nanocrystal Arrays," **invited** talk presented at the *13<sup>th</sup> Meeting of the Condensed Phase and Interfacial Molecular Sciences Program, Department of Energy, Office of Basic Energy Sciences*; Gaithersburg, MD; October, 2017.

58. "Excitons, Disorder, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Department of Chemical Engineering at Iowa State University*; Ames, IA; September, 2017.
57. "Luminescent 2D Metal Halide Perovskite Nanoplatelets," talk presented at the *Department of Energy EFRS-Hub PI Meeting*; Washington, D.C.; July, 2017.
56. "Origin of Trap States in PbS Quantum Dot Solids," poster presented at the *2017 AFOSR Molecular Dynamics and Theoretical Chemistry Program Review*; Albuquerque, NM; May, 2017.
55. "Nonequilibrium Charge and Exciton Transport in Quantum Dot Solids," **invited** talk presented at the *Workshop on Charge & Energy Transport in Nanocrystal Assemblies*; University of Minnesota, Minneapolis, MN; May, 2017.
54. "Excitons, Disorder, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Department of Chemical Engineering at the Georgia Institute of Technology*; Atlanta, GA; March, 2017.
53. "Interfacial Exciton Dynamics in Atomically Thin Semiconductors," **invited** talk presented at the *APS March Meeting*; New Orleans, LA; March, 2017.
52. "Excitons, Disorder, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Boston Area Excitonics Meeting*; Harvard University, Cambridge, MA; February, 2017.
51. "Halide Perovskite Nanoplatelets," contributed talk presented at the *MRS Fall Meeting*; Boston, MA; December, 2016.
50. "Quantum Confined 2D Halide Perovskites," contributed talk presented at the *MRS Fall Meeting*; Boston, MA; December, 2016.
49. "Halide Perovskite Nanoplatelets," contributed talk presented at the *AIChE Annual Meeting*; San Francisco, CA; November, 2016.
48. "Excitons, Disorder, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Department of Chemistry at the University of California*; Berkeley, CA; November, 2016.
47. "Excitons, Disorder, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *MRSEC Center at Columbia University*; New York, NY; October, 2016.
46. "Excitons, Disorder, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Department of Chemistry at the University of Texas*; Austin, TX; September, 2016.
45. "Photonics and Excitonics," **invited** discussion leader at the *Gordon Research Conference on Colloidal Semiconductor Nanocrystals*; Mt. Snow, VT; August, 2016.
44. "Exciton Transport in Semiconductor Nanomaterials," **invited** talk presented at the *MRS Spring Meeting*; Phoenix, AZ; March, 2016.
43. "Real-Time Imaging of Nanocrystal Superlattice Self-Assembly," contributed talk presented at the *MRS Spring Meeting*; Phoenix, AZ; March, 2016.
42. "Excitons, Disorder, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Department of Chemical Engineering at Caltech*; Pasadena, CA; March, 2016.
41. "Excitons, Disorder, and Nonequilibrium Transport in Semiconductor Nanomaterials," **invited** seminar presented at the *Department of Chemical Engineering at the University of Washington*; Seattle, WA; January, 2016.
40. "Phonon Engineering in Semiconductor Nanocrystals through Surface Chemistry," contributed talk presented at the *MRS Fall Meeting*; Boston, MA; December, 2015.
39. "Real-Time Imaging of Nanocrystal Superlattice Self-Assembly," contributed talk presented at the *AIChE Annual Meeting*; Salt Lake City, UT; November, 2015.
38. "Stimulated Second Harmonic Generation for High-Speed Interfacial Spectroscopy and Imaging," **invited** talk presented at the *11<sup>th</sup> Meeting of the Condensed Phase and Interfacial Molecular Sciences Program, Department of Energy, Office of Basic Energy Sciences*; Gaithersburg, MD; November, 2015.

37. "Exciton Dynamics in Hybrid 0D/2D Systems," **invited** talk presented at the *Energy Frontier Research Centers Principle Investigators Meeting*; Washington, D.C.; October, 2015.
36. "Energy Transport Phenomena in Nanostructured Materials," **invited** seminar presented at the *Department of Chemical Engineering at Drexel University*; Philadelphia, PA; October, 2015.
35. "Exciton Dynamics in Quantum Dot Films and Interfaces," **invited** talk presented at the *Center for Integrated Nanotechnologies User Meeting*; Santa Fe, NM; September, 2015.
34. "Engineering Colloidal Quantum Dot Materials Through Surface Chemistry," **invited** poster presentation at the *3M Science & Engineering Faculty Day*; St. Paul, MN; June, 2015.
33. "Thermal Imaging of Flexible Photovoltaic Materials," talk presented at the *Eni-MIT Solar Frontiers Center Annual Meeting*; Milan, Italy; June, 2015.
32. "Exciton Dynamics in Quantum Dot Films and Interfaces," **invited** talk presented at the *APS March Meeting*; San Antonio, TX; March, 2015.
31. "Exciton Dynamics at Hybrid QD-MoS<sub>2</sub> Interfaces," contributed talk presented at the *MRS Fall Meeting*; Boston, MA; December, 2014.
30. "Vision for the Future of Nanotechnology," **invited** panelist at the *MTL 30<sup>th</sup> Anniversary Symposium*; Cambridge, MA; October, 2014.
29. "Exciton Transport in Quantum Dot Solids," **invited** talk presented at *SPIE Optics + Photonics*; San Diego, CA; August, 2014.
28. "Energy Conversion and Charge Transport," **invited** discussion leader at the *Gordon Research Conference on Colloidal Semiconductor Nanocrystals*; Smithfield, RI; July, 2014.
27. "Thermal and Morphological Imaging of Organic Photovoltaic Materials," talk presented at the *Eni-MIT Solar Frontiers Center Annual Meeting*; Milan, Italy; June, 2014.
26. "Exciton Transport in Colloidal Quantum Dot Solids," seminar presented at the *Division of Physical Chemistry at the University of North Carolina*; Chapel Hill, NC; May, 2014.
25. "Exciton Diffusion in Quantum Dot Assemblies," **invited** talk presented at the *MRS Spring Meeting*; San Francisco, CA; April, 2014.
24. "Exciton Transport in Quantum Dot Solids," contributed talk presented at the *MRS Fall Meeting*; Boston, MA; December, 2013.
23. "Exciton Transport in Quantum Dot Solids," contributed talk presented at the *AICHE Annual Meeting*; San Francisco, CA; November, 2013.
22. "Energy Transport in Colloidal Quantum Dot Materials: New Approaches and Applications," **invited** seminar presented at *3M, Inc.*; St. Paul, MN; April 2013.
21. "New Opportunities in Nonlinear Optical Imaging," **invited** seminar presented at the *Modern Optics and Spectroscopy Seminar Series at MIT*; Cambridge, MA; April 2012.

Talks, seminars, and presentations originating from PhD and postdoctoral work:

20. "Hot Electron Transfer from Semiconductor Nanocrystals: Implications for Quantum Dot Photovoltaics," **invited** seminar presented at the *Energy Science and Technology Seminar Series at Brown University*; Providence, RI; November 2011.
19. "Hot Electron Transfer from Semiconductor Nanocrystals," **invited** talk presented at the *AVS 58<sup>th</sup> International Symposium*; Nashville, TN; October 2011.
18. "Enhancement of Molecular Fluorescence by Excitonic Coupling to a J-Aggregate Critically Coupled Resonator," talk presented at the *AICHE Annual Meeting*; Minneapolis, MN; October 2011.
17. "Hot Electron Transfer from Semiconductor Nanocrystals: Implications for Quantum Dot Photovoltaics," **invited** seminar presented at the *Precourt Institute for Energy at Stanford University*; Palo Alto, CA; March 2011.

16. "Hot Electron Transfer from Semiconductor Nanocrystals: Implications for Quantum Dot Photovoltaics," **invited** seminar presented at the *Department of Chemical Engineering at MIT*; Cambridge, MA; February 2011.
15. "Hot Electron Transfer from Semiconductor Nanocrystals: Implications for Quantum Dot Photovoltaics," **invited** seminar presented at the *Department of Chemical and Biomolecular Engineering at North Carolina State University*; Raleigh, NC; February 2011.
14. "Hot Electron Transfer from Semiconductor Nanocrystals: Implications for Quantum Dot Photovoltaics," **invited** seminar presented at the *Department of Chemical Engineering at the University of Delaware*; Newark, DE; February 2011.
13. "Hot Electron Transfer from Semiconductor Nanocrystals: Implications for Quantum Dot Photovoltaics," **invited** seminar presented at the *Department of Chemical and Biological Engineering at the University of Colorado*; Boulder, CO; January 2011.
12. "Hot Electron Transfer from Semiconductor Nanocrystals: Implications for Quantum Dot Photovoltaics," **invited** seminar presented at the *Department of Chemistry at the University of Minnesota*; Minneapolis, MN; January 2011.
11. "Hot Electron Transfer from Semiconductor Nanocrystals," poster presented at the *MRS Fall Meeting*; Boston, MA; December 2010.
10. "Hot Electron Transfer from Semiconductor Nanocrystals: Implications for Quantum Dot Photovoltaics," talk presented at the *AIChE Annual Meeting*; Salt Lake City, UT; November 2010.
9. "Electronic Relaxation Dynamics at the ZnO(10-10) Surface," talk presented at the *AIChE Annual Meeting*; Salt Lake City, UT; November 2010.
8. "Hot Electron Transfer from Semiconductor Nanocrystals: Implications for Quantum Dot Photovoltaics," **invited** seminar presented at the *Department of Chemical Engineering at the University of California at Santa Barbara*; Santa Barbara, CA; October 2010.
7. "Hot Electron Transfer from Semiconductor Nanocrystals," **invited** seminar presented at the *Center for Excitonics at MIT*; Cambridge, MA; March 2010.
6. "Hot Electron Transfer from PbSe Nanocrystals," talk presented at the *MRS Fall Meeting*; Boston, MA; December 2009.
5. "Hot Electron Transfer from Semiconductor Nanocrystals," poster presented at the *Third Annual Minnesota Nanotechnology Conference*; Minneapolis, MN; November 2009.
4. "Hot Electron Transfer from PbSe Nanocrystals Probed by Surface Second Harmonic Generation," poster presented at the *Gordon Research Conference on Clusters, Nanocrystals, & Nanostructures*; South Hadley, MA; July 2009.
3. "Using Time-Resolved Surface Second Harmonic Generation to Probe Interfacial Electron Transfer at a Semiconductor Surface," poster presented at the *6<sup>th</sup> International Conference on Ultrafast Surface Dynamics*; Kloster-Banz, Germany; July 2008.
2. "Electron Dynamics at the ZnO(10-10) Surface," talk presented at the *ACS Spring Meeting*; New Orleans, LA; April 2008.
1. "Time-Resolved Two-Photon Photoelectron Spectroscopy as a Probe of Excited State Electronic Structure at an Oxide Semiconductor Surface," talk presented at the *AVS Surface Analysis Symposium*; Minneapolis, MN; June 2007.