

## **Dr. Bin Hu**

Professor  
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University of Tennessee, Knoxville, TN 37996

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### **Research Interests**

- (1) **Photo-physics**: exploring lattice dynamics-enabled un-usual excited states effects towards breaking traditional limits in generating light-emitting, photovoltaic, lasing actions
- (2) **Spin-physics**: revealing spin-enabled superior optoelectronic properties in semiconductors
- (3) **Quantum materials**: exploring new approach of developing quantum materials by using 2D Rashba band structures with quantized orbital magnetic dipoles, as against common approach of using electron spins

### **Professional Experience**

**July 2013 – Present**                      **Full professor**  
Research: organic spintronics, orbitronics, photophysics and quantum materials  
Department of Materials Science and Engineering  
University of Tennessee, Knoxville, TN 37996

**June – August 2022**                      **Invited Visiting Professor**  
Research Center for Materials Science, Nagoya University, Nagoya, Japan

**January – December 2009**              **Visiting Professor**  
National Cheng Kung University, Tainan, Taiwan

**June 2008 – July 2013:**                **Tenured Associate Professor**  
Research: spin-controllable energy-conversion organic materials and devices  
Department of Materials Science and Engineering  
University of Tennessee, Knoxville, TN 37996

**January 2010 – October 2020:**      **Adjunct/consultant Professor**  
Research collaboration: experimental studies on organic thermoelectrics and solar cells  
Huazhong University of Science and Technology, Wu Han, China

**September 2014 – August 2019:**    **Guest/consultant Professor**  
Research collaboration: experimental studies on organic spintronics  
Beijing Jiaotong University, Beijing, China

**August 2002 – June 2008:**            **Assistant Professor**  
Research: Spin-controllable optoelectronic organic materials and devices  
Department of Materials Science and Engineering  
University of Tennessee, Knoxville, TN 37996

**October 1998 – August 2002: Senior Research Scientist**

Research: polarized optical polymer materials and devices  
R & D Division, SICPA Securink Inc., Springfield, VA 22153

**October 1995 – October 1998: Research scientist**

Research: nanophase polymer blends for lasing, light-emitting, and photovoltaic applications  
Department of Polymer Science & Engineering  
University of Massachusetts, Amherst, MA 0100

**November 1992 – September 1995: Postdoctoral Research Scientist**

Research: organic light-emitting and photovoltaic materials and devices  
Department of Polymer Science & Engineering  
University of Massachusetts, Amherst, MA 01003  
Advisor: Professor Frank Karasz

**October 1991 – November 1992: Postdoctoral Researcher**

Research: Two-photon laser spectroscopy of C<sub>60</sub>  
Institute of Molecular Spectroscopy, Bologna, Italy  
Advisor: Professor Carlo Taliani

## Education

**Ph.D.** Chinese Academy of Sciences, 1991

Advisor: Professor Xurong Xu

*Thesis Title: Interchain Interaction Effects on Energy Band Structure in One-Dimensional Conducting Polymers*

**M.S.** Chinese Academy of Science, 1987

Advisor: Professor Xinyi Zhang

*Thesis Title: Photoluminescence Studies of Exited States in Conducting Polymers*

**B.S.** Department of Physics, Northeast Normal University, Changchun, China, 1984

*Major: Solid State Physics*

## Awards

**Graduate Research Mentor Award – 2022**

Graduate School, University of Tennessee

**Research Achievement Award – 2019**

College of Engineering, University of Tennessee

**Research Achievement Award – April 2014**

College of Engineering, University of Tennessee

**Research Fellow Award – April 2012**

College of Engineering, University of Tennessee

**Research Fellow Award – April 2010**

College of Engineering, University of Tennessee

**Chancellor's Research and Creative Achievement Professional Promise Award–April 2008**

University of Tennessee

**Research Fellow Award – April 2008**

College of engineering, University of Tennessee

**Faculty Award for Excellence in Research – April 2008**

Department of Materials Science and Engineering, University of Tennessee

**NSF Career Award – February 2007**

National Science Foundation, USA

**Invited Conference Oral Presentations**

- (1) **Spin Effects on Circularly Polarized Photoluminescence in 2D-Superlattice Perovskite films**  
Bin Hu  
MRS Meetings, San Francisco, April 09-14, 2023
- (2) **Accelerated TADF and Super-Delayed TADF through Spin Flipping and Magnetic-Electric Coupling**  
Bin Hu  
7<sup>th</sup> TADF Workshop, online conference at Kyushu University, Japan, December 02-03, 2022
- (3) **Orbit-Orbit Interaction-Enabled Optically Induced Magnetization Towards Spin-Switchable Orbital Order in 2D-Superlattice Perovskite Film**  
Bin Hu  
Yamada Conference, Tohoku University, Sendai, Japan, October 08-12, 2022
- (4) **Linear and Nonlinear Light-Emitting Behaviors in Heterostructured Perovskites**  
Bin Hu  
SPIE Optics and Photonics, San Diego, August 19-23, 2022
- (5) **Orbit-orbit interaction effects on light-emitting properties in 2D perovskites**  
Bin Hu  
MRS, Hawaii, May 08-13, 2022
- (6) **Spin-Orbital Coupling Effects in Organic Molecules and 2D-Superlattice Perovskites**  
Bin Hu  
Institute of Chemical Research, Kyoto University, Kyoto, Japan, August 05, 2022
- (7) **Spin-dependent light emission in weak & strong orbital materials**  
Bin Hu  
Institute of Molecular Science, Okazaki, Japan, July 27, 2022
- (8) **Rashba band structures: orbit-orbit interaction effects on light-emitting, photovoltaic, lasing properties in hybrid perovskites**  
Bin Hu

- International Conference of Synthetic Metals, Glasgow, Scotland, July 17-22, 2022
- (9) **2D perovskites: Tuning Orbit-Orbit Interaction To Advance Multifunctional Properties By Controlling Thermodynamics in Forming Spin-Cast Films**  
Bin Hu  
Department of Chemistry, Nagoya University, Nagoya, Japan, July 08, 2022
- (10) **Orbit-Orbit Interaction Effects on Light-Emitting, Photovoltaic, and Lasing Properties in Hybrid Perovskites**  
Bin Hu  
PACIFICHEM2021 (Virtual), December 16-21, 2021
- (11) **Orbit-orbit interaction effects on light-emitting properties in hybrid perovskites**  
Bin Hu  
The 12<sup>th</sup> International Conference on Advanced Materials and Devices (Virtual)  
Jeju, South Korea, December 06-10, 2021
- (12) **Spin-Orbital Coupling Effects on Light-Emitting Properties**  
Bin Hu  
SPIE Optics and Photonics, online conference, August 01-05, 2021
- (13) **Tutorial: photophysics of emerging light-emitting materials and devices**  
MRS, online conference, November 29-December 04, 2020
- (14) **Self-stimulated dissociation in non-fullerene organic bulk-heterojunction solar cells**  
Bin Hu  
SPIE Optics and Photonics, online conference, August 16-20, 2020
- (15) **Deeper Understanding on Controlling Bright and Dark States in Organic and Hybrid Perovskite LEDs**  
Bin Hu  
SPIE Optics and Photonics, online conference, August 16-20, 2020
- (16) **Controlling Orbit-Orbit Interaction in Hybrid Perovskites towards Enhancing Amplified Spontaneous Emission**  
Bin Hu  
MRS, Boston, December 01-06, 2019
- (17) **Optically Induced Magnetization at Ferromagnetic/Perovskite Interface**  
Bin Hu  
AVS, Columbus, Ohio, October 23, 2019
- (18) **Departmental Seminar: Orbit-Orbit Interaction Effects on Excited States in Hybrid Perovskites from 3D to 2D**  
Bin Hu  
Department of Materials Science and Engineering, North Carolina State University,  
September 13, 2019
- (19) **Deeper Understanding on Excited Processes in Exciplex and Perovskite LEDs**  
Bin Hu  
SPIE Optics and Photonics, San Diego, August 11-15, 2019
- (20) **Spin-orbital Coupling Effects: 3D to 2D perovskites**  
Bin Hu  
MRS meeting, Phoenix, April 22-26, 2019
- (21) **Organic Electronics from Weak-Orbital to Strong-Orbital Materials**  
Bin Hu

Departmental Seminar in Department of Materials Science and Engineering, Seoul National University, May 07, 2019

**(22) Spin-Orbital Coupling Effects in Organic Materials and Perovskites**

Bin Hu

The 10th Asian Conference on Organic Electronics, December 05-08, 2018, Hong Kong

**(23) Spin-Orbital Coupling Effects on TADF**

Bin Hu

SPIE Optics and Photonics, San Diego, California, USA, August 19-22, 2018

**(24) Spin Effects in Organic-Inorganic Semiconducting Perovskites**

Bin Hu

43rd International Conference on Coordination Chemistry

Sendai, Japan, July 31-August 04, 2018

**(25) Spin-Orbital Coupling Effects on Photovoltaic and Light-Emitting Actions in Organic-Inorganic Hybrid Perovskites**

Bin Hu

International Conference on Synthetic Metals of Science and Technology, Pusan, July 01-06, 2018

**(26) Effects of Spin States on Photovoltaic and Light-Emitting Actions in Organic-Inorganic Hybrid Perovskites**

Bin Hu

European MRS, Strasbourg, France, June 17-22, 2018

**(27) Perovskite LEDs: self passivation, polarizing light-emitting states, spin states**

Bin Hu

MRS, Phoenix, AZ, April 01-06, 2018

**(28) Photoinduced polarization and spin states in perovskite solar cells**

Bin Hu

International Conference on Optics and Photonics 2017 Taiwan, Sun Yat-Sen University, Kaoshiung, Taiwan, December 06-09, 2017

**(29) Understanding spin-dependent processes in TADF light-emitting materials**

Bin Hu

SPIE, San Diego, CA, USA, August 06-10, 2017

**(30) Understanding Spectral Narrowing Phenomenon in OLEDs under Electrical Pumping Based on Magneto-Optical Studies**

Bin Hu

Frontiers of Organic Semiconductor Lasers, Kyushu University, Fukuoka, Japan, January 19-21, 2017

**(31) Spin effects in light-emitting devices: perovskite and 3<sup>rd</sup> generation LEDs**

Bin Hu

International Conference on Materials for Energy Application, Hong Kong, January 3-6, 2017

**(32) Spin effects on photovoltaic and light-emitting actions in organic/inorganic hybrid perovskites**

Bin Hu

2016 Asian Conference on Organic Electronics 2016, Kyoto, Japan, December 04-07, 2016

**(33) Interface-controllable photovoltaic actions in perovskite solar cells**

- Bin Hu  
14th International Conference on Frontiers of Polymers and Advanced Materials, Daejeon, South Korea, October 31 – November 04, 2016
- (34) Magneto-optical studies on internal photovoltaic processes in perovskite solar cells**  
Bin Hu  
19<sup>th</sup> Interfinish World Congress and Exhibition, Beijing, China, September 19-22, 2016
- (35) Introducing Magneto-Optical Properties into Up-conversion Rare Earth Nanocrystals Based on Two-photon and Three-photon Excitation**  
Bin Hu  
The 4<sup>th</sup> International Symposium on Rare Earth Resource Utilization, Changchun, China, August 16-19, 2016
- (36) Introducing Magneto-Optical Effects into Soft Materials**  
Bin Hu  
2016 Joint USAF-Korea NBIT-Taiwan Nanoscience Program Review, Xi-Tou, Taiwan, August 07-12, 2016
- (37) Spin mixing involved in 3<sup>rd</sup> generation-OLED materials**  
Bin Hu  
Topic workshop on developing new-generation OLED materials, Taipei, Taiwan, August 13-14, 2016
- (38) Magneto-Optical Properties in Organic-Inorganic Hybrid Perovskites**  
Bin Hu  
4th International Workshop on Novel Magnetic and Multifunctional Materials, Paris, France, July 04-08, 2016
- (39) Exploring New Driving Force To Develop Seebeck and Cooling Effects by Using Temperature-Dependent Surface Polarization Based on Semiconducting Organic and Perovskite Materials with Hybrid Conductor/Semiconductor/Conductor Thin-Film Design**  
Bin Hu  
International Conference on Thermoelectrics, Wu Han, China, May 28- June 02, 2016
- (40) Revealing Fundamental Mechanisms to Control Magneto-optic, Photovoltaic, and Thermoelectric Functions in Ferroelectrically Semiconducting Organic-Inorganic Perovskites**  
Bin Hu  
MRS meetings, Phoenix, Arizona, March 28 – April 1, 2016
- (41) Polarization-driven thermoelectric effects in organic thin-film devices**  
Bin Hu  
ICOT-2016, Kyoto, Japan, January 18-20, 2016
- (42) Revealing Fundamental Mechanisms to Control Light-Emitting, Photovoltaic, and Thermoelectric Functions in Ferroelectrically Semiconducting Organic-Inorganic Perovskites**  
Bin Hu  
Institute of Physical Chemistry and Materials, Strasbourg, France, January 06, 2016
- (43) Magneto-optical properties of organic/inorganic hybrid perovskites**  
Bin Hu  
PACIFICHEM-2015, Honolulu, Hawaii, December 15-20, 2015
- (44) Light-Emitting and Photovoltaic Properties in Organic-Inorganic Hybrid Perovskites**

- Bin Hu  
9<sup>th</sup> International Conference on Advanced Materials and Devices, Jeju Island, Korea, December 06-09, 2015
- (45) Revealing Fundamental Mechanisms to Control Light-Emitting, Photovoltaic, and Thermoelectric Functions in Ferroelectrically Semiconducting Organic-Inorganic Perovskites**  
Bin Hu  
8<sup>th</sup> Asian Conference on Organic Electronics, Beijing, China, October 28-31, 2015
- (46) Magneto-optical Studies on Organic/Inorganic Perovskites**  
Bin Hu  
AFOSR Annual Review Meeting, Santa Barbara, California, USA, June 12-15, 2015
- (47) Magneto-optic, Photovoltaic, and Thermoelectric Studies on Organic-Inorganic Perovskites**  
Bin Hu  
8<sup>th</sup> International Conference on NanoPhotonics, Changchun, China, May 25-28, 2015
- (48) Photovoltaic and Thermoelectric Properties in Organic Perovskite Materials**  
Bin Hu  
Invited Lectures at Hong Kong Baptist University, Hong Kong, March 23 and 24, 2015
- (49) Magneto-Optical Studies on Organic and Perovskite Solar Cells**  
Bin Hu  
Asian Conference on Organic Electronics, National Cheng Kung University, Tainan, Taiwan, November 12-15, 2014
- (50) Magneto-Dielectric Effects Generated by Charge-Transfer States in Organic Semiconductors**  
Bin Hu  
5<sup>th</sup> Topical Meeting on Spins in Organic Semiconductors, Himeji, Japan, October 14-17, 2014
- (51) New Magnetic Field Effects in Organic Semiconductors**  
Bin Hu  
2014 International Symposium on Materials for Enabling Nanodevices, National Cheng Kung University, Tainan, Taiwan, September 03-06, 2014
- (52) Magneto-optic properties in organic materials**  
Bin Hu  
AOARD conference on magnetic nanomaterials, University of Maryland, June 16-17, 2014
- (53) Organic spintronics, organic solar cells, and organic thermoelectrics**  
Bin Hu  
E-MRS, Lille, France, May 26-30, 2014
- (54) Magneto-optic properties in organic materials**  
Bin Hu  
US-Taiwan Air Force Conference, Hualien, Taiwan, May 13-15, 2014
- (55) Magneto-optic studies of photovoltaic processes at D:A interface and electrode interface in organic solar cells**  
Bin Hu  
Indo-US Joint Workshop on Organic Solar Cells, Kanpur, India, March 20-22, 2014

- (56) Interface enhanced photovoltaic and Seebeck effects in organic solar cells and thermoelectric devices**  
Bin Hu  
ACS Annual Meeting, Dallas, TX, March 16, 2014
- (57) Multiferroic Effects from Intermolecular Excited States in Organic Semiconductors**  
Bin Hu  
Brazil-MRS meeting, Campos do Jordao, September 30 – October 04, 2013
- (58) Magneto-Optic, Magneto-Electric, and Magneto-Thermoelectric Effects in Organic Semiconductors**  
Bin Hu  
BES Program Review for the CNMS at Oak Ridge National Laboratory, September 24-26, 2013
- (59) Organic Thin-Film Thermoelectric Devices**  
Bin Hu  
Flexible Thermoelectric Workshop organized by AFOSR, Arlington, VA, July 09-10, 2013
- (60) Effects of Intermolecular and Dielectric-layer Interfaces on Internal Photovoltaic Processes in Organic Solar Cells**  
Bin Hu  
Indo-US Joint Workshop on Organic Solar Cells, National Renewable Energy Laboratory, Golden, Co, June 24-25, 2013
- (61) Magneto-optical Studies on Internal Photovoltaic Processes in Organic Solar Cells**  
Bin Hu  
2013 TechConnect World, National Innovation Summit and National SBIR Conference, Gaylord Hotel, National Harbor, Maryland, May 13-16, 2013
- (62) Magneto-Dielectric Functions Developed by Intermolecular Excited States**  
Bin Hu  
MRS Meetings, San Francisco, CA, April 01-05, 2013
- (63) Departmental Seminar: Organic Spintronics**  
Bin Hu  
National Taiwan University, Taipei, Taiwan, December 11, 2012
- (64) Workshop on Organic Spintronics**  
Bin Hu  
Intermolecular Excited States-Based Organic Spintronics  
National Cheng Kung University, Tainan, Taiwan, December 06-07, 2012
- (65) Effects of Intermolecular and Dielectric-layer Interfaces on Internal Photovoltaic Processes in Organic Solar Cells**  
Bin Hu  
International Symposium on Organic and Dye-Sensitized Solar Cells 2012 (IS-OPVDSC 2012), Taipei, Taiwan, November 24-29, 2012
- (66) Magneto-optical studies on internal photovoltaic processes in organic solar cells**  
Bin Hu  
Workshop on key scientific and technological issues for development of next-generation organic solar cells  
Arlington, VA, September 20 – 21, 2012
- (67) Multi-Ferroic Functions Developed by Inter-molecular Excited States**



- Bin Hu  
4th Topical Meeting on Spintronics in Organic Semiconductors, London, UK, September 10 – 14, 2012
- (68) Excited States-Based Organic Spintronics**  
Bin Hu  
International Workshop on Novel Nano-Magnetic and Multifunctional Materials 2012  
Seoul, Korea, June 11-14, 2012
- (69) Magneto-Optical Studies of Internal Photovoltaic Processes in Organic Solar Cells**  
Bin Hu  
Departmental seminar at Department of Materials Science and Engineering, University of Florida, Gainesville, FL, April 04, 2012
- (70) Organic Molecular Metamaterials**  
Bin Hu  
Organic Metamaterials Workshop, Army Research Laboratory, March 02, 2012
- (71) Characterization and Understanding on Internal Photovoltaic Processes in Organic Solar Cells**  
Bin Hu  
International Photonics Conference – 2011, Tainan, Taiwan, December 07-08, 2011
- (72) Organic Spintronics: Magnetic Field Effects**  
Bin Hu  
International Symposium on Organic Dye Sensitized Solar Cells, Tainan, Taiwan, December 08-10, 2011
- (73) The Role of Inter-molecular Electron-Hole Pairs in Magnetic Field Effects in Organic Materials,**  
Bin Hu  
61<sup>st</sup> Annual Meeting of Japan Coordination Chemistry Society, Okayama, Japan, September 17-19, 2011
- (74) Characterization and Understanding on Charge Dissociation, Transport, Collection in Organic Solar Cells**  
Bin Hu  
Workshop on Sustainable Energy Future: Focus on Organic Photovoltaics, Oak Ridge National Laboratory, September 21 – 23, 2011
- (75) Electromagnetic and Thermoelectric Responses from Inter-molecular Excited States: Radicals Pairs**  
Bin Hu  
8<sup>th</sup> US-Taiwan NanoScience Workshop, Seattle, Washington, April 05-06, 2011
- (76) Magnetic Field Effects in Organic Semiconductors**  
Bin Hu  
International Conference on Molecular Magnetism, Beijing, China, October 08-13, 2010
- (77) Magneto-Optical Studies on Charge Dissociation, Transport, Collection in Organic Solar Cells**  
Bin Hu  
Workshop on Sustainable Energy Future: Focus on Organic Photovoltaics, Oak Ridge National Laboratory, September 15 – 16, 2010
- (78) Nanoscience-Driven Electromagnetic and Thermoelectric Responses in Organic Materials**

- Bin Hu  
1<sup>st</sup> France-South Korea-USA joint Workshop on Nanostructured Magnetic Materials and Advanced Polymers, Strasburg, France, July 19 – 22, 2010
- (79) Magnetic Field Effects in Organic Semiconductors**  
Bin Hu  
Joint Workshop on Spin-related Phenomena in Organic Materials, University of Tokyo, Tokyo, Japan, June 30 – July 01, 2010
- (80) Tuning Permittivity and Permeability by Using Radical Pairs towards Development of Molecular MetaMaterials**  
Bin Hu  
CERMACS, Dayton, Ohio, June 12-15, 2010
- (81) Spin-Dependent and Spin-Random Processes in Magnetic Field Effects in Organic Semiconductors**  
Bin Hu  
International Conference on Core Research and Engineering Science of Advanced Materials, Osaka University, Osaka, Japan, May 30 – June 05, 2010
- (82) NanoScience Driven Electromagnetic and Thermoelectric responses in Organic Materials**  
Bin Hu  
7<sup>th</sup> Taiwan/US Airforce NanoScience Workshop, Yilan, Taiwan, April 01-02, 2010
- (83) Magnetic Field Effects in Organic Semiconductors**  
Bin Hu  
National Workshop on Organic Spintronics  
Taiwan (National Cheng Kung University), December 14-16, 2009
- (84) Tuning Magnetic Field Effects through Spin-Spin Interaction in Organic Semiconductors**  
Bin Hu  
MRS meetings in Boston, November 30, 2009
- (85) Magnetic Field Effects in Organic Semiconductors**  
Bin Hu  
Workshop in Group IV Spintronics" at Tohoku University in Sendai, Japan, October 05, 2009
- (86) Organic Spintronics**  
Bin Hu  
Lectures on Organic Spintronics at Niigata University, Niigata, Japan, October 08, 2009
- (87) Exciton Dissociation and Charge Transport in Organic Solar Cells**  
Bin Hu  
Workshop Sustainable Energy Future: Focus on Organic Photovoltaics  
Oak Ridge National Laboratory, September 15, 2009
- (88) Magnetic Field Effects in Organic Semiconductors**  
Bin Hu  
14<sup>th</sup> Brazilian National Workshop on Semiconductors, Curitiba-PR, Brazil, from March 23 - 27, 2009
- (89) Positive and negative magnetic field effects**  
Bin Hu

2<sup>nd</sup> Workshop on Spintronics in Organic Semiconductors (SPINOS09), Salt Lake City, Utah, February 04 – 08, 2009

**(90) Singlet and Triplet Photovoltaic Processes in Organic Solar Cells**

Bin Hu

Workshop at the user meeting at Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, Tennessee, September 26, 2008

**(91) Magnetic Responses in Organic Light-Emitting Diodes and Solar Cells**

Bin Hu

International Symposium on Materials for Enabling NanoDevices  
Tainan, Taiwan, September 03-05, 2008

**(92) Positive and Negative Magnetic Field Effects in Organic Semiconductors**

Bin Hu

International Conference on Science and Technology of Synthetic Metals, Pernambuco, Brazil, July 06 -11, 2008

**(93) Magnetic Field Effects of Excited States and Charge Transport in Organic Semiconductors**

Bin Hu

Departmental Seminar in Physics, University of Rochester, Rochester, NY  
November, 19, 2007

**(94) Spin Injection and Magnetoresistance in Organic Semiconductors**

Bin Hu

LEOS (Laser Electro-Optics Society) conference, Orlando, FL, October 22, 2007

**(95) Spin-Orbital Coupling and Magnetoresistance Tuning in Organic Semiconductors**

Bin Hu

APS (American Physical Society) Meetings, Denver, CO, March, 2007

**(96) Spin Injection in Organic Semiconducting Materials**

Bin Hu

User meeting at Center of Nanophase Materials Science at Oak Ridge National Laboratory, June 10, 2006, Oak Ridge, Tennessee

## Journal Publications

More than 200 research articles have been published with the citations of > 10,000 in Nature Materials, Nature Photonics, Nature Nanotechnology, Nature Communications, Joule, Advanced Materials, Advanced Energy Materials, Advanced Functional Materials, Advanced Optical Materials, Advances in Physics, JACS, ACS Nano, Nano Energy, Small, JPC-Letters.

1. Overcoming Charge Confinement in Perovskite Quantum Dot Solar Cells  
Wenqiang Yang, Seung - Hyeon Jo, Yipeng Tang, Jumi Park, Su Geun Ji, Seong Ho Cho, Yongseok Hong, Dong - Hyeok Kim, Jinwoo Park, Eojin Yoon, Huanyu Zhou, Seung - Je Woo, Hyeran Kim, Hyung Joong Yun, Yun Seog Lee, Jin Young Kim, Bin Hu, Tae - Woo\*  
Advanced Materials, 2023 (doi.org/10.1002/adma.202304533)  
**Impact factor: 30.086**
2. Dual Emission Bands of a 2D Perovskite Single Crystal with Charge Transfer State Characteristics  
Bogdan Dryzhakov, Benjamin J Lawrie, Jakob Zosa Celio, Miaosheng Wang, Michael Koehler, Bin Hu\*  
ACS Nano, 2023 (doi.org/10.1021/acsnano.3c00496)  
**Impact factor: 18.027**
3. Understanding the ligand-assisted reprecipitation of CsPbBr<sub>3</sub> nanocrystals via high-throughput robotic synthesis approach  
Sheryl L Sanchez, Yipeng Tang, Bin Hu, Jonghee Yang, Mahshid Ahmadi\*  
Matter, 2023 (doi.org/10.1016/j.matt.2023.05.023)  
**Impact factor: 19.967**
4. Necessary and Sufficient Condition for Organic Room - Temperature Phosphorescence from Host-Guest Doped Crystalline Systems  
Catherine Demangeat, Yipeng Tang, Yixuan Dou, Sherrice Dale, Jakob Cielo, Eunkyong Kim, Ha - Jin Lee, Anthony D'Aléo, Bin Hu\*, André - Jean Attias\*  
Advanced Optical Materials, 2023 (doi.org/10.1002/adom.202300289)  
**Impact factor: 10.050**
5. Extending Anisotropy Dynamics of Light - Emitting Dipoles as Necessary Condition Toward Developing Highly - Efficient OLEDs  
Miaosheng Wang, Dian Luo, Tzu - Hung Yeh, Yi - Hsuan Huang, Chang - Lun Ko, Wen - Yi Hung, Yipeng Tang, Shun - Wei Liu\*, Ken - Tsung Wong\*, Bin Hu\*  
Advanced Optical Materials, 2023 (doi.org/10.1002/adom.202202477)  
**Impact factor: 10.050**
6. Highly Efficient Blue Thermally Activated Delayed Fluorescence Emitters with a Triphenylamine-Based Macrocyclic Donor  
Chun - Yen Lin, Chen - Han Lu, Kai - Hua Kuo, Miaosheng Wang, Yipeng Tang, Yixuan Dou, Bin Hu\*, Chung - Chih Wu\*, Ken - Tsung Wong\*  
Advanced Optical Materials, 2023 (doi.org/10.1002/adom.202202292)

- Impact factor: 10.050**
7. Light-Induced Structural Dynamics and Charge Transport in Layered Halide Perovskite Thin Films  
Hsinhan Tsai, Dibyajyoti Ghosh, Eli Kinigstein, Bogdan Dryzhakov, Honora Driscoll, Magdalena Owczarek, Bin Hu, Xiaoyi Zhang, Sergei Tretiak, Wanyi Nie\*  
Nano Letters, 2023 (doi.org/10.1021/acs.nanolett.2c03403)  
**Impact factor: 10.800**
  8. Transport layer engineering towards lower threshold for perovskite lasers  
Jia Zhang, Jiajun Qin, Weidong Cai, Yipeng Tang, Houtian Zhang, Ting Wang, Bin Hu\*, Xiao-Ke Liu\*, Feng Gao\*  
Advanced Materials, 2023 (doi.org/10.1002/adma.20230092)  
**Impact factor: 30/086**
  9. Exploiting the full advantages of colloidal perovskite nanocrystals for large-area efficient light-emitting diodes  
Young-Hoon Kim, Jinwoo Park, Sungjin Kim, Joo Sung Kim, Hengxing Xu, Su-Hun Jeong, Bin Hu & Tae-Woo Lee\*  
Nature Nanotechnology. 17, 590-597, 2022, https://doi.org/10.1038/s41565-022-01113-4  
**Impact factor: 39.21**
  10. Lithium Chloride-Substituted Methylammonium Lead Tribromide Perovskites for Dual  $\gamma$ /Neutron Sensing  
Ryan Tan, Bogdan Dryzhakov, Kate Higgins, Jessica Charest, Zachary Dancoes, Praneeth Kandlakunta, Lei R. Cao, Mahshid Ahmadi, Bin Hu, and Eric Lukosi\*  
ACS Appl. Mater. Interfaces 14, 30, 34571-34582, 2022, https://doi.org/10.1021/acsami.2c05024  
**Impact factor: 10.38**
  11. Photoinduced iodide repulsion and halides-demixing in layered perovskites  
Yongtao Liu, Miaosheng Wang, Anton V. Levlev, Ali Ahmadi, Jong Keum, Mahshid Ahmadi, Bin Hu, Olga S Ovchinnikova\*  
Materials Today Nano, 18, 100197, 2022, https://doi.org/10.1016/j.mtnano.2022.100197  
**Impact factor: 12.36**
  12. Photo-physics and spin-physics studies on persistent up-conversion luminescence from nonlinearly polarizable ferroelectric-like lattice prepared by orderly packing donor-acceptor structures under multiphoton excitation  
Yixuan Dou, Catherine Demangeat, Miaosheng Wang, Bogdan Dryzhakov, Kwang-Sup Lee, André-Jean Attias\*, Bin Hu\*  
Advanced Optical Materials, DOI: 10.1002/adom.202102002, 2022  
**Impact factor: 9.73**
  13. Origin of Defects and Positron Annihilation in Hybrid and All-Inorganic Perovskites  
Artem Musienko\*, Jakub Čížek, Hassan Elhadidy, Petr Praus, Kate Higgins, Bogdan Dryzhakov, Andrii Kanak, Franck Sureau, Jindřich Pipek, Eduard Belas, Marián Betušiak, Mykola Brynza, Eric Lukosi, Bin Hu, and Mahshid Ahmadi\*  
Chem. Mater., 34, 1, 297-306, 2021, https://doi.org/10.1021/acs.chemmater.1c03540  
**Impact factor: 9.811**
  14. Aligning Transition Dipole Moment toward Light Amplification and Polarized Emission in Hybrid Perovskites

- Jiajun Qin, Jia Zhang, Tangyao Shen, Heyong Wang, Bin Hu, and Feng Gao\*  
*Advanced Optical Materials*, 9, 20, 2100984, 2021, <https://doi.org/10.1002/adom.202100984>  
**Impact factor: 9.73**
15. Spin-orbital coupling and slow phonon effects enabled persistent photoluminescence in organic crystal under isomer doping  
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