**Jinsong Huang**

Louis D. Rubin Jr. Distinguished Professor

Department of Applied Physical Science

University of North Carolina Chapel Hill

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**EDUCATION**

**Ph.D.** Materials Science & Engineering, University of California-Los Angeles, 2007

**M.S.** Semiconductors Physics, Chinese Academy of Sciences, 2003

**B.E.** Materials and Photoelectronic Physics, Xiangtan University, 2000

**PROFESSIONAL EXPERIENCE**

***Louis D. Rubin Jr. Distinguished Professor,*** Department of Applied Physical Science, University of North Carolina Chapel Hill, 2020-present

***Professor,*** Department of Applied Physical Science, University of North Carolina Chapel Hill, 2017-present

***Susan J. Rosowski University Professor***, University of Nebraska Lincoln, 2015-2017

***Professor,*** Department of Mechanical Engineering, University of Nebraska Lincoln, 2016-2017

***Associate Professor,*** Department of Mechanical Engineering, University of Nebraska Lincoln, 2014-2016

***Assistant Professor,*** Department of Mechanical Engineering, University of Nebraska Lincoln, 2009-2014

***Senior Research Scientist****,* Department of Material Technologies, Agiltron Inc. 2008-2009

***Research Scientist****,* Department of Material Technologies, Agiltron Inc. 2007-2008

**HONORS AND AWARDS**

2020 Louis D. Rubin Jr. Distinguished Professor

2019 Highly Cited Researchers, by Web of Science

2019 MRS symposium Oral award

2018 Top five researchers in the world in perovskite solar cell research, by Times Higher Education (THE)

2018 Highly Cited Researchers by Clarivate Analytics

2017 Highly Cited Researchers by Clarivate Analytics

2016 Highly Cited Researchers by Thomson Reuters

2016 NUtech Ventures Innovator Award, University of Nebraska, Lincoln

2015 Highly Cited Researchers by Thomson Reuters

2015 Postdoc Mentor Award, University of Nebraska, Lincoln,

2015 College Faculty Research and Creative Activity Award

2015 Susan J. Rosowski University Professorship

2015 Lecture in National Academies, Condensed Matter and Materials Research Committee Spring Meeting

2014 William E. Brooks Engineering Leadership Fellow

2013 NSF CAREER Award

2013 Honorable Speaker for the Polymer Science Lecture, Chinese Academy of Science

2012 Edgerton Innovation Award

2012 Research Fellow, University of Nebraska Lincoln

2011 College Faculty Research and Creative Activity Award

2011 Faculty Research Award, UNL Department of Mechanical Engineering

2010 DoD Young Investigator Award

2009 FIRST award, National Science Foundation

2007 Society for Information Display Student Scholarship Award

2006 Materials Research Society Graduate Student Awards, MRS Fall

**SERVICE TO MATERIAL SOCIETY**

**Editor Board Member**

2020-present Editorial Board Member for Advanced Photonic Materials

2019-present Editorial Board Member for International Journal of Extreme Manufacturing

2019-present Editorial Board Member for Cell Reports Physical Science

2018 “Perovskite solar cells themed issue of *Sustainable Energy & Fuels*.” *Sustainable Energy & Fuels,* Guest editors, Jinsong **Huang**, Nam-Gyu Park, Yabing Qi, Editor: Katie Lim

2017-present Editorial Board Member for *Materials Today Energy*

2014-present Editorial Board Member for *Scientific Reports*

**Conference and Symposium Organizer**

2021 EMRS 2021, Symposium on “Novel Materials for Radiation Detection”

2021 11th International Conference on Materials for Advanced Technologies, Symposium Advanced Materials for X-ray Scintillation, Singapore,

2018 “*ACS* **Nanostructured Materials for Energy Harvesting & Storage**" symposium at the 256th ACS National Meeting (August 19-23, in Boston), Organizers: **Jinsong Huang**, Marina S. Leite, Matthew T. McDowell,

2017 “Symposium ES01—Perovskite Materials and Devices—Progress and Challenges”, **MRS** Fall 2017, Boston, MA, (Nov.26-Dec 1), Organizers: Yabing Qi, **Jinsong Huang**, Annamaria Petrozza, Huanping Zhou

2016 “Symposium EP3: Perovskite-Based Photovoltaics and Optoelectronic Devices”, **MRS** Spring, Phoenix, AZ (March 28-April 1), Organizers: Kai Zhu, **Jinsong Huang**, Maria Antonietta Loi, Tsutomu Miyasaka

2015 [PolyChar 23](http://polychar23.unl.edu/), **Jinsong Huang** , Local Organizing Committee:, Lincoln NE

2015 EMN Meeting/Quantum Technology Energy Materials Nanotechnology, Beijing, China, April 14 to 17, International Advisory Committee

2013 “Symposium B:  Organic and Hybrid Photovoltaic Materials and Devices”, **MRS** spring, San Francisco, CA, (April 1 - April 5), Organizer: **Jinsong Huang (**leading**)**, Maria Antonietta Loi , Wallace Choy, Yan Shao

2005 Symposium assistant, **MRS** Fall, Boston, MA (2005)

**Other society services**

* Conference Session Chair: MRS Spring 2018, MRS Fall 2017, MRS Spring 2017, MRS Fall 2016, MRS Spring 2015, E-MRS 2014
* Tutorial lecture in 2015 MRS fall meeting
* Outreach to Nebraskans in Nebraska Museum on “*Sunday with a Scientist*” (>400 attendee), and “*Nebraska Citizens for Science*” for a seminar.
* Reviewer for various journals (*Nature, Science, Nature Materials, Nature Photonics, Nature Nanotechnology, Nature Energy, Nature Communications, Science Advances, Advanced Materials, Energy and Environmental Science, ACS Nano, Nano Letters* etc)
* Panelist and proposal reviewer for grant agencies (*DOE, DOD, NSF*, etc).

**PUBLICATIONS** (Total Google Scholar citation 40,000+ as of 2020, H index: 93)

**Highlight of the Science and Nature Publications:**

1. Perovskite-Filled Membranes for Flexible and Large Area Direct Conversion X-ray Detector Arrays, Jingjing Zhao, Liang Zhao, Yehao Deng, Xun Xiao, Zhenyi Ni, Shuang Xu, Jinsong Huang\*, **Nature Photonics**,  (2020)
2. [Simplified Interconnection Structure based on C60/SnO2-x for All-Perovskite Tandem Solar Cells](https://www.nature.com/articles/s41560-020-0657-y.epdf?sharing_token=tL6jPDOVClzuaFtqkGJMPtRgN0jAjWel9jnR3ZoTv0O9UaVi8FNPDbm-ehMvNXexf_KMh_xkhodro__Kef0-Dwi4anexUDt4v_n9jirjyY_VVimVoCuD0Gb5RM7P3wWsQFVzi6iz4dQ7uieWlb5dL99Ik3rMEBIucO5ogidghJw%3D), Zhenhua Yu, Zhibin Yang, Zhenyi Ni, Yuchuan Shao, Bo Chen, Yuze Lin, Haotong Wei, Zhengshan J. Yu, Zachary Holman and Jinsong Huang\*, **Nature Energy,** (2020)
3. [Benign Ferroelastic Twin Boundaries in Halide Perovskites for Charge Carrier Transport and Recombination](https://www.nature.com/articles/s41467-020-16075-1), Xun Xiao, Wenhao Li, Yanjun Fang, Ye Liu, Yuchuan Shao, Shuang Yang, Jingjing Zhao, Xuezeng Dai, Rashid Zia, and Jinsong Huang\*, **Nature Communications**, 11, Article number: 2215 (2020)
4. [Resolving spatial and energetic distributions of trap states in metal halide perovskite solar cells](https://science.sciencemag.org/content/367/6484/1352.full?ijkey=M5k/..h79KPs2&keytype=ref&siteid=sci), Zhenyi Ni, Chunxiong Bao, Ye Liu, Qi Jiang, Wu-Qiang Wu, Shangshang Chen, Xuezeng Dai, Bo Chen, Barry Hartweg, Zhengshan Yu, Zachary Holman, Jinsong Huang\*, **Science**, Vol. 367, Issue 6484, pp. 1352-135. (2020)
5. ​[Templated Growth of Oriented Layered Hybrid Perovskites on Quasi-3D perovskites](https://www.nature.com/articles/s41467-019-13856-1), Jifei Wang, Shiqiang Luo, Yun Lin, Yifu Chen, Yehao Deng, Zhimin Li, Ke Meng, Gang Chen, Tiantian Huang, Si Xiao, Han Huang, Conghua Zhou, Liming Ding, Jun He, Jinsong Huang\* and Yongbo Yuan\*, **Nature Communications**, 11, 582 (2020)
6. ​[Efficient Sky-blue Perovskite Light-emitting Diodes via Potoluminescence Enhancement](https://www.nature.com/articles/s41467-019-13580-w), Qi Wang, Xiaoming Wang, Zhi Yang, Ninghao Zhou, Yehao Deng, Jingjing Zhao, Xun
Xiao, Peter Rudd, Andrew Moran, Yanfa Yan and Jinsong Huang\*, **Nature Communications,** published online
7. Tailoring Solvent Coordination for High-Speed, Room-Temperature Blading of Perovskite Photovoltaic Films, Yehao Deng, Charles H. Van Brackle, Xuezeng Dai, Jingjing Zhao, Bo Chen & Jinsong Huang\*, **Science Advances**, published online
8. [Enhancing electron diffusion length in narrow-bandgap perovskites for efficient monolithic perovskite tandem solar cells](https://www.nature.com/articles/s41467-019-12513-x.pdf), Zhibin Yang, Zhenhua Yu, Haotong Wei, Xun Xiao, Zhenyi Ni, Bo Chen, Yehao Deng, Severin N. Habisreutinger, Xihan Chen, Kang Wang, Jingjing Zhao, Peter N. Rudd, Joseph J. Berry, Matthew C. Beard & Jinsong Huang\*, **Nature Communication**, Vol. 10, Issue 4498, 2019.
9. [Stabilizing halide perovskite surfaces for solar cell operation with wide-bandgap lead oxysalts](http://science.sciencemag.org/cgi/content/full/365/6452/473?ijkey=3qPZX/TumY4.M&keytype=ref&siteid=sci), Shuang Yang, Shangshang Chen, Edoardo Mosconi, Yanjun Fang, Xun Xiao, Congcong Wang, Yu Zhou, Zhenhua Yu, Jingjing Zhao, Yongli Gao, Filippo De Angelis, Jinsong Huang†, **Science**, Vol. 365, Issue 6452, pp. 473-478, 2019.
10. Synthetic Control over Orientational Degeneracy of Spacer Cations Enhances Solar Cell Efficiency in Two-Dimensional Perovskites, Jun Hu, Iain Oswald, Samuel Stuard, Masrur Morshed Nahid, Ninghao Zhou, Olivia Williams, Zhenkun Guo, Liang Yan, Huamin Hu, Zheng Chen, Xun Xiao, Yun Lin, Zhibin Yang, Jinsong Huang, Andrew Moran, Harald Ade, James Neilson, and Wei You\*, **Nature Communications**, In press
11. Unveiling the Operation Mechanism of Layered Perovskite Solar Cells , Yun Lin, Yanjun Fang, Jingjing Zhao, Yuchuan Shao, Samuel J. Stuard, Masrur Morshed Nahid, Harald Ade, Qi Wang, Jeffrey E. Shield, Ninghao Zhou, Andrew M. Moran, and Jinsong Huang\*, **Nature Communications**, 10, 1008 (2019)
12. Bilateral alkylamine for suppressing charge recombination and improving stability in blade-coated perovskite solar cells, Wu-Qiang Wu, Zhibin Yang, Peter N. Rudd, Yuchuan Shao, Xuezeng Dai, Haotong Wei, Jingjing Zhao, Yanjun Fang, Qi Wang, Ye Liu, Yehao Deng, Xun Xiao, Yuanxiang Feng, Jinsong Huang\*, **Science Advances**, 2019, 5, eaav8925.
13. Halide Lead Perovskites for Ionization Radiation Detection, Haotong Wei, Jinsong Huang\*, Invited Review, **Nature Communications**, In press
14. Y. Fang, A. Armin, P. Meredith and **J. Huang\***, Accurate characterization of next generation thin film photodetectors, ***Nature Photonics***, 13,1 (2019)
15. B. Chen, T. Li, Q. Dong, E. Mosconi, J. Song, Z. Chen, Y. Deng, Y. Liu, S. Ducharme, A. Gruverman, F.D. Angelis, and J. Huang\*, Giant Electrostrictive Response in Lead Halide Perovskites” ***Nature Materials***, 2018, 17, 1020–1026.
16. Y. Lin, B. Chen, Y. Fang, J. Zhao, C. Bao, Z. Yu, Y. Deng, P. N. Rudd, Y. Yan, and J. Huang\*.Excess Charge-Carrier Induced Instability of Hybrid Perovskites, ***Nature Communications***, (2018)9:4981
17. Y. Deng, X. Zheng, Y. Bai, Q. Wang, J. Zhao and **J. Huang\***, Surfactant-controlled ink drying enables high-speed deposition of perovskite films for efficient photovoltaic modules, ***Nature Energy***, 2018, published online doi: 10.1038/s41560-018-0153-9
18. W.-Q. Wu, Q. Wang,  Y. Fang, Y. Shao, S. Tang, Y. Deng, H. Lu, Y. Liu, T. Li, Z. Yang, A. Gruverman, **J. Huang** \*, Molecular Doping Enabled Scalable Blading of Efficient Hole-Transport-Layer-free Perovskite Solar Cells, ***Nature Communications***, 9, 1625 (2018), doi:10.1038/s41467-018-04028-8
19. J. Zhao, Y. Deng, H. Wei, X. Zheng, Z. Yu, Y. Shao, J. E. Shield, **J. Huang** \*, [Strained Hybrid Perovskite Thin Films and Its Impact to Intrinsic Stability of Perovskite Solar Cells](http://advances.sciencemag.org/content/3/11/eaao5616.full), ***Science Advances,*** 17 Nov 2017: Vol. 3, no. 11, eaao5616, DOI: 10.1126/sciadv.aao5616
20. Z. Chen, Q. Dong, Y. Liu, C. Bao, Y. Fang, Y. Lin, S. Tang, Q. Wang, X. Xiao, Y. Bai, Y. Deng, and **J. Huang** \*, [Thin Single Crystal Perovskite Solar Cells to Harvest Below-bandgap Light Absorption](https://www.nature.com/articles/s41467-017-02039-5), ***Nature communications, 8***, 1890 (2017)
21. H. Wei, D. DeSantis, W. Wei, Y. Deng, D. Guo, T. J. Savenije, L. Cao and **J. Huang**\*, [Dopant Compensation in Alloyed CH3NH3PbBr3-xClx Perovskite Single Crystals for Gamma-ray Spectroscopy](https://www.nature.com/nmat/journal/vaop/ncurrent/full/nmat4927.html), ***Nature Materials***, volume 16, pages 826–833 (2017)
22. X. Zheng, B. Chen, J. Dai, Y. Fang, Y. Bai, Y. Lin, H. Wei, X. C. Zeng and **J. Huang** \*, [Defect Passivation using Quaternary Ammonium Halides for High Efficiency Perovskite Solar Cells](http://www.nature.com/articles/nenergy2017102), ***Nature Energy***, volume 2, Article number: 17102 (2017) ,doi:10.1038/nenergy.2017.102
23. M. He, B. Li,  X. Cui, B. Jiang,  Y. He, Y. Chen, D.O’Neil,Paul Szymanski, M. A. EI-Sayed, **J. Huang**, and Z. Lin\*, [Meniscus-Assisted Solution Printing of Large-Grained Perovskite Films for High-Efficiency Solar Cells](http://www.nature.com/articles/ncomms16045),  ***Nature Communications,*** volume 8, Article number: 16045 (2017).
24. W. Wei, Y. Zhang, Q. Xu, H. Wei, Y. Fang, Q. Wang, Y. Deng, T. Li, A. Gruverman, L. Cao and **J. Huang** \*, [Monolithic Integration of Hybrid Perovskite Single Crystals with Heterogenous Substrate for Highly Sensitive X-ray Imaging](http://www.nature.com/nphoton/journal/v11/n5/full/nphoton.2017.43.html), Nature Photonics, ***Nature Photonics***, volume 11, pages 315–321 (2017)
25. E. Strelcov, Q. Dong, T. Li, J. Chae, Y. Shao, Y. Deng, A. Gruveman\*, **J. Huang** \*, and A. Centrone\*, [Ferroelasticity Revealed in CH3NH3PbI3 Perovskites](http://advances.sciencemag.org/content/3/4/e1602165), Science Advances, ***Science Advances***, 14 Apr 2017:Vol. 3, no. 4, e1602165
26. Y. Fang, H. Wei, Q. Dong, and **J. Huang** \*,[Quantification of Re-absorption and Re-emission Processes to Determine Photon Recycling Efficiency in Perovskite Single Crystals](http://www.nature.com/articles/ncomms14417), ***Nature Communications,*** volume 8, Article number: 14417 (2017)
27. Y. Yuan, T. Li, Q.Wang, J. Xing, A. Gruverman and **J. Huang**\*,[Anomalous Photovoltaic Effect in Organic-Inorganic Hybrid Perovskite Solar Cells](http://advances.sciencemag.org/content/3/3/e1602164.full), Science Advances, ***Science Advances***, 17 Mar 2017:Vol. 3, no. 3, e1602164
28. **J. Huang** \*, Y. Shao, Y. Yuan, Y. Yan, Understanding the physical properties of hybrid perovskites for photovoltaic applications, ***Nature Reviews Materials,*** volume 2, Article number: 17042 (2017)
29. Y. Bai, Q. Dong, Y. Shao, Y. Deng, Q. Wang, L. Shen, D. Wang, W. Wei, and **J. Huang** \*, Enhancing Stability and Efficiency of Perovskite Solar Cells with Crosslinkable Silane Functionalized and Doped Fullerene, ***Nature Communications***,     7, Article number: 12806 (2016)
30. H.-H. Fang, S. Adjokatse, H. Wei, J. Yang, G. R. Blake, J. Huang, J. Even, M. Antonietta Loi\*, Ultra-high sensitivity of methylammonium-lead tribromide perovskite single crystals to environmental gases, ***Science Advances,***  27 Jul 2016: Vol. 2, no. 7, e1600534
31. H. Wei, Y. Fang, P. Mulligan, W. Chuirazzi, H. Fang, C. Wang, B. Ecker, Y. Gao, M. A. Loi, L. Cao, and J. Huang\*, *Sensitive X-Ray Detectors Made of Methylammonium-lead Tribromide Perovskite Single Crystals”,* ***Nature Photonics,*** 10, 333-339 (2016)
32. Y. Shao, Y. Yuan and J. Huang\*,Reducing Energetic Disorder of Electron Transport Layer to Increase Open-Circuit Voltage in Perovskite Solar Cells, ***Nature Energy*** *1, 15001* (2016)
33. Y. Fang, Q. Dong, Y. Shao, Y. Yuan, and J. Huang\*. Highly Narrow Band Perovskite Single Crystal Photodetectors with Tunable Spectral Response from Blue to Red, ***Nature Photonics***, 9(10), 679-686, (2015)
34. C. Bi, Q. Wang, Y. Shao, Y. Yuan, Z. Xiao and J. Huang\*, Nonwetting Surface Driven High Aspect Ratio Crystalline Grain Growth for Efficient Hybrid Perovskite Solar Cells, ***Nature Communications***, 6, 7747 (2015)
35. Q. Dong, Y. Fang, Y. Shao, P. Mulligan, J. Qiu, L. Cao, and J. Huang\*, Electron-Hole Diffusion Lengths > 175 μm in Solution Grown CH3NH3PbI3 Single Crystals, ***Science***, Vol. 347 no. 6225 pp. 967-970 (2015)
36. Z. Xiao, Y. Yuan, Y. Shao, Q. Wang, Q. Dong, C. Bi, P. Sharma, A. Gruverman and J. Huang\*. Giant Switchable Photovoltaic Effect in Organometal Trihalide Perovskite Devices. ***Nature Materials,***14, 193-198 (2015)
37. Y. Shao, Z. Xiao, C. Bi, Y. Yuan and J. Huang\*, Origin and Elimination of Photocurrent Hysteresis by Fullerene Passivation in CH3NH3PbI3 Planar Heterojunction Solar Cells, ***Nature Communications,*** *5, 5784 (2014)*
38. Y. Yuan, G. Giri, A. Ayzner, A. P. Zoombelt, S. C. B. Mannsfeld, J. Chen, J. Huang\* and Z. Bao\*, Ultra-high-mobility transparent organic thin film transistors grown by an off-centre spin-coating method, ***Nature Communications****, 5,3005* (2014)
39. F. Guo, B. Yang, Y. Yuan, Z. Xiao, Y. Bi, and J. Huang\*, Ultrasensitive Nanocomposite Ultraviolet Detector Enabled by Interfacial Trap-controlled Charge Injection, ***Nature Nanotechnology***, 7, 798-802 (2012)
40. Y. Yuan2, T. J. Reece, P. Sharma, S. Poddar, S. Ducharme, A. Gruverman, Y. Yang and J. Huang\*, Efficiency enhancement in organic solar cells with ferroelectric polymers, ***Nature Materials***, 10, 296 (2011)
41. G. Li, V. Shrotriya, J. Huang, Y. Yao, T. Moriarty, K. Emery and Y. Yang.\* High-efficiency solution processable polymer photovoltaic cells by self-organization of polymer blends. ***Nature Materials***. 4, 864 (2005)

**Full publication list:**

1. Suppressing Interfacial Charge Recombination in Electron Transport Layer-Free Perovskite Solar Cells with Efficiency Exceeding 21%, Wu-Qiang Wu,\* Jin-Feng Liao, Jun-Xing Zhong,  Yang-Fan Xu, Lianzhou Wang,\* and Jinsong Huang\*,Angewandte Chemie,  DOI: 10.1002/anie.202005680 and 10.1002/ange.202005680
2. Perovskite-Filled Membranes for Flexible and Large Area Direct Conversion X-ray Detector Arrays, Jingjing Zhao, Liang Zhao, Yehao Deng, Xun Xiao, Zhenyi Ni, Shuang Xu, Jinsong Huang\*, Nature Photonics,
3. Reduced Self-doping of Perovskites Induced by Short Annealing for Efficient Solar Modules, Yehao Deng, Zhenyi Ni, Axel F. Palmstrom, Jingjing Zhao, Shuang Xu, Charles H. Van Brackle, Xun Xiao, Kai Zhu, Jinsong Huang\*, Joule
4. [Simplified Interconnection Structure based on C60/SnO2-x for All-Perovskite Tandem Solar Cells](https://www.nature.com/articles/s41560-020-0657-y.epdf?sharing_token=tL6jPDOVClzuaFtqkGJMPtRgN0jAjWel9jnR3ZoTv0O9UaVi8FNPDbm-ehMvNXexf_KMh_xkhodro__Kef0-Dwi4anexUDt4v_n9jirjyY_VVimVoCuD0Gb5RM7P3wWsQFVzi6iz4dQ7uieWlb5dL99Ik3rMEBIucO5ogidghJw%3D), Zhenhua Yu, Zhibin Yang, Zhenyi Ni, Yuchuan Shao, Bo Chen, Yuze Lin, Haotong Wei, Zhengshan J. Yu, Zachary Holman and Jinsong Huang\*, Nature Energy
5. [Interfacial Molecular Doping of Metal Halide Perovskites for Highly Efficient Solar Cells](https://onlinelibrary.wiley.com/doi/abs/10.1002/adma.202001581), Qi Jiang, Zhenyi Ni, Guiying Xu, Yun Lin, Peter N. Rudd, Rongming Xue, Yaowen Li,\* Yongfang Li, Yongli Gao, and Jinsong Huang\*, Advanced Materials​
6. [Tunable perovskite-based photodetectors in optical sensing](https://266bda81-1a56-43ab-81f6-54913689d68c.filesusr.com/ugd/9b644c_e03beaa3a626404aac1255df370422fb.pdf), Joshua Wolanyk, Xun Xiao, Michael Fralaide, Nicholas J. Lauersdorf, Rajiv Kaudal, Erik Dykstra, Jinsong Huang\*, Joseph Shinar\*, and Ruth Shinar\*, Sensors & Actuators: B. Chemical. <https://doi.org/10.1016/j.snb.2020.128462>
7. [Blading Phase-Pure Formamidinium-Alloyed Perovskites for High-Efficiency Solar Cells with Low Photovoltage Deficit and Improved Stability](https://266bda81-1a56-43ab-81f6-54913689d68c.filesusr.com/ugd/6b2292_88b1d63f0fb3422eb3ea634fd3950c4e.pdf), Wu-Qiang Wu\*, Peter N. Rudd, Qi Wang, Zhibin Yang and  Jinsong Huang\*, Advanced Materials, <https://doi.org/10.1002/adma.202000995>
8. ​[Synergistic Cascade Carrier Extraction via Dual Interfacial Positioning of Ambipolar Black Phosphorene for High-Efficiency Perovskite Solar Cells](https://266bda81-1a56-43ab-81f6-54913689d68c.filesusr.com/ugd/6b2292_ae5b0518a2114449a80113fcf9427e2c.pdf), Meng Zhang, Meidan Ye, Wenlong Wang, Chunyuan Ma, Shun Wang, Qiliang Liu, Tim Lian, Jinsong Huang\* and Zhiqun Lin\*, Advanced Materials, <https://doi.org/10.1002/adma.202000999>
9. ​[Benign Ferroelastic Twin Boundaries in Halide Perovskites for Charge Carrier Transport and Recombination](https://www.nature.com/articles/s41467-020-16075-1), Xun Xiao, Wenhao Li, Yanjun Fang, Ye Liu, Yuchuan Shao, Shuang Yang, Jingjing Zhao, Xuezeng Dai, Rashid Zia, and Jinsong Huang\*, Nature Communications, 11, Article number: 2215 (2020)
10. [Resolving spatial and energetic distributions of trap states in metal halide perovskite solar cells](https://science.sciencemag.org/content/367/6484/1352.full?ijkey=M5k/..h79KPs2&keytype=ref&siteid=sci), Zhenyi Ni, Chunxiong Bao, Ye Liu, Qi Jiang, Wu-Qiang Wu, Shangshang Chen, Xuezeng Dai, Bo Chen, Barry Hartweg, Zhengshan Yu, Zachary Holman, Jinsong Huang\*, Science, Vol. 367, Issue 6484, pp. 1352-135.
11. ​[Is formamidinium (FA) always more stable than methylammonium (MA)?](https://266bda81-1a56-43ab-81f6-54913689d68c.filesusr.com/ugd/9b644c_9ae721f4ebfe4b38bc57e491a57c4adb.pdf) Wei, Haotong; Chen, Shangshang; Zhao, Jingjing; Yu, Zhenhua; Huang, Jinsong\*, Chemistry of Materials, 2020, 32, 6, 2501-2507​
12. [Reducing Surface Halide Deficiency for Efficient and Stable Iodide-Based Perovskite Solar Cells](https://pubs.acs.org/doi/pdf/10.1021/jacs.9b13418), Wu, Wu-Qiang; Rudd, Peter; Ni, Zhenyi; Van Brackle, Charles; Wei, Haotong; Wang, Qi; Ecker, Benjamin; Gao, Yongli; Huang, Jinsong\*,  Journal of the American Chemical Society ,2020, 142, 8, 3989-3996
13. ​[Templated Growth of Oriented Layered Hybrid Perovskites on Quasi-3D perovskites](https://www.nature.com/articles/s41467-019-13856-1), Jifei Wang, Shiqiang Luo, Yun Lin, Yifu Chen, Yehao Deng, Zhimin Li, Ke Meng, Gang Chen, Tiantian Huang, Si Xiao, Han Huang, Conghua Zhou, Liming Ding, Jun He, Jinsong Huang\* and Yongbo Yuan\*, Nature Communications, 11, 582 (2020)
14. ​[Tailoring carrier dynamics in perovskite solar cells via precise dimension and architecture control and interfacial positioning of plasmonic nanoparticles](https://pubs.rsc.org/en/content/articlehtml/2020/ee/c9ee03937f), Xun Cui,  Yihuang Chen,  Meng Zhang,  Yeu Wei Harn,  Jiabin Qi,  Likun Gao,  Zhong Lin Wang,  Jinsong Huang, Yingkui Yang  \* and  Zhiqun Lin \*, Energy and Environmental Science, DOI: [10.1039/C9EE03937F](https://www.researchgate.net/deref/http%3A//dx.doi.org/10.1039/C9EE03937F)​
15. [Comparative studies of optoelectrical properties of prominent PV materials: Halide Perovskite, CdTe, and GaAs​](https://266bda81-1a56-43ab-81f6-54913689d68c.filesusr.com/ugd/9b644c_8eacf608c126477e8d49f109779a2e44.pdf), Fan Zhang, Jose F. Castaneda, Shangshang Chen, Wuqiang Wu, Michael J. DiNezza, Maxwell Lassise, Wanyi Nie, Aditya Mohite, Yucheng Liu, Shengzhong Liu, Daniel Friedman, Henan Liu, Qiong Chen, Yong-Hang Zhang, Jinsong Huang, and Yong Zhang\*,  Materials Today (2020)
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**Books and Book Chapters**

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3. Hui Huang and Jinsong Huang, “*Organic and Hybrid Solar Cells*”. Book published by Springer; 2014 edition (November 25, 2014) ISBN-13: 978-3319108544 ISBN-10: 3319108549
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**PATENTS**

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1. Polymer electronic devices by all-solution process, US8044389B2, granted in 2011, expire 2028-08-06, Yang Yang, Jinsong Huang,,
2. Photovoltaic device, **US8796677B2**, , (Granted in 2014, effective until 2032-12-06), Jinsong Huang, Yongbo Yuan, Bin Yang,
3. Floating-gate transistor photodetector with light absorbing layer, US9331293B2, Granted in 2016, effective until 2034-09-03), Jinsong Huang, Yongbo Yuan
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5. Method for single crystal growth of photovoltaic perovskite material and devices, US9812660B2, Granted in 2017, Jinsong Huang, Qingfeng Dong,
6. Photovoltaic perovskite material and method of fabrication, **US9391287B1** (Granted in 2017, effective until 2034-12-19), [Jinsong Huang](https://patents.google.com/?inventor=Jinsong+Huang), [Qingfeng Dong](https://patents.google.com/?inventor=Qingfeng+Dong), [Rui Dong](https://patents.google.com/?inventor=Rui+Dong), [Yuchuan Shao](https://patents.google.com/patent/US9391287?oq=jinsong+huang%2c+nebraska), [Cheng Bi](https://patents.google.com/?inventor=Cheng+Bi), [Qi Wang](https://patents.google.com/patent/US9391287?oq=jinsong+huang%2c+nebraska), [Zhengguo Xiao](https://patents.google.com/?inventor=Zhengguo+Xiao),
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13. Narrowband nanocomposite photodetector, **US20170077429A1**, (Grant in 2020, effective until 2034-04-16), Jinsong Huang, Fawen Guo, Liang Shen
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**Pending applications**

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2. Molecular doping enabled scalable blading of efficient hole transport layer-free perovskite solar cells, US201862661891P, Jinsong Huang, Wuqiang Wu, filed in 2018,
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**Unpublished**

1. Lead Sequestration in Perovskite Solar Modules with Abundant, Low-Cost and Stable Cation Exchange Resins, Jinsong Huang, Shangshang Chen
2. Stabilizing Perovskite Solar Cells by Polishing-off the Defective Top Surface Layers/ Removing Surface Defective Layer with Adhesive Tape for Enhanced Efficiency and Stability in Perovskite Solar Cells, Yuze Lin, Ye Liu, Shangshang Chen,
3. Perovskite/silicon tandem photovoltaic device with a rough interface, Jinsong Huang, Bo Chen, Jason Yu, Zak Holman
4. Flexible X-ray Detectors Composing of Hybrid Perovskite Filled Membranes and Methods of Fabrication and Integration into Readout Circuit Board, Jinsong Huang, JingJing Zhao
5. PSCs with near-infrared sensitive layers, Jinsong Huang, Shangshang Chen, Yuze Lin
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7. Conversion of Perovskite Surfaces to Lead Oxysalts for Enhanced Solar Cell Stability , Jinsong Huang, Shuang Yang
8. Jinsong Huang, Cheng Bi and Qi Wang, New hole transport materials for perovskite solar cells, US patent filed on 2/11/15
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**GRANTSMANSHIP**

1. Interaction of Ionizing Radiation with Matter (IIRM) University Research Alliance (URA) DTRA: Defense Threat Reduction Agency through PSU: Penn State University, co-PI Jinsong Huang, 7/1/01/2020–6/30/2025, Total $25 Million, Huang share: $1,375,000
2. Fabrication of Perovskite Solar Modules, Navy SBIR, PI Yehao Deng and co-PI Jinsong Huang, 7/8/2020- 6/30/2021, $240,000,
3. Scalable Manufacturing of Efficient Perovskite/Silicon Tandem Modules, DOE: Department of Energy, Jinsong Huang, PI, co-PI Zak Holman, and Joey Luther, 1.00 Summer Months, 8/01/2019 – 07/30/2022, $1,875,000
4. Collaborative Research: Surface analytical investigation on stability of organometal trihalide perovskite, PI: Yongli Gao, co-PI Jinsong Huang, National Science Foundation, 07/01/2019 – 06/30/2022, $608,900
5. The Consortium for Enabling Technologies & Innovation, The Department of Energy’s National Nuclear Security Administration (DOE/NNSA), PI Anna Erickson with ~30 co-PIs, $25,000,000, Huang share $625,000, 4/1/2019-3/31/2024
6. Solar Panel for Prompt Detection and Identification of Nuclear Detonations, PI Raymond Cao, co-PIs Jinsong Huang, and John McClory, $1,050,000, 08/01/2018 – 07/31/2021
7. Center for Hybrid Organic-Inorganic Semiconductors for Energy (CHOISE) EFRC, $11,750,000, Director Matt Beard, Associate Director Jinsong Huang, and 16 co-PI, 8/1/2018-7/30/2022
8. “Radiation detectors” $135,000, a contract from a company, 10/1/2018-9/30/2019
9. DURIP: Carrier Dynamics in Perovskite Energy Harvesters,
$373,100.00, PI Jinsong Huang, 10/1/2018-9/30/2019
10. ROI: Center of Hybrid Materials Enabled Electronic Technologies (CH-MEET), Total and Direct $2,100,000, PI: Jinsong Huang, and six other co-PIs 07/01/2017-06/30/2020
11. “Manufacturing of Solar Cells”, Energy Materials Corporation (Prime: Department of Energy (DOE)), Total $400,000
12. “Understanding Grain-Morphology-Dependent Grain Degradation for Improved Stability in Perovskite Solar Cells”, Office of Naval Research (ONR), Total $480,000, 09/01/2017-08/31/2020
13. “ARI-MA: Trap-Triggered Organic Field Effect Transistor as Low-Cost, Uncooled, Highly Sensitive Solid-State Photodetectors for Radiation Sensing”, Department of Homeland Security (DHS), Total: $750,000, (10/1/2014-09/30/2018) no-cost extension
14. “Collaborative Research: Perovskite Photodetectors with Microcavity Organic Light Emitting Diodes for Sensing Applications” National Science Foundation, Total $186,428, 6/1/2016-5/30/2019, (PI J. Huang). no-cost extension
15. “Trap Engineering for High Efficiency Planar Heterojunction Hybrid Perovskite Solar Cells” $450,000, Direct $317,378, 5/15/2016-5/14/2019, AFOSR (PI J. Huang). no-cost extension
16. “Perovskite Solar Cells”, $150,000, A research contract from EMC, 10/1/2015-9/30/2019, 0 (PI J. Huang) no-cost extension
17. “Understanding the Grain Formation in Doctor-Bladed Perovskite Films for Scalable Fabrication of Efficient Hybrid Solar Cells” Office of Naval Research, Total $480,000, 7/1/2015/-6/30/2018, (PI J. Huang with co-PI J. Shield). no-cost extension
18. “Combined Macroscopic and Nanoscopic Studies of the Photovoltaic Behavior of Organic Perovskite Solar Cells” National Science Foundation, Total $480,000, 7/1/2015/-6/30/2018, 0.5 month, (PI J. Huang with co-PI A. Gruverman). no-cost extension
19. “RII Track-2 FEC: Low-Cost, Efficient Next-Generation Solar Cells for the Coming Clean Energy Revolution” National Science Foundation, Total $4,000,000, 10/1/2015-/7/30/2019, (PI N. P Padture with co-PI J. Huang and 8 other senior personals)
20. “Materials Research Science and Engineering Center: Polarization and Spin Phenomena in Nanoferroic Structures”, National Science Foundation, $9,500,000, 11/1/2014-10/30/2020 (PI: Evgeny Tsymbal  with 16 co-PIs, including J. Huang)
21. “Perovskite/Silicon Tandem Solar Cell”, Department of Energy, Total $1,350,000, 10/1/2014-9/30/18 (PI J. Huang with co-PI Zak Holman) no-cost extension
22. “High Efficiency Low-cost Nanocomposite for Radiation Detection Enabled by Charge Triggered Secondary Charge Injection”, Defense Threat Reduction Agency, Total $1,750,000, (1/1/2014-9/30/2019 (PI J. Huang with co-PI L. Cao)
23. “Increasing charge separation and extraction by ferroelectric polymer induced persisting electric-field for efficient organic solar cell”, National Science Foundation CAREER, Total $400,000, 7/1/2013-6/30/2018, (PI. J. Huang) no-cost extension
24. “STTR: Scalable Fabrication of Efficient Flexible Perovskite”, Energy Materials Corporation (Prime: Department of Defense (DOD)), Total $90,000 (10/1/2017-3/31/2018),
25. “Design and Development of High-Efficiency, Low-Cost Perovskite Solar Cells” Nebraska Center for Energy Science and Research, Total and Direct $150,000, 1/1/2015-12/31/2016 (PI J. Huang with X. Zeng and Y. Lu)
26. “Organic PV Technology Brief” Electric Power Research Inst (EPRI), Total $29,614, 7/1/2015-8/30/2015, 0 month, University of Nebraska-Lincoln (PI J. Huang)
27. Supplement: Research Experience for Undergraduate (REU) Amount: $6000 (2013)
28. “Room-temperature Operation Single-Photon Detectors Based on Nanoparticle Super-gated Organic Field Effect Transistors”, National Science Foundation, Total $300,000, Direct $230,937 (No cost share, all contributed to Dr. Huang) 4/15/2013-3/31/2016, (PI. J. Huang)
29. Supplement: Research Experience for Undergraduate (REU) Amount: $5000 (2015)
30. “Scalable and Facile Production of Conformal Graphene as Low-Cost Transparent Electrodes for Organic Photovoltaics” Nebraska Center for Energy Science Research, Direct $190,000 (No cost share, $85,000 to Dr. Huang) 1/1/2014 - 12/31/2015, (PI. J. Huang)
31. “A Novel High Quantum Efficiency Mechanism in Organic Photodetector for Sensing the Radiation from Weapons of Mass Destruction”, DTRA Young Investigator Award, Total $500,000, Direct $392,287 (No cost share, all contributed to Dr. Huang) 10/1/2010 - 2/15/2016, (PI. J. Huang)
32. “Developing Efficient Pyrite Photovoltaic Cells” Nebraska Center for Energy Science Research, Direct $150,000 (No cost share, $85,000 contributed to Dr. Huang), 1/1/2013-12/31/2014, (PI J. Huang with Co-PIs N. Ianno)
33. “Extremely Sensitive Solid-State Ultraviolet Photodetector by Fabricated Low-Cost Solution Process”, Office of Naval Research, Total $628,183, Direct $469,899 (No cost share, all contributed to Dr. Huang) 4/1/2012-4/30/2016 (PI. J. Huang)
34. “Tailoring the Energy Levels of Donor and Acceptor in Organic Photovoltaics for Increased Photovoltage with Ferroelectric Dipole Layer”, National Science Foundation, Total $416,000, Direct $301,874, (No cost share, $276,000 contributed to Dr. Huang), 6/1/2012-5/31/2016 (PI. J. Huang and Co-PI S. Ducharme)
35. “Ferroelectric-enhanced Organic Electronics”, NSF EPSCoR Trans-disciplinary, Multi-Institutional Research Clusters Program, Total and Direct $300,000 (Cost share amount $75,000, $81,750 contributed to Dr. Huang), 5/1/2012-12/31/2013, (PI S. Ducharme with Co-PIs J. Huang, A. Gruverman, C. L. Cheung, and T. J. Reece)
36. “High-Performance Organic Solar Cells” Nebraska Center for Energy Science Research, Total and Direct $140,000 (No cost share, $50,000 contributed to Dr. Huang), 1/1/2012-12/31/2013, (PI S. Ducharme with Co-PIs J. Huang, K. Cole)
37. “Room-Temperature Ferromagnetic Polymers with Nanoscale Phase Separation and Spin Transport in the Nanodomains”, NSF MRSEC Seeds, Total $76,744 (No cost share, all contributed to Dr. Huang), 5/1/2010 - 4/30/2012, (PI J. Huang)
38. “Solution printed OTFT-driven infrared detectors”, Air Force Office of Scientific Research, Total $100,000 (No cost share, $30,000 contributed to Dr. Huang), 2/1/2012-10/31/2012, (Agiltron PI S. Jae Ryu with UNL PI J. Huang,)
39. “Printed Transparent Backplane for Displays and Spatial Light Modulators Based on Organic Thin Film Transistors”, DARPA STTR Phase II, Total $750,000 (No cost share, $149,949 contributed to Dr. Huang) 6/23/2010 – 4/30/2012, (Agiltron PI Jae Ryu with UNL PI J. Huang and Stanford PI Z. Bao)
40. “Nanoantenna-Enhanced Photo Detector (NEOPD)”, Office of Naval Research (ONR) SBIR, Total $150,000 ($45,000 contributed to Dr. Huang), 11/15/2011-4/1/2012, (Hitron PI H. Zhang with UNL PI J. Huang)
41. “Nano-particle Loaded Polymer X-Ray Detector”, Office of the Secretary of Defense (OSD) SBIR, Total $150,000 ($45,000 contributed to Dr. Huang), 1/1/2012-6/30/2012, (Agiltron PI A. Greenwald with UNL PI J. Huang)
42. “Non-restricted research fund support from Industry”, $40,000 (PI J. Huang)
43. “Bridge organic/metal interface for high performance organic electronic devices”, Nebraska EPSCoR FIRST Award, Total $20,000, 4/1/2010 - 3/31/2011 (PI J. Huang)
44. “Edgerton Innovation Award” $22,500, (PI. J. Huang)
45. “Formation of Tandem Plastic Solar Cells by Low-cost Lamination” UNL Layman Award, 6/1/2010-5/31/2011, (PI. J. Huang), Total and Direct $10,000,
46. “Proposal Revision Award”, Total and Direct $50,000, PI Y. Lu and with co-PIs J. Huang, S. Ducharme, X. Zeng. Huang’s share $12,500, 2014
47. “Development of High Efficiency, Low-Cost Thin Film Solar Cell Based on Naturally Abundant and Non-toxic Materials”, Nebraska Research Initiative, Total and Direct $100,000 (No cost share, $70,000 contributed to Dr. Huang), 7/1/2012-6/30/2014 (PI. J. Huang and Co-PIs C. Exstrom and S. Darveau)
48. “Printed transparent backplane for displays and spatial light modulators based on organic thin film transistors”, DARPA, STTR, Phase I, $98,990, 09/05/2008 - 08/30/2009
49. “Printed transparent backplane for displays and spatial light modulators based on organic thin film transistors”, DARPA, STTR, Phase II, $749,922, 06/23/2010 - 05/31/2012
50. “Advanced nanocomposite scintillator for gamma ray detection” DTRA, SBIR, Phase I, $99,951, 05/08/2008 - 11/07/2008
51. “Advanced nanocomposite scintillator for gamma ray detection” DTRA, SBIR, Phase II, $749,227, 10/28/2009 - 10/27/2011,
52. “Single Wall Carbon Nanotube Printed Integrated Circuits”, DARPA SBIR, Phase I, $100,000, 03/17/2009 - 11/09/2009
53. “High energy efficient polymer light-emitting diodes by *p-i-n* structure for solid state lighting”, NSF SBIR IIP, Phase I, $100,000, 2008

**INVITED LECTURES AND KEYNOTE SPEECHES**

1. Progress in Understanding Perovskite Materials and Manufacturing of Efficient and Stable Solar Cells and Modules , University of Massachusetts Amherst, Feb. 27, 2020
2. Understand the Stability Limitation of Perovskites and Strategies to Enhance the Stability, MRS fall 2019, Boston, Dec. 6th, 2019
3. High throughput Fabrication of Efficient Perovskite Solar Modules and Tandem Solar Cells, MRS fall 2019, Boston, Dec. 4th, 2019
4. Scalable fabrication of perovskite modules, First Solar, Nov. 19, 2019
5. Photodetectors for radiation sensing, seminar, Georgia Institute of Technology, Nov.5, 2019
6. Multiple Facets Stability Issues of Metal Halide Perovskites and Mitigation Strategies ,PSCO 2019 Lausanne, Switzerland from 30 September to 2 October 2019
7. Growth of Perovskite Single Crystal and Defect Characterization, CHOISE meeting, Duke University, Sep 30, 2019
8. HALIDE PEROVSKITES FOR SENSITIVE, FAST WEAK LIGHT DETECTION, 2019 IEEE Research and Applications of Photonics in Defense Conference (RAPID), 8/19/19, Florida, USA
9. Progress in understanding perovskite materials and manufacturing of efficient and stable solar cells and modules, The 2019 Nankai International Symposium on Solar Energy Conversion, June 18, Tianjin, China
10. HALIDE PEROVSKITES FOR SENSITIVE, FAST WEAK LIGHT DETECTION, 2019 IEEE Research and Applications of Photonics in Defense Conference (RAPID), Aug 19-21, 2019, Miramar Beach FL, USA
11. Defect Passivation in Halide Perovskites, International Conference on Hybrid and Organic Photovoltaics , Roma, Italy, from 2019 May 12th to 2019 May 15th
12. Perovskite materials for radiation detectors, OSU Material week, May 8th, 2019
13. Beyond Solar Cells—Perovskite Radiation Detectors and Light Emitting Diodes, April 22, 2019, MRS spring 2019
14. Unique properties of halide perovskites for applications beyond solar cells, Seminar in NCSU, Nov. 17, 2018
15. Advance in Understanding Defects and Passivation in Perovskite Materials and Devices, MRS fall 2018, November 26, 2018
16. “Halide perovskites: Understanding and Technology Development” Seminar in Duke University, Oct 31, 2018,
17. Perovskite materials and technology, fundamentals and upscaling, Seminar in Florida State University, Oct 17, 2018
18. “Halide perovskites: what do we know and where they will go?” Molecular Foundry Review Meeting, Invited nonuser presentation, Aug.15-16, 2018
19. “Layered perovskites for solar cells, is it really good?”, Institute of Chemistry, Chinese Academy of Science, July 10, 2018
20. “Perovskite solar cells, from lab cells to modules”, National Center for Nanoscience and Technology, China, July 7, 2018
21. “Halide Perovskites, Detectors and Solar Cells”, The 7th Sungkyun International Solar Forum 2018, June 27-29, SKKU, Seoul, Korea
22. “Perovskite materials and devices, 2nd WUT International Symposium on Advanced Optoelectronic Materials and Devices (June 23-25, 2018)
23. “Perovskite solar cells, from lab cells to modules”, Central South University, China, June 22, 2018
24. "Perovskite Solar Cells: From Fundamental Understanding to Commercialization", Gordon Research Conference, June 17-22, Hong Kong, CN, 2018
25. “Scalable fabrication of perovskite modules”, South China University of Technology, June 20th, 2018
26. “Scalable fabrication of perovskite modules”, Shanghai Jiaotong University, June 8th, 2018
27. Advance in Understanding Perovskite Materials for Solar Cell Applications, ACS-China, Hangzhou, China May 5-8,2018
28. Perovskite Materials and Solar Cells, Seminar in Suzhou University, Su Zhou, China, May 4, 2018
29. Halide Perovskites –Solar Energy, Detector Development and Fundamental Understanding, Seminar at University of Tennessee, Knoxville, TN, 4/24/2018
30. Matching the Perovskite Subcell with Silicon Cells for Efficient Tandem Solar Cells, MRS Spring 2018, Phoenix, AZ, April 2018
31. Stability enhancement of perovskite solar cells, MRS Spring 2018, Phoenix, AZ, April 2018
32. Halide Perovskites –Promising Materials for Radiation Detection beyond Solar, Seminar University of Michigan**,** Oct. 6, 2017
33. Understanding the properties of perovskite for high performance devices, Sep 18-20, PCSO 2017 Oxford, UK
34. Understanding the upper efficiency limit and stability in perovskite solar cells , SPIE Organic Photonics + Electronics , 6 - 10 August 2017, San Diego, California United States , Organic, Hybrid, and Perovskite Photovoltaics XVIII
35. Pushing the detection limit of organic and hybrid perovskites detectors to light and x-ray , SPIE Organic Photonics + Electronics, San Diego, California United States, Organic Sensors and Bioelectronics X , 6 August 2017
36. Continuing to explore the unusual properties of hybrid perovskites,” Meeting: SPIE Organic Photonics + Electronics, 6 - 10 August 2017 , San Diego, California United States, Organic Light Emitting Materials and Devices XXI
37. Understanding Fundamental Properties of Hybrid Perovskites, Telluride Workshop on Solar Solutions to Energy and Environmental Problems, 2017 Telluride, Colorado,
38. How Much Do We Know about Perovskite, April 17-20 MRS Spring 2017, Symposium: ES1: Perovskite Solar Cells—Towards Commercialization, April 18, Phoenix, Arizona, USA
39. Surfaces and Grain Boundaries in Perovskites-Ion Migration and Stability, MRS Fall 2016, 11/27-12/2, Boston, MA
40. Efficiency and Stability of Perovskite Solar Cells,11th International Conference on Electroluminescence and Organic Electronics which is scheduled to be held in Raleigh, NC, USA on October 2-Oct 6, 2016.
41. Enhancing the Moisture Stability of Perovskite Solar Cells with Modified Electron Transport Layers, September 26th –28th 2016 Genova, Italy. the second annual conference on Perovskite Solar Cells and Optoelectronics (PSCO-16),
42. “Perovskite based high performance photodetectors and radiation detectors,” SPIE Organic Photonics + Electronics , 28 August - 1 September 2016 , San Diego, California United States
43. Achieving high performance Perovskite solar cells: materials, morphology, interface, and energy disorder, SPIE Nanoscience + Engineering , 28 August - 1 September 2016, San Diego, California United States
44. Achieving high performance Perovskite solar cells: materials, morphology, interface, and energy disorder, SPIE Nanoscience + Engineering , 28 August - 1 September 2016, San Diego, California United States
45. August 21-25, ACS meeting Symposium of “Polymer and Polymer Hybrid Electronics and Biosensors” Philadelphia, Pennsylvania. 2D Materials: Graphene and Beyond, and Their Device Applications,
46. The Birth and Death of Perovskite Grains, Office of Naval Research, Workshop on Perovskite Solar Cell Stability , University of Washington, Kane Hall Room 110, August 11 & 12, 2016
47. Hybrid Perovskite Solar Cell Progress-Materials and Device Physics, 2016 Hybrid Electronic & Photonic Materials and Phenomena" Gordon Research Conference. June 19 - 24, 2016 Hong Kong
48. Why Do Hybrid Perovskites Work So Well For Solar Cells and Applications Beyond?, June 11-14, 2016, Nature Conference on Materials for Energy 2016, in Wuhan, China
49. Ion Migration in Hybrid Perovskite Materials and Influence to Photovoltaic,May 25 (Wed) to May 27 (Fri), 2016, The 5th Sungkyun International Solar Forum 2016, Seoul, Korea
50. May 23, 2016, Brown workshop Microstructural Evolution in Organic-Inorganic Hybrid Perovskite Thin Films
51. “Grain Morphology Engineering in Perovskite Solar Cells for High Efficiency and Long Stability” March 28-April 1, 2016, MRS, Phoenix,
52. Understanding of perovskite properties using single crystals, MARCH 17, 2016 BALTIMORE, APS meeting,
53. Perovskite single crystals and application, March 13-16, 2016 San Diego, Invited talk at the Applications of Polymer Surfaces & Interfaces Symposium, ACS National Meeting in San Diego, March 13-17, 2016
54. “Understanding of perovskite materials”, Feb. 26, 2016, Seminar at University of Houston
55. “Perovskite solar cells, status and the future,” Feb. 15, 2016, Seminar at NCSU
56. “Perovskite electronics”, Feb 11, 2016, Seminar at University of North Carolina Chapel Hill
57. “*Perovskite materials solar cells*,” Seminar at Huazhong Science and Technology University, Wuhan, China, Dec. 23th, 2015.
58. “*What do we know about perovskite,*” Department seminar at South Central University, Dec 22, 2015
59. “*What do we know about perovskite,*” Department seminar at Beijing JiaoTong University, Dec. 18th, 2015
60. “*Influence of Low Cost Solution Process on Electronic Properties and Device Performances of Organic and Hybrid Perovskite Materials* ", Symposium BB, MRS2015 Fall meeting (November 29 - December 4, 2015, Boston, Massachusetts, USA
61. “*Hybrid Perovskite Single Crystals- A New Platform for High Performance Devices and Fundamental Understanding*” Symposium NN, MRS2015 Fall meeting (November 29 - December 4, 2015 Boston, Massachusetts, USA
62. “*Tutorial NN: New Developments in Perovskite Solar Cells—From Fundamentals to Applications*” MRS2015 Fall meeting MRS invited Tutorial talk
63. “*Why Perovskites Work So Well for Photovoltaic Cells*” Department seminar at University of Florida, Oct. 26, 2015
64. “*Material Morphology and Defects in Hybrid Perovskite Solar Cells*” Department seminar at University of Wisconsin-Madison, Oct. 15, 2015
65. “*Morphology dependent carrier diffusion length in hybrid perovskite materials*”, The 26th. International Conference on Amorphous and Nanocrystalline Semiconductors, Aachen, Germany Sep 13.-18th, 2015
66. “*Perovskite Solar Cell Progress at UNL*”, Invited Talk at Brown University, Sep 11, 2015
67. “*High grain, low noise organic and nanoelectronic photodetectors*”, SPIE Optics + Photonics 2015, San Diego, Aug. 13, 2015
68. *8:35 am: Sensitive organometal trihalide perovskite photodetectors with high gain and low noise for sub pW/cm2 light detection at room temperature, Jinsong Huang, Yanjun Fang, Univ. of Nebraska-Lincoln (USA) . . . . . . . [9568-217]* SPIE Optics + Photonics 2015, San Diego, Aug. 10, 2015
69. *“Hybrid Perovskites Material for Energy Harvesting and Sensing”* UNL Materials for Energy Systems Symposium, July 21, 2015
70. “*Engineering Crystalline Grain of Hybrid Perovskites for High Efficiency Solar Cells and Beyond*”, The International Photonics and OptoElectronics Meetings 2015 (POEM 2015), June 16th to 19th, 2015 at Wuhan China.
71. “*Ion Transport in Hybrid Organic-Inorganic Hybrid Perovskite*”,  the 20th international conference on Solid State Ionics (SSI-20), Keystone, Colorado, USA from June 17th, 2015
72. “*Hybrid Perovskite Solar Cells-Material Process, Device, and Understanding of the Unique Properties*”, National Academies, Condensed Matter and Materials Research Committee Meeting, June 16th,  2015, Washington DC
73. “*Progress of pervskite materials and understanding*” Department seminar at Shenzhen University, June 8th, 2015
74. “*Perovskite solar cell research status*” Department seminar at South Central University, June 1st, 2015
75. “*Understand the fundamental electronic processes in hybrid perovskite solar cells* ” Seminar at Huazhong Science and Technology University, Wuhan, China, June 1st, 2015.
76. *“Diffusion Length in Organometal Trihalide Perovskites”,* Seminar in the Department of Physics, Peking University, China, May 27, 2015
77. “*Understanding Fundamental Properties of Organometal Trihalide Perovskites for Solar Cell Application*”, Department Seminar in the Department of Material Science and Engineering, NCSU, Feb 19, 2015
78. “*Scaling of Diffusion Length in Organometal Trihalide Perovskites for Solar Cell Application and Beyond*”, Department Seminar in the Department of Material Science and Engineering, Purdue University, Feb. 12, 2015
79. “*Perovskite Solar Cells Progress*”, Department Seminar in the Department of Material Science and Engineering, UCLA, Oct. 31st, 2014
80. “*Charge Traps Enabled High Gain Photodetectors*”, Department Seminar in the Department of Mechanical Engineering, Ohio State University, Sep 3rd, 2014
81. “*Highly efficient perovskite solar cells by a low temperature solution process and its working principle*”, Aug. 20, 2014 SPIE Optics and Photonics, San Diego, CA, USA
82. “*Charge trap engineering for highly sensitive photodetectors*” Aug. 19, 2014 SPIE Optics and Photonics, San Diego, CA, USA
83. “*Improving Perovskite Crystal Quality for High Device Performance*” **,** E-MRS, May 27, 2014, Lille, France
84. “*Improving Perovskite Crystal Quality for High Device Performance and It Operation Principle*” , Seminar in Central South University, Changsha, Hunan, China, May 13,2014
85. “*The development of organic ferroelectric photovoltaic*” Seminar in Institute of Semiconductor, Chinese Academy of Science, Beijing, China, May 5, 2014
86. “*Ferroelectric polymer solar cells*”, University of North Carolina at Chapel Hill, March 24, 2014
87. “*Universal formation of compositionally graded bulk heterojunction for efficiency enhancement in organic photovoltaics*” 247th ACS National Meeting and Exposition, March 16-20, 2014, Dallas, Texas
88. “*High Gain, Low Noise, Large Linear Dynamic Range UV Hybrid Photodetectors*” 50th Annual AOC International Symposium & Convention. 29 October 2013 Washington, DC
89. “*High gain, low noise and low cost nanocomposite photodetectors*”, SPIE Optics & Photonics, San Diego, California, United States, 25 - 29 August 2013
90. “*Organic bulk ferroelectric photovoltaic*” International Symposium on Integrated Functionalities ISIF 2013, July 30, Dallas, TX 2013
91. “*Organic Ferroelectronics*”, Invited seminar in Institute of Semiconductor, Chinese Academy of Sciences, Beijing, China June 25, 2013
92. “*Application of Ferroelectrics in Photovoltaic Application*”, Honorable speaker for the Polymer Science Lecture Series, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, June 24, 2013 Changchun, China
93. “*Organic Electronics*” Invited department seminar in South Central University, Changsha, China, May 28, 2013
94. “*Organic ferroelectric photovoltaics*” Invited seminar in Xiangtan, Xiangtan, China, May 30,2013
95. “*Ferroelectric-organic hybrid photovoltaic*”, MRS 2012 Fall meeting, Boston, USA 2012
96. “*Switchable and high efficiency organic ferroelectric solar cell*” International Symposium on Integrated Functionalities ISIF 2012, June 18-21, Hong Kong, China, 2012
97. “*Ferroelectric Organic Photovoltaic-for Higher Efficiency and New Functionalities*”, UNL Department of Mechanical and Materials Engineering Seminar, Nov. 8, 2011, Lincoln, NE
98. “*Introduce an Electric Field into Polymer Solar Cell for Increased Efficiency*”, Fifth International Conference on Nanophotonics, May 22-25, Shanghai China 2011
99. “*Ferro-organic electronics*”, UCLA Department of Material Science and Engineering Seminar, Los Angeles, CA, March 20 2011
100. “*Dipole layer in organic electronic devices-a unique application opportunity for ferroelectric*” , International Symposium on Integrated Functionalities ISIF 2010, San Juan, Puerto Rico, Jun. 2010
101. “*Organic electronic materials and devices*” Seminar in J.A. Woollam Co, Lincoln NE Jun.5 2010
102. “*High efficiency polymer solar cell and polymer light emitting diodes*”, College of Material and Optoelectronic Physics, Xiangtan University, Hunan, China, June 2009
103. “*Interface engineering for high performance organic optoelectronic devices*”, Institute of Chemistry, Chinese Academy of Science, Beijing, China, November 2009
104. “*Achieving high efficiency and low cost polymer solar cells*”, Institute of Semiconductor, Chinese Academy of Science, Beijing, China, November 2009

**GRADUATE ADVISEES**

**PhD Students**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Name** | **Co-supervisors** | **Supervise time** | **Dissertation title** | **Fund the student** | **Graduation date** |
| 29 | Shuang Xu | **NA** | **8**/2019- | TBD | Yes, RA | TBD |
| 28 | Hangyu Gu  | **NA** | **8**/2019- | TBD | Yes, RA | TBD |
| 27 | Mengru Wang | **NA** | **8**/2019- | TBD | Yes, RA | TBD |
| 26 | Nicholas Lauersdorf | **NA** | **8**/2019- | TBD | Yes, RA | TBD |
| 25 | Haoyang Jiao | **NA** | **8**/2018- | TBD | Yes, RA | TBD |
| 24 | Liang Zhao | NA | 8/2018 | TBD | Yes, RA | TBD |
| 23 | Charles Henry Van Brackle | NA | 7/2017-present | Perovskite solar cell | Yes(RA) | 8/16/2020 |
| 22 | Derrek Spronk | NA | 7/2017-present | Nanocomposite radiation detector | Yes(RA) | TBD |
| 21 | Peter Neil Rudd | NA | 7/2017-present | Perovskite solar cell | Yes (RA) | TBD |
| 20 | Xuezeng Dai | NA | 7/2017-present | Perovskite solar cell | Yes(RA) | TBD |
| 19 | Teddy Feng | NA | 7/2017-present | Perovskite solar cell | Yes (RA) | 5/8/2020 |
| 18 | Xun Xiao | NA | 7/2017-present | Perovskite solar cell | Yes(RA) | TBD |
| 17 | Ye Liu | Jeffrey Shield | 1/2016-present | Perovskite solar cell | Yes(RA) | 8/31/2020 |
| 16 | Jingjing Zhao | Jeffrey Shield | 1/2016-present | Perovskite | Yes(RA) | 8/31/2019 |
| 15 | Yun Lin | Jeffrey Shield | 8/2015-present | Perovskite solar cell | Yes (RA, CSC) | 8/31/2019 |
| 14 | Yehao Deng | NA | 8/2014-present | Perovskite solar cell | Yes(RA) | 5/31/2019 |
| 13 | Qi Wang | NA | 8/2013-present | Polymer Solar Cell | Yes(RA) | 5/31/2019 |
| 12 | Yuchuan Shao | NA | 8/2012-present | Ferroelectrics | Yes(RA) | 5/31/2016 |
| 11 | Jeremy VanDerslice | Zhaoyan Zhang | 1/2012-present | Ellipsometry | No | 5/31/2018 |
| 10 | Bi Cheng | NA | 8/2012-present | Nanoparticle Photodetector | Yes(RA) | 5/31/2016 |
| 9 | Dong Wang | NA | 8/2015-8/2016 | Perovskite solar cell | Yes(RA) | NA |
| 8 | Qingfeng Dong  | Wenjing Tian | 9/2009-8/2014 | Organic solar cells | Yes | 8/2014 |
| 7 | Yu Bi | Tianfu | 9/2009-8/2014 | Organic solar cells | No | 8/2014 |
| 6 | Yunzhang Lu | Zhang | 8/2012/-7/2017 | Organic solar cell | No | 7/2017 |
| 5 | Zhengguo Xiao | NA | 8/2011-8/2015 | Ferroelectric Organic Solar Cells | Yes(RA) | 8/14/2015 |
| 4 | Edwin Peng | Jeffrey Shield | 5/2014-12/2014 | Perovskite solar cell | Yes(RA) | NA |
| 3 | Fawen Guo | NA | 1/2011-8/2014 | Photodetector | Yes(RA) | 5/31/2014 |
| 2 | Bin Yang  | NA | 8/2010-12/2013 | Bilayer Organic Solar cells | Yes(RA) | 12/31/2013 |
| 1 | Shumin Li | Li Tan | 8/2013-12/2013 | Nanoparticle synthesis | Yes (RA and CSC) | 6/30/2018 |

**Master Students**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 5 | Charles Henry Van Brackle |  | 2017-2020 | PL study | Yes (RA) | 8/16/2020 |
| 4 | Yuanxiang Feng |  | 2017-2020 | Radiation Detectors | Yes (RA) | 5/8/2020 |
| 3 | Tomas Tong | Jeffrey Shield | 2016-present | LED | Yes(RA) | 8/31/2019 |
| 2 | Miao Hu | NA | 1/2014-2016 | Perovskite solar cell | Yes(RA) | 5/31/2016 |
| 1 | Xiaopeng Zheng | Jeffrey Shield | 8/2015-present | Perovskite solar cell | Yes(RA) | 8/31/2019 |

**Postdoc**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Name | Co-supervisors | Supervise time | Research Projects |
| 29 | Ying Zhou | NA | 12/1/2019 | New |
| 28 | Fei Ye | NA | 9/1/2019 | New |
| 27 | Shen Wang | NA | 8/1/2019 | New |
| 26 | Yehao Deng | NA | 715/2019 | New |
| 25 | Guang Yang | NA | 8/1/2019 | Perovskite solar cells |
| 24 | Zhenyi Ni | NA | 11/15/2018 | Detectors |
| 23 | Shangshang Chen | NA | 10/1/2018 | Perovskite solar cells |
| 22 | Qi Jiang | NA | 8/1/2018 | Perovskite solar cells |
| 21 | Zhibin Yang | NA | 8/1/2017 | Perovskite solar cells |
| 20 | Yu Zhou | NA | 9/1/2017 | Perovskite solar cells |
| 19 | Wuqiang Wu | NA | 5/1/2017 | Perovskite solar cells |
| 18 | Yuze Lin | NA | 7/1/2017 | Perovskite solar cells |
| 17 | Yuchuan Shao | NA | 11/1/2017 | Perovskite solar cells |
| 16 | Shuang Yang | NA | 7/1/2017 | Perovskite solar cells |
| 15 | Yanjun Fang  | NA | 9/2013-2/2018 | Ferroelectrics |
| 14 | Haotong Wei | NA | 8/1/2014-present | Nanocomposite radiation detector |
| 13 | Bo Chen | NA | 11/1/2015-present | Perovskite solar cells |
| 12 | Zhenhua Yu | NA | 3/1/2017-present | Perovskite solar cells |
| 11 | Tianyou Zhang | NA | 10/1/2015- | Perovskite solar cells |
| 10 | Wei Wei | NA | 8/15/2015- | Perovskite single crystals |
| 9 | Yang Zhang | NA | 6/1/2015- | Photodetector |
| 8 | Yang Bai | NA | 2/1/2015- | Perovskite solar cells |
| 7 | Liang Shen | NA | 6/1/2014- | Photodetector |
| 6 | Qingfeng Dong | NA | 7/2013- | Ferroelectrics |
| 5 | Yongbo Yuan  | NA | 12/2009- | Solar cell, transistor, detector |
| 4 | Chieu Nguyen | NA | 10/1/2014-2/15/2015 | Photodetector |
| 3 | Qingfeng Zhang | NA | 2/1/2014 –12/30/2014 | Ferroelectrics |
| 2 | Roy Dong | NA | 2/2013-6/30/2014 | Photodetector |
| 1 | Baodong Mao | NA | 5/2012-8/2013 | Nanocrystal solar cells |

**Undergraduate Students**

1. Billingsley, Alex Joe , 2018-2020
2. Jared Goldman, 2018
3. Philip Weibe, 2016-2017
4. Brian Cronin, 2015-2016
5. Alan Akil, Jan 2015-Dec. 2015
6. Runyu Zhang, Jan.2010-Dec 2012, UCARE student
7. Katie McDaniel, Lei Zhang, May 2015-Aug. 2015, MRSEC REU-Teacher Pair
8. Mitch Sanchez, May 2015-Aug. 2015, NSF REU
9. Michel Dawson, May 2015-Aug. 2015, NCMN High school researcher
10. William Ferreira, May 2014-May 2015
11. Mitchell Faltin, May 2013-May 2014, NSF REU student, UCARE student
12. Jennifer Mark, June 2013-Sep 2013, UCARE student
13. Stephanie Paustian, May 2012-Aug.2012, MRSEC REU student
14. William Smith,May 2012-Aug.2012, MRSEC RET teacher
15. Beatriz Dumont Defendi, May 2012-Aug.2012, MRSEC REU student
16. James L. Cox , Sep.2009-May,2011, UCARE student
17. Alexander Clement, May 2011-Aug 2011, MRSEC REU student

**Honors/Awards Received by Advisees**

1. Graduate student Xun Xiao received Dissertation Finishing Scholarship. 2020
2. Graduate student Qi Wang received the BEST POSTER AWARD in International Symposium on Energy Science and Technology, 2018
3. Graduate student Yehao Deng received the 2018 Chinese Government Award for Outstanding Self-financed Student Abroad.
4. Graduate student Cheng Bi received the 2017 Chinese Government Award for Outstanding Self-financed Student Abroad.
5. Graduate student Qi Wang received the 2017 Chinese Government Award for Outstanding Self-financed Student Abroad.
6. Graduate student Qi Wang is awarded College of Engineering graduate research assistant award of the year 2016
7. Graduate student Qi Wang is awarded Mechanical and Materials Engineering department graduate research assistant award of the year 2016
8. Gradate student Yuchuan Shao is award **MRS** graduate student award, gold medal, in the Spring MRS 2016 conference.  This is the 3rd time UNL material graduate students (All of them are from Huang group) broke into the prestigious award lists.
9. Graduate student Yuchuan Shao received the 2016 Chinese Government Award for Outstanding Self-financed Student Abroad In the category of SPECIAL Award.
10. Graduate student Cheng Bi received the competitive NCMN Graduate Research Fellowship for excellence in research in 2015 (total two awards per year in the campus).
11. Graduate student Zhengguo Xiao received received 2015 **MRS** Fall Meeting Graduate Student Silver Medal Award. It is the second time a UNL graduate student received this award in the history.
12. Graduate student Zhengguo Xiao received the 2015 Chinese Government Award for Outstanding Self-financed Student Abroad.
13. Graduate student Yuchuan Shao received the 2015 "Outstanding Graduate Research Assistant Shao Award" This award recognizes excellence in graduate student research at UNL. Yuchuan is the only recipient for this award in 2015.
14. Postdoc Yongbo Yuan received the university 2014 Outstanding Postdoc Award
15. Graduate student Yuchuan Shao has been awarded the 2014 Nebraska Center for Materials & Nanoscience ( NCMN) Fellowship.
16. Graduate student Bin Yang received the 2014 Chinese Government Award for Outstanding Self-financed Student Abroad.
17. Graduate student Bin Yang received 2013 **MRS** Fall Meeting Graduate Student Gold Medal Award. This is the highest award for graduate student in material research field. It is the first time a UNL graduate student received this award in the history.
18. Graduate student Zhengguo Xiao won the 2014 Department Graduate Student Research Award
19. Postdoc Qingfeng Dong won Spring 2013 Science Art Competition Award.
20. Undergraduate student researcher Runyu Zhang is awarded the Ralph & Martha Siemers Scholarship from the UNL

**Committee Service**

Olivia Williams, ELUCIDATION OF LIGHT-HARVESTING DYNAMICS IN LAYERED PEROVSKITES WITH TRANSIENT ABSORPTION SPECTROSCOPIES, May 2020