Yuanyuan Zhou

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EDUCATION

Ph.D.	Materials Science and Engineering	Brown University, United States	2012 − 2016
M.S.	Chemistry	Korea Research Institute of Chemical Technology, South Korea	2010 − 2012
M.S.	Materials Science and Engineering	Xi'an Jiaotong University, P.R. China	2009 − 2011
B.S.	Materials Science and Engineering	Xi'an Jiaotong University, P.R. China	2005 − 2009

EMPLOYMENT

Assistant Professor (Research), School of Engineering, Brown University, Jun. 2016 – present
Intern, Chem. & Nanoscience Center, National Renewable Energy Laboratory, Oct. 2014 – May 2016
Research Assistant, School of Engineering, Brown University, Jun. 2013 – May 2016
Graduate Fellow, School of Engineering, Brown University, Sep. 2012 – May 2013
Research Assistant, Korea Research Institute of Chemical Technology, Aug. 2010 – Aug. 2012
Intern, Yieh Phui Enterprise Co., Ltd. (Steel-Materials Company), Taiwan, Sep. 2008 – Jan. 2009

SELECTED AWARDS & HONORS

Chinese Government Award for Outstanding Student Aboard, Chinese Scholarship Council, 2016
An award presented to only 500 overseas Chinese students each year in all disciplines in 32 countries.

The Outstanding Thesis Award, School of Engineering, Brown University, 2016
An award presented each year to the only graduate student in all of School of Engineering.

RESEARCH GRANTS

- ✧ **4** funded projects, **4** pending proposals (not listed).

1. N.P. Padture (PI), X.C. Zeng (Co-PI), **Y. Zhou (Faculty Co-Investigator),** together with J. Huang, A.I. Kingon, R. Zia, D. Pacifici, and H. Xia), "Low-Cost, High-Efficiency Solar Cells for the Coming Clean Energy Revolution;" National Science Foundation; $4,000,000; 48 months (Aug. 1, 2015 – Jul. 31, 2019).
2. N.P. Padture (PI) and **Y. Zhou (Co-PI)**, "Grain Boundary Engineering in Hybrid Organic-Inorganic Perovskites;" Office of Naval Research (ONR); $450,000; 36 months (Mar. 1, 2017 – Feb. 29, 2020).
3. O. Chen (PI) and **Y. Zhou (Co-PI)**, "Bridging Halide Perovskites from Nanocrystals to Thin-Film Solar Cells;" Brown University's Institute for Molecular and Nanoscale Innovation Seed Fund; $50,000; 12 months (Jul. 1, 2017 – Jun. 30, 2018).
4. N.P. Padture and **Y. Zhou (Co-PI)**, "Acquisition of In Situ and Operando Capabilities in Transmission Electron Microscopy for Materials Research and Education;" Defense University Research Instrumentation Program (DURIP); $229,145; 12 months (Jun. 15, 2018 – Jun. 14, 2019).

PUBLICATION RECORD

- ✧ **1,827** Google Citations; **24** H-index.
- ✧ **50** journal papers; **1** manuscripts in revision; **2** manuscripts submitted; **4** US patents filed; 1 provisional US patent filed.
- ✧ **38** papers as the (co-)first/corresponding authors.
- ✧ **11** papers with ≥50 citations (labeled ¶), **3** covers/frontispieces (labeled †).

- ✧ **18** papers in top-tier journals (labeled §) in the materials-science, chemistry and energy fields including **1** in *Joule*, **1** in *Nature Communications*, **2** in *Journal of the American Chemical Society*, **4** in *Angewandte Chemie International Edition*, **1** in *Advanced Materials*, **1** in *Advanced Energy Materials*, **2** in *Advanced Functional Materials*, **1** in *Nano Letters*, and **5** in *ACS Energy Letters.*
- ✧ Research covers materials-science topics (e.g. synthesis/processing, crystallization mechanisms, crystal chemistry, optoelectronic/dielectric/electrochemical/mechanical properties, modeling, quantum/nano behavior, device engineering/mechanisms) on functional ceramic materials for photovoltaics and other (opto)electronics (**40** papers), and electrochemical devices (**10** papers).

JOURNAL PAPERS (reverse-chronological)

Photovoltaics and (opto)electronics

§1. M. Chen, M.-G. Ju, A.D. Carl, Y. Zong, R.L. Grimm, J. Gu, X.C. Zeng, **Y. Zhou (corresponding author)**, and N.P. Padture, "Cesium Titanium(IV) Bromide Thin Films Based Stable Lead-Free Perovskite Solar Cells," *Joule*, DOI:10.1016/j.joule.2018.01.009. **[A Sister Journal to *Cell*; Featured in *AAAS EurekAlert!*, etc.]**

2. M.C. Ramirez, S.K. Yadavalli, H.F. Garces, **Y. Zhou**, and N.P. Padture, "Thermo-Mechanical Behavior of Organic-Inorganic Halide Perovskites for Solar Cells," *Scripta Materialia*, accepted. **[Invited Review]**

§3. M.-G. Ju, M. Chen, **Y. Zhou (corresponding author)**, Y. Li, J. Dai, L. Ma, N.P. Padture, and X. C. Zeng, "Earth-Abundant Non-Toxic Titanium-Based Halide Double-Perovskites with Tunable 1.0-1.8 eV Bandgaps for Photovoltaic Applications," *ACS Energy Letters*, 3, 297-304 (2018). **[Featured in ACS Editors' Choices and Most-Read Articles]**

§4. S.K. Yadavalli, **Y. Zhou**, and N.P. Padture, "Exceptional Grain-Growth in $FAPbI_3$ Perovskite Thin Films Induced by the δ-to-α Phase Transformation," *ACS Energy Letters*, 3, 63-4 (2018).

5. Z. Xiao, **Y. Zhou (corresponding author)**, H. Hosono, T. Kamiya, and N.P. Padture, "Bandgap Optimization of Perovskite Semiconductors for Photovoltaic Applications," *Chemistry – A European Journal*, 24, 2305-2316 (2018). **[Invited Review Paper]**

† **Frontispiece** (DOI: 10.1002/chem.201881062)

§6. Y. Zong, N. Wang, L. Zhang, M. Ju, X.C. Zeng, X.W. Sun, **Y. Zhou (corresponding author)**, and N.P. Padture, "Homogenous Alloys of Formamidinium Lead Triiodide and Cesium Tin Triiodide for Efficient Ideal-Bandgap Perovskite Solar Cells," *Angewandte Chemie International Edition,* 56, 12658-62 (2017). **[Very Important Paper]**

† **Back Cover** (DOI: 10.1002/anie.201708387)

§7. C. Li, **Y. Zhou (co-first author)**, Y. Chang, L. Wang, Y. Zong, Z. Zhou, J. Zhang, L. Etgar, G. Cui, S. Pang, and N.P. Padture, "Methylammonium-Mediated Evolution of Mixed-Organic-Cation Perovskite Thin Films: A Dynamic Composition-Tuning Process," *Angewandte Chemie International Edition,* 129, 1-6 (2017).

§8. J. Fu, S. Pang, L. Zhang, Y. Zong, G. Cui, N.P. Padture, and **Y. Zhou (corresponding author)**, "Simultaneous Evolution of Uniaxially-Oriented Grains and Ultralow-Density Grain-Boundary Network in $CH_3NH_3PbI_3$ Perovskite Films Mediated by Precursor-Phase Metastability," *ACS Energy Letters*, 2, 2727-33 (2017).

§9. B. Wu, **Y. Zhou (co-first author)**, G. Xing, A. Solanki, H.F. Garces, N.P. Padture, and T.C. Sum, "Long Minority-Carrier Diffusion Length and Low Surface-Recombination Velocity in Inorganic Lead-free $CsSnI_3$ Perovskite Crystal for Solar Cells," *Advanced Functional Materials*, 27, 1604818 (2017).

§10. O.S. Onkar, G.J. Buchsbaum, **Y. Zhou**, N.P. Padture, and A.I. Kingon, "Ions Matter: Description of the Anomalous Electronic Behavior in Methylammonium Lead Halide Perovskite Devices," *Advanced Functional Materials*, 27, 1606584 (2017).

11. **Y. Zhou (corresponding author)** and N.P. Padture, "Gas-Induced Formation/Transformation of Organic-Inorganic Halide Perovskites," *ACS Energy Letters*, 2, 2166-76 (2017). **[Invited Review Paper]**
12. T. Liu, Y. Zong, **Y. Zhou (corresponding author)**, S. Pang, M. Yang, Z. Li, O.S. Game, K. Zhu, R. Zhu, Q. Gong, and N.P. Padture, "High-Performance Formamidinium-Based Perovskite Solar Cells Based on Microstructure-Mediated δ-to-α Phase Transformation," *Chemistry of Materials*, 29, 3246-50 (2017).
13. T. Liu, **Y. Zhou (co-first author)**, Q. Hu, K. Chen, Y. Zhang, W. Yang, J. Wu, F. Ye, D. Luo, K. Zhu, N.P. Padture, R. Zhu, and Q. Gong, "Fabrication of Compact and Stable Perovskite Films with Optimized Precursor Composition in the Fast-Growing Procedure," *Science China Materials*, 60, 608-16 (2017)

§14. N. Wang, **Y. Zhou (corresponding author)**, M. Gang, H. F. Garces, T. Ding, S. Pang, X.C. Zeng, N.P. Padture, and X. Sun, "Heterojunction-Depleted Lead-Free Perovskite Solar Cells with Coarse-Grained B-γ-$CsSnI_3$ Thin Films," *Advanced Energy Materials*, 6, 1601130 (2016).

† **Front Cover** (DOI: 10.1002/aenm.201670137)

¶§15. **Y. Zhou**, M. Yang, S. Pang, K. Zhu, and N.P. Padture, "Exceptional Morphology-Preserving Evolution of Formamidinium Lead Triiodide Perovskite Thin Films via Organic-Cation Displacement," *Journal of the American Chemical Society*, 138, 5535-8 (2016). **[62 Citations; Featured in *AAAS-EurekAlert!*, *JACerS*, *ACS C&EN*, *etc.*]**

§16. Y. Zong, **Y. Zhou (corresponding author)**, M.-G. Ju, H.F. Garces, A.R. Krause, F. Ji, G. Cui, X.C. Zeng, N.P. Padture, and S. Pang. "Thin-Film Transformation of NH_4PbI_3 to $CH_3NH_3PbI_3$-Perovskite: A Methylamine-Induced Conversion-Healing Process," *Angewandte Chemie International Edition*, 55, 14723-7 (2016).

§17. S. Pang, **Y. Zhou (co-first author)**, Z. Wang, M. Yang, A.R. Krause, Z. Zhou, K. Zhu, N.P. Padture, and G. Cui, "Transformative Evolution of Organolead Triiodide Perovskite Thin Films from Strong Room-Temperature Solid-Gas Interaction between $HPbI_3$-CH_3NH_2 Precursor Pair," *Journal of the American Chemical Society*, 138, 750-3 (2016). **[46 Citations]**

18. **Y. Zhou**, Z. Zhou, M. Chen, Y. Zong, S. Pang, and N.P. Padture. "Doping and Alloying for Improved Perovskite Solar Cells," *Journal of Materials Chemistry A*, 4, 17623-35 (2016). **[Invited Review Paper]**

§19. Y. Kutes, **Y. Zhou**, B. James, S. James, N.P. Padture, and B.D. Huey, "Mapping the Photoresponse of $CH_3NH_3PbI_3$ Hybrid Perovskite Thin Films at the Nanoscale," *Nano Letters*, 16, 3434-41 (2016).

§20. **Y. Zhou** and K. Zhu. "Perovskite Solar Cells Shine in the Valley of the Sun," *ACS Energy Letters*, 1, 64-7 (2016). **[46 Citations; Invited Paper in Inaugural Issue; Featured in *Most-Read Articles*]**

21. **Y. Zhou (corresponding author)**, J. Kwun, H.F. Garces, S. Pang, and N.P. Padture, "Observation of Phase-Retention Behavior of the $HC(NH_2)_2PbI_3$ Black Perovskite Polymorph upon Mesoporous TiO_2 Scaffolds," *Chemical Communications*, 52, 7273-5 (2016)
22. **Y. Zhou**, M. Yang, J. Kwun, O.S. Onkar, Y. Zhao, S. Pang, N.P. Padture, and K. Zhu, "Intercalation Crystallization of Phase-Pure α- $HC(NH_2)_2PbI_3$ upon Microstructurally Engineered PbI_2 Thin Films for Planar Perovskite Solar Cells," *Nanoscale*, 8, 6265-70 (2016). **[Invited Paper for Themed Collection *Perovskites at the Nanoscale*]**
23. **Y. Zhou**, H.F. Garces, and N.P. Padture, "Challenges in the Ambient Raman Spectroscopy Characterization of Methylammonium Lead Triiodide Perovskite Thin Films," *Frontiers of Optoelectronics*, 9, 81-6 (2016). **[Invited Paper for Special Issue *Mesoscopic Solar Cells*]**
24. **Y. Zhou**, M. Yang, O.S. Games, J. Kwun, S. Pang, K. Zhu, and N.P. Padture, "Manipulating Crystallization of Organolead Mixed-Halide Thin Films in Antisolvent Baths for Wide-Bandgap Perovskite Solar Cells," *ACS Applied Materials & Interfaces*, 8, 2232-7 (2016).

25. R. Naphade, S. Nagane, G.S. Shanker, R. Fernades, D.C. Kothari, **Y. Zhou**, N.P. Padture, and S.B. Ogale, "Hybrid Perovskite Quantum Nanostructures Synthesized by Electrospray Antisolvent-Solvent Extraction and Intercalation," *ACS Applied Materials & Interfaces*, 8, 854-61 (2016).

¶§26. M. Yang, **Y. Zhou (co-first author)**, Y. Zeng, C.-S. Jiang, N.P. Padture, and K. Zhu, "Square-Centimeter Solution-Processed Planar $CH_3NH_3PbI_3$ Perovskite Solar Cells with Efficiency Exceeding 15%," *Advanced Materials*, 27, 6363-70 (2015). **[137 Citations; Featured in *AAAS EurekAlert!*, *etc.*]**

¶§27. Z. Zhou, Z. Wang, **Y. Zhou (co-first author)**, S. Pang, D. Wang, H. Xu, Z. Liu, N.P. Padture, and G. Cui, "Methylamine-Gas-Induced Defect-Healing Behavior of $CH_3NH_3PbI_3$ Thin Films for Perovskite Photovoltaics," *Angewandte Chemie International Edition*, 54, 9702-9 (2015). **[147 Citations; Very Important Paper; Highlighted in August 7, 2015 Issue of *Science* as Editor's Choice]**

¶§28. **Y. Zhou (corresponding author)**, O.S. Game, S. Pang, and N.P. Padture, "Microstructures of Organolead Trihalide Perovskites for Solar Cells: Their Evolution from Solutions and Characterization," *The Journal of Physical Chemistry Letters*, 6, 4827-39 (2015). **[82 Citations; Invited Review]**

¶§29. C.-S. Jiang, M. Yang, **Y. Zhou**, B. Too, S. Nanayakkara, J. Luther, W. Zhou, J. Berry, J.V. de Lagemaat, N.P. Padture, K. Zhu, and M.M. Al-Jassi, "Carrier Separation and Transport in Perovskite Solar Cells Studied by Nanometer-Scale Profiling of Electrical Potential," *Nature Communications*, 6, 8397 (2015). **[69 Citations]**

¶30. Z. Wang, **Y. Zhou (co-first author)**, S. Pang, Z. Xiao, J. Zhang, W. Chai, H. Xu, Z. Liu, N.P. Padture, and G. Cui, "Additive-Modulated Evolution of $HC(NH_2)_2PbI_3$ Black Polymorph for Mesoscopic Perovskite Solar Cells," *Chemistry of Materials*, 27, 7149-55 (2015). [**51 Citations**]

31. **Y. Zhou (corresponding author)**, A.L. Vasiliev, W. Wu, M. Yang, K. Zhu, and N.P. Padture, "Crystal Morphologies of Organolead Trihalide in Mesoscopic/Planar Perovskite Solar Cells," *Journal of Physical Chemistry Letters*, 6, 2292-7 (2015). **[44 Citations]**

¶32. **Y. Zhou**, M. Yang, W. Wu, A.L. Vasiliev, K. Zhu, and N.P. Padture, "Room-Temperature Crystallization of Hybrid-Perovskite Thin Films via Solvent-Solvent Extraction for High-Performance Solar Cells," *Journal of Materials Chemistry A*, 3, 8178-84 (2015). **[185 Citations; Themed Collection of *The 2015 Journal of Materials Chemistry A Most Accessed Manuscripts*; Featured in *AAAS-EurekAlert!*, *The Economist, etc.*]**

¶33. **Y. Zhou**, M. Yang, A.L. Vasiliev, H.F. Garces, Y. Zhao, D. Wang, S. Pang, K. Zhu, and N.P. Padture, "Growth Control of Compact $CH_3NH_3PbI_3$ Thin Films via Enhanced Solid-State Precursor Reaction for Efficient Planar Perovskite Solar Cells," *Journal of Materials Chemistry A*, 3, 9249-56 (2015). **[61 Citations; Invited Contribution for Themed Collection of *Perovskite Solar Cells*]**

34. Z. Xiao, **Y. Zhou**, H. Hideo, and T. Kamiya, "Intrinsic Defects in Photovoltaic Perovskite Variant Cs_2SnI_6," *Physical Chemistry Chemical Physics*, 17, 189000-3 (2015).

35. Z. Xiao, H. Lei, X. Zhang, **Y. Zhou**, H. Hosono, and T. Kamiya, "Ligand-Hole in SnI_6 Unit and Origin of Band Gap in Photovoltaic Perovskite Variant Cs_2SnI_6," *Bulletin of the Chemical Society of Japan*, 88, 1250-5 (2015).

36. D. Wang, Z. Liu, Z. Zhou, H. Zhu, **Y. Zhou**, C. Huang, Z. Wang, H. Xu, Y. Jin, F. Bin, S. Pang, and G. Cui, "Reproducible One-Step Fabrication of Compact $MAPbI_{3-x}Cl_x$ Thin Films Derived from Mixed-Lead-Halide Precursors," *Chemistry of Materials*, 26, 7145-50 (2014).

¶37. Y. Kutes, L. Ye, **Y. Zhou (co-first author)**, S. Pang, B. D. Huey, and N.P. Padture, "Direct Observation of Ferroelectric Domains in Solution-Processed $CH_3NH_3PbI_3$ Perovskite Thin Films," *The Journal of Physical Chemistry Letters*, 5, 3335-9 (2014). [**239 Citations**]

¶38. H. Hu, D. Wang, **Y. Zhou**, J. Zhang, S. Lv, S. Pang, X. Chen, Z. Liu, N.P. Padture, C. Huang, and G. Cui, "Vapour-Based Processing of HTM-Free $CH_3NH_3PbI_3$ Perovskite/Fullerene Planar Solar Cells," *RSC Advances*, 4, 28964-7 (2014). **[82 Citations]**

¶39. S. Lv, S. Pang, **Y. Zhou**, N.P. Padture, H. Hu, L. Wang, X. Zhou, C. Huang, and G. Cui, "One-Step Solution-Processed Formamidinium Lead Halide ($FAPbI_{(3-x)}Cl_x$) for Mesoscopic Perovskite-Polymer Solar Cells," *Physical Chemistry Chemical Physics*, 16, 19206-11 (2014). **[82 Citations]**

40. **Y. Zhou**, H.F. Garces, B.S. Senturk, A.L. Ortiz, and N.P. Padture, "Room Temperature 'One-Pot' Solution Synthesis of Nanoscale $CsSnI_3$ Orthorhombic Perovskite Thin Films and Particles," *Materials Letters*, 110, 127-9 (2013).

Electrochemical Devices

41. **Y. Zhou**, I. Lee, D. Kim, S. Han, J.-K. Kim, D. Lee, S.W. Ko, S.G. Pyo, H. Son, and S. Yoon, "Direct Synthesis of Carbon Sheathed Tungsten Oxide Nanoparticles via Self-Assembly Route for High Performance Electrochemical Charge Storage Electrode," *Journal of Nanoscience and Nanotechnology*, 17, 389-97 (2017).
42. H. Kim, **Y. Zhou**, J. Kim, N. Kim, and S. Yoon, "Ordered Mesoporous Carbon Imbedded with Nano Tungsten Oxide as Anode Material in Lithium Ion Batteries," *Science of Advanced Materials*, 2017, 9, 1867-71.
43. **Y. Zhou** and S. Yoon, "Interconnected Carbon-Decorated TiO_2 Nanocrystals with Enhanced Lithium Storage Performance," *Electrochemical Communications*, 40, 54-7 (2014).
44. **Y. Zhou**, I. Lee, C.W. Lee, H.S. Park, H. Son, and S. Yoon, "Ordered Mesoporous Carbon-MoO_2 Nanocomposite as High Performance Anode Material in Lithium Ion Batteries," *Bulletin of the Korean Chemical Society*, 35, 257-60 (2014).
45. **Y. Zhou**, S.-H. Ko, C.W. Lee, and S. Yoon, "Enhanced Charge Storage by Optimization of Pore Structure in Nanocomposite between Ordered Mesoporous Carbon and Nanosized WO_{3-x}," *Journal of Power Sources*, 244, 777-82 (2013).
46. **Y. Zhou**, J. Lee, C.W. Lee, M. Wu, and S. Yoon, "Crystallinity-Controlled TiO_2-Carbon Nanocomposites with Enhanced Lithium Storage Performance," *ChemSusChem*, 5, 2376-82 (2012).
47. **Y. Zhou**, C.W. Lee, S.-K. Kim, and S. Yoon, "Ordered Mesoporous Carbon-MoO_2 Nanocomposites as Stable Supercapacitor Electrodes," *ECS Electrochemistry Letters*, 1, A17-20 (2012).
48. **Y. Zhou**, C. Jo, J. Lee, C.W. Lee, G. Qao, and S. Yoon, "Development of Novel Mesoporous C-TiO_2-SnO_2 Nanocomposites and Their Application to Anode Materials in Lithium Ion Secondary Batteries," *Microporous Mesoporous Materials*, 151, 172-9 (2012).
49. **Y. Zhou**, C.W. Lee, and S. Yoon, "Development of an Ordered Mesoporous Carbon/MoO_2 Nanocomposite for High Performance Supercapacitor Electrode," *Electrochemical Solid-State Letters*, 14, A157-60 (2011).
50. **Y. Zhou**, Y. Kim, C. Jo, J. Lee, C.W. Lee, and S. Yoon, "A Novel Mesoporous Carbon-Silica-Titania Nanocomposite as a High Performance Anode Material in Lithium Ion Batteries," *Chemical Communications*, 47, 4944-6 (2011). **[44 Citations]**

PATENTS FILED

1. N.P. Padture and **Y. Zhou**, "Methods of Making Coated Substrates," No. PCT/US2015/061736. *U.S. Patent Application*, 2015.
2. K. Zhu, M. Yang, **Y. Zhou**, and N.P. Padture, "Organo-Metal Halide Perovskites Films and Methods of Making the Same," No. PCT/US2016/033135. *U.S. Patent Application*, 2016.
3. K. Zhu, M. Yang, **Y. Zhou**, and N.P. Padture, "Methods for Producing Perovskite Halide Films," No. PCT/US17/18663. *U.S. Patent Application*, 2017.
4. X.C. Zeng, M.-G. Ju, N.P. Padture, **Y. Zhou**, and M. Chen, "(Lead-Free) Cesium (Mixed) Tin-Germanium Halide Perovskite Materials for Solar Cell Applications," *U.S. Patent Application*, 2017.

5. N.P. Padture, **Y. Zhou**, M. Chen, X.C. Zeng and M.-G. Ju, "Titanium (IV)-Based Halide Double-Perovskites with Tunable 1.0 to 1.8 eV Bandgaps for Photovoltaic Applications" *Provisional U.S. Patent Application*, 2017.

ORAL TALKS

✧ **9** conference talks (**1** invited, **8** contributed); **12** invited lectures in international institutes.

CONFERENCE TALKS (INVITED)

1. **Invited Speaker** in 2018 MRS Fall Meeting Symposium ET04 – Challenges and Opportunities. 2018 Materials Research Society (MRS) Fall Meeting, Boston, USA, Nov. 2018. To be presented.

CONFERENCE TALKS (CONTRIBUTED)

1. "Microstructural/Compositional Tailoring of Cesium Tin Iodide Perovskites for Solar Cells with Improved Efficiency and Stability," 2018 MRS Spring Meeting, Phoenix, USA, Apr. 2018. To be presented.
2. "Functionalizing Grain Boundaries/Surfaces Confocally in Organic-Inorganic Halide Perovskite Thin Films." 2018 MRS Spring Meeting, Phoenix, USA, Apr. 2018. To be presented.
3. "Grain Boundary Engineering in Hybrid Perovskite Thin Films for Efficient, Stable Solar Cells," 2017 MRS Fall Meeting, Boston, USA, Nov. 2017.
4. "Soft Processing of Hybrid Organic-Inorganic Perovskites," 2017 MRS Spring Meeting 2017, Phoenix, USA, Apr. 2017.
5. "Transformative Behavior of Organolead Halide Perovskites Induced by Amine Gas," 2016 MRS Spring Meeting, Phoenix, USA, Apr. 2016.
6. "Ambient Amine-Gas-Induced Transformative Behavior of Organolead Halide Perovskites for Upscaling Perovskite Solar Cells," Rump Session of Perovskite Photovoltaics and Optoelectronics, 2015 MRS Fall Meeting, Boston, USA, Dec. 2015.
7. "A Universal Low-Temperature One-Step Solution Processing Method for the Deposition of Large-Area Organometallic Halide Perovskite Thin Films for High-Performance Multifunctional Photovoltaics," 2015 MRS Spring Meeting, San Francisco, USA, Apr. 2015.
8. "Influence of Surface Micro-/Nano-Structuring on the Photovoltaic Mechanisms and Performance of Solid-State Perovskites-Based Solar Cells," 2014 MRS Spring Meeting, San Francisco, USA, Apr. 2014.

INVITED LECTURES

1. Department of Chemistry, The University of Tokyo, Japan, Aug. 21, 2017. **Zasshikai Seminar 1683rd**. Hosted by Prof. Eiichi Nakamura.
2. Qingdao Institute of Bioenergy and Bioprocess Technology, Chinese Academy of Sciences (CAS), China, Aug. 18, 2017. Hosted by Prof. Shuping Pang.
3. Department of Photonics, National Cheng Kung University, Taiwan, Jan. 3, 2017. Hosted by Prof. Tzung-Fang Guo & Prof. Peter C.-Y. Chen.
4. National Center for Nanoscience and Technology, CAS, China, Jul. 9, 2016. Hosted by the Institute.
5. Institute of Processing Engineering, CAS, China, May 9, 2016. Hosted by the Institute.
6. Suzhou Institute of Nano-Tech and Nano-Bionics, CAS, China, Sep. 3, 2016. Hosted by Prof. Sunan Ding.
7. Qingdao Institute of Bioenergy and Bioprocess Technology, CAS, China, Dec. 30, 2015. Hosted by Prof. Shuping Pang.
8. School of Physics, Peking University, China, Dec. 25, 2015. Hosted by Prof. Rui Zhu.

9. Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, China, Jan. 15, 2015. Hosted by Prof. Hongwei Han.
10. School of Environmental Science and Engineering, Shanghai Jiaotong University, China, Jan. 12, 2015. Hosted by Prof. Yixin Zhao.
11. Qingdao Institute of Bioenergy and Bioprocess Technology, CAS, China, Jan. 10, 2015. Hosted by Prof. Shuping Pang.
12. School of Materials Science and Engineering, Jiangsu University, China, Jan. 7, 2015. Hosted by Prof. Guanjun Qiao.

TEACHING EXPERIENCE

1. **Teaching Assistant**:
    a. *Introduction to Materials Science* (ENGN 0410); Brown University, Fall Semester 2015.
2. **Supervisor**:
    a. Dr. Yi Zhang, Postdoc, Brown Univ.; Funded by NSF and Brown Seed Funding.
    b. Dr. Dan Liu, Visiting Professor, Tianjin Polytechnic University; Funded by Chinese Scholarship Council.
    c. Mr. Tanghao Liu, Visiting Ph.D., Peking Univ.; Funded by Peking University.
3. **Mentor** (in Professor Nitin P. Padture's Laboratory): Mr. Min Chen (Ph.D., Brown Univ.), Mr. Srinivas Yadavalli (Ph.D., Brown Univ.), Ms. Yingxia Zong (Visiting Ph.D., Qingdao Univ. of Sci. & Tech), Mr. Connor Watts† (UG, Brown Univ.), Mr. Martin Strauss† (UG, Brown Univ.; Received *Joseph J. Loferski Award* from Brown University for his PV research), Mr. Joonsuk Kwun† (UG, Brown Univ.), Mr. Mollie Koval† (UG, Brown Univ.), Ms. Rachel J. Meyen† (UG, RI College). Note: † former mentee.

SERVICE ACTIVITIES

1. **Conference/Symposium Organizer**:
    a. **Co-Organizer** (with Iván Mora Seró, Qing Shen, Yanfa Yan), 2018 MRS Fall Meeting Symposium ET05: *Fundamental Aspects of Halide Perovskite (Opto)electronics and Beyond*.
    b. **Leader-Organizer** (with Maria Antonietta Loi, Tingli Ma, Iván Mora Seró), 2019 MRS Spring Meeting Symposium: *Perovskite Light-emission and Frontier Phenomena: Single-Crystals, Thin Films and Nanocrystals*. To be organized.
2. **Conference/Symposium Session-Chair**:
    a. 2017 MRS Spring Meeting Symposium ES1: *Perovskite Solar Cells Towards Commercialization*.
    b. 2017 MRS Fall Meeting Symposium ES01: *Perovskite Materials and Devices - Progress and Challenges*.
    c. 2018 MRS Spring Meeting Symposium EN15: *Novel Materials Physics of Perovskite Semiconductors*.
    d. 2018 MRS Spring Meeting Symposium EN02: *Advances in Perovskite Solar Cell Devices and Applications*.
3. ***Ad-hoc* Journal Reviewer**: Nature Publishing (*Nature Communications*, *Scientific Reports); Wiley* (*Advanced Materials*, *Advanced Energy Materials*, *Angewandte Chemie International Edition, Advanced Optical Materials*, *ChemSusChem*, *Energy Technology*, *Solar RRL*); ACS Publishing (*Journal of the American Chemical Society*, *ACS Nano, ACS Energy Letters*, *ACS Applied Materials & Interfaces*); RSC Publishing (*Chemical Science*, *Journal of Materials Chemistry A*, *Nanoscale*, *RSC Advances*, *Sustainable Energy & Fuels*); Elsevier Publishing (*Nano Energy*, *Materials Today Energy*, *Organic Electronics*, *Solar Energy*, *Superlattices and Microstructures*, *Synthetic Metals*, *Materials Science in Semiconductor Processing*, *Journal of Industrial & Engineering Chemistry*);

Others (*Nanomaterials*, *Materials*, *Crystals*, *MRS Communications*, *Chemistry Letters*, *Optical Materials Express*).

4. **Proposal Reviewer**:
    a. Natural Sciences and Engineering Research Council of Canada.
    b. Research Foundation – Flanders (Belgium).
    c. Foundation for Polish Science.
5. **Conference Assistant**:
    a. 2015 MRS Spring Meeting Symposium C: *Perovskite Solar Cells.*
    b. 2015 MRS Fall Meeting Symposium NN: *Thin-Film and Nanostructure Solar Cells.*
6. **K-12 Education**:
    a. Speaker in Vartan Gregorian Elementary School Science Conference 2017.
    b. Participant in Developing the Brown University Pre-College Course *Power from the Sun*.

OTHER ACTIVITIES

1. **Entrepreneurship:** Semi-Finalist in Rhode Island Business Plan Competition 2016 for the project of *Empower Photovoltaic*.