

## 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

2019- Associate Professor [with Tenure], ARCO Career Development Chair, 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

2020 [MacVicar Faculty Fellow](#)  
2019 C. Michael Mohr Outstanding Undergraduate Teaching Award  
2018 AIChE Delaware Valley Section Outstanding Alumni Award  
2017 C. Michael Mohr Outstanding 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 Outstanding Undergraduate Teaching Award  
2014 [Everett Moore Baker Award](#) for Excellence in Undergraduate Teaching  
2014 3M Non-Tenured Faculty Award  
2013 DOE Early Career Award

## Teaching

- 2019-2020 10.213 – Thermodynamics. *Average Instructor Rating 6.8/7.0*  
 Led curriculum overhaul of new sophomore year experience in thermodynamics for Chemical Engineering majors at MIT.
- Selected student comments:
    - o *“The best professor I’ve ever had. Super engaging, highly knowledgeable, and was so easily able to explain complex concepts in simple terms.”*
- 2012-2014, 2016-2017 10.302 – Transport Phenomena. *Average Instructor Rating 6.7/7.0*  
 Junior-level chemical engineering core lecture subject in heat & mass transfer.
- Selected student comments:
    - o *“Very engaging; clear and organized lectures.”*
    - o *“Literally the greatest teacher I have had in my 15 years of schooling.”*
    - o *“... the best professor I have had at MIT so far...”*
- 2012-2018 10.27 – Energy Projects Lab. *Average Instructor Rating 6.8/7.0*  
 Junior/Senior-level chemical engineering laboratory subject.
- Created 7 new semester-long projects, including:
    - o Hybrid Organic-Inorganic Perovskite Nanoplatelets: Advanced Materials for Next-Generation Optoelectronic Technologies
    - o Optimization of an Organic Solar Cell
    - o Engineering Quantum-Dot Materials for Energy-Efficient Lighting
    - o Heat Transport in Nanostructured Materials
- 2015 10.51 – Nanoscale Energy Transport Processes. *Average Instructor Rating 6.7/7.0*  
 Newly developed graduate elective subject.

## Department and Institute Service

- 2019- Institute Faculty Meeting Representative – Chemical Engineering
- 2019- NEET “Renewable Energy Machines” instructional team
- 2018-2019 Member, NEET “Renewable Energy Machines” ad hoc advisory committee
- 2018-2019 Led revitalization of MIT ChemE undergraduate thermodynamics sequence
- 2018- Faculty Host, MIT First-Year Student Lunch Series
- 2018-2021 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
  - Participant, *Thermodynamics, 10.10*, and *Labs* focus groups
- 2015- Course X undergraduate education committee
- 2014-2018 Member, Steering Committee, *EFRC Center for Excitonics*
- 2013- Course X undergraduate advisor
- 2013-2016 Chemical Engineering seminar series coordinator
- 2012- Course X graduate admissions committee

## Outreach

- 2020 DOE Early Career Network – Career Panelist
- 2012-2019 Supervised 23 different undergraduate student researchers
- 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

- 2020 Co-Organizer, *E<sub>3</sub>S: Exciton Engineering in Emerging Semiconductors*, Madrid, Spain
- 2018- Member, *AIChE NSEF Awards Committee*
- 2015-2018 Member, Steering Committee, *EFRC Center for Excitonics*
- 2012-2018 Organizing Committee, 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*

- 2016- Sam Winslow, *Chemical Engineering, MIT, PhD*
- 2016- Watcharaphol “Oat” Paritmongkol, *Physical Chemistry, MIT, PhD*
- 2016- Seung Kyun Ha, *Chemical Engineering, MIT, PhD*
- 2017- Wenbi Wu, *Physical Chemistry, MIT, PhD*
- 2018- Eric Powers, *Chemical Engineering, MIT, PhD*
- 2019- Ruomeng Wan, *Inorganic Chemistry, MIT, PhD*
- 2020- Narumi Wong, *Chemical Engineering, MIT, PhD*
- 2020- Abigail Taussig, *Chemical Engineering, MIT, PhD*
- 2020- Woo Seok Lee, *Materials Science & 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 Shulenberg, *Physical Chemistry, MIT, PhD*

## Supervised Master’s Theses

### *Completed*

- 2013 Lisa Poulidakos, *ETH, Zurich (MS thesis research performed at MIT)*

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>

## Supervised Postdoctoral Associates

### *In progress*

2017-	Kristopher Williams, <i>PhD, Physical Chemistry – Columbia University, NY</i>
2018-	Nannan Mao, <i>PhD, Physical Chemistry – Peking University, China</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: Principle Investigator, Rowland Institute at Harvard</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>

## Patents

5. “Tunable light emitting diodes utilizing quantum-confined layered perovskite emitters;” D.N. Congreve, M. Seitz, M.C. Weidman, W.A. Tisdale; US Patent App. 16/336,892 (pending).
4. “Nonlinear optical imaging;” Y. Gao, A.J. Goodman, W.A. Tisdale; US Patent App. 16/159,627 (pending).
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 <http://www-mtl.mit.edu/wpmu/tisdale/publications> for updated list

### Publications as an independent PI:

60. “Spatially Resolved Exciton and Charge Transport in Emerging Semiconductors”  
N.S. Ginsberg\* & W.A. Tisdale\*  
*Ann. Rev. Phys. Chem. accepted/in press* (2020).
59. “Tunable Exciton Binding Energy in Two-Dimensional Hybrid Layered Perovskites through Organic-Layer Donor-Acceptor Interactions”  
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 Chem. accepted/in press* (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 Mater.* 10.1038/s41563-019-0602-2 (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-Lenord, 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. Shulenberger, 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. Poulikakos, 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. Poulikakos, 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. Leschkes, 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:

93. "Hybrid Semiconductor Nanomaterials: from Soft Materials to Ultrafast Dynamics," **invited** seminar at the *Department of Chemical Engineering and Materials Science at the University of Minnesota*; Minneapolis, MN; April, 2020.
92. "Structure and Dynamics in Perovskite Nanomaterials," **invited** talk presented at the *ACS Spring Meeting*; Philadelphia, PA; March, 2020.
91. "Interfacial Exciton Dynamics in Atomically Thin Semiconductors," **invited** talk presented at the *ACS Spring Meeting*; Philadelphia, PA; March, 2020.
90. "Energy Transport Processes in Halide Perovskite Nanomaterials," **invited** talk presented at the *ACS Spring Meeting*; Philadelphia, PA; March, 2020.
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 *Division of Materials, 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 EFRF-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.