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Education

Ph.D.	Engineering and Applied Science, Yale University Advisor: Charles Ahn	2006
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B.S.	Electronics, Peking University	1998
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Professional Preparation and Appointment

Professor	Physics and Astronomy, University of Nebraska-Lincoln	08/2022-present
Associate Professor	Physics and Astronomy, University of Nebraska-Lincoln	08/2016-08/2022
Assistant Professor	Physics and Astronomy, University of Nebraska-Lincoln	01/2011-08/2016
Postdoctoral Associate	Physics, Pennsylvania State University-University Park Advisor: Jun Zhu	09/2006-12/2010

Awards and Achievements

- Nebraska EPSCoR *EQUATE* program, Focused Research Group 1 leader (2021-2026)
- *Research Leaders Program*, University of Nebraska-Lincoln (2021-2022)
- *DOE Early Career Award* (2016)
- *NCMN Ambassador Award*, Nebraska Center for Materials and Nanoscience, University of Nebraska-Lincoln (2015)
- *Achievement Award for Outstanding Service in Educational Outreach*, Nebraska Center for Materials and Nanoscience, University of Nebraska-Lincoln (2014)
- *NSF Career Award* (2012)
- *Research Development Fellow*, University of Nebraska-Lincoln (2011)
- *Nebraska EPSCoR First Award* (2011)
- *Albert P. Gagnebin Fellowship*, Yale University (1999)
- *Graduate School Fellowship; Faculty of Engineering Fellowship*, Yale University (1998)
- *Outstanding Graduate Award*, City of Beijing (1998)
- *Outstanding Graduate Award*, Peking University (1998)

Research Interests

- Growth of epitaxial complex oxide thin films and heterostructures and van der Waals materials using physical and chemical vapor deposition techniques
- Nanofabrication
- Transport phenomena in nanoscale and two-dimensional systems, including strongly correlated oxides and layered van der Waals materials
- Scanning probe microscopy studies of nanoscale ferroic materials

Professional Activities

- Panelist: NSF (CMP 2013, 2016, 2018, 2020, 2024; ECCS 2012, 2020; EPM 2021; EPSCoR 2025), Nebraska EPSCoR (First Award 2012); *ad hoc* reviewer: NSF (CMP 2013, 2014, 2020, 2022, 2025; SSMC 2022; CERAMICS 2025), DOE (BES 2023, BES 2018, 2019; Office of Science Graduate Fellowship 2012, 2019); ACS (Petroleum Research Fund 2015, 2016)
- Sandia National Lab CINT External Proposal Review Committee (2018-present)
- APS Quantum Materials Topical Group: Organizing Committee (2023), Member-at-Large (2023-2024), GQMS Fellowship Committee (2024-2025)
- Journal reviews for over 30 journals, including *Physical Review Letters*, *Physical Review X*, *Nature*, *Science*, *Science Advances*, *Nature Materials*, *Nature Nanotechnology*, *Nature Electronics*, *Nature Communications*, *Applied Physics Letters*, *Nano Letters*, *ACS Nano*, *Advanced Materials*, etc.
- Editorial board: *Scientific Reports*; guest editor: *Journal of Applied Physics* special topic: “2D Piezoelectrics, Pyroelectrics, and Ferroelectrics”
- Session chairs: *APS March meetings* (2009, 2010, 2014-2016, 2019, 2021); *MRS Spring Meeting* (2024); *ACerS Electronic Materials and Applications conference* (2017, 2018); *MMM Conference* (2017); *Intermag* (2021); *Conference for Undergraduate Women in Physical Sciences* (2011, 2013-2018, 2021)
- Conference organizers: 2025 *APS March Meeting* Focus Topic “Design and Synthesis of New Bulk and Thin Film Quantum Materials”; 2023 *Nebraska Research and Innovation Conference – Topology and Valley-Driven Quantum Phenomena*; 2021 *APS March Meeting* Focus Topic “2D Materials: Semiconductors”; 2020 *MRS Spring Symposium* Topic “Topological and Quantum Phenomena in Oxides and Oxide Heterostructures”; 2016 *APS March Meeting* Focus Topic “Devices from 2D materials: function, fabrication and characterization”; *APS March meeting* sorter: 2009, 2015, 2020, 2024

Department, College, and University Services

- Committee chair: *Physics Department Junior Faculty Search Committee* (2018); *Graduate Admissions Committee* (2023-present)
- Departmental committee member: *Physics Department Junior Faculty Search Committee* (2012, 2016, 2021); *Graduate Admission Committee* (2014-2019); *Undergraduate Advisory Committee* (2017-present); *Physics Department Faculty Advisory Committee* (2015, 2018-2020); *Grade Appeals/Graduate Exam Committee* (2020-present); *Publications (Spectrum) Committee* (2020-present); *Alumni Affairs Committee* (2022-present); *Graduate Committee* (2023-present)
- University/college committee member: *NCMN Graduate Research Fellowship Committee* (2015); *NCMN Advisory Committee* (2017-present); *UNL Association for Women In Science Steering Committee* (2018-2022); *CAS Curriculum and Advising Committee* (2021-2024)
- *UNL GSA Graduate Travel Award* reviewer (2017, 2018)

Teaching

- PHYS 212H *General Physics II: E&M (Honor)* (Fall 2011, Spring 2012, Fall 2012, Fall 2013, Fall 2017, Fall 2021)
- PHYS 212 *General Physics II: E&M (Regular)* (Spring 2013, Fall 2015)
- PHYS 422/822 *Introduction to Physics and Chemistry in Solids* (Spring 2014, Spring 2016, Spring 2017, Spring 2023, Fall 2024)
- PHYS 213 *General Physics III: Modern Physics* (Fall 2014, Spring 2015, Spring 2026)
- PHYS 927 *Introduction to Solid State Physics* (Fall 2016, 2018, 2020, Spring 2025)

- PHYS 461 *Quantum Mechanics I* (Spring 2018-2022, 2025)
- PHYS 462 *Quantum Mechanics II* (Fall 2025)

Publications

Preprints

1. Myung-Geun Han*, Yangyang Zhang, Le Zhang, Dawei Li, Junsik Mun, Nagarajan Valanoor, Xia Hong*, and Yimei Zhu, “Probing Néel-type ferroelectric domain walls at polar coupled MoS₂/PZT interface”, under review in *Journal of Physics: Condensed Matter*.

Journal Publications

2. Sanyum Channa, Houssam Sabri, Xin Yu Zheng, Tian-Yue Chen, Haowen Ren, Qiuchen Wu, Kun Wang, Yuntian Li, Zbigniew Galazka, Ian R. Fisher, Xia Hong, Andrew D. Kent, Jiadong Zang, and Yuri Suzuki, “Signatures of fluctuation-driven magnetic topology in Pt-ferromagnetic insulator bilayers”, *Physical Review Letters* **135**, 096702 (2025).
3. Yibo Wang*, Md Sazzad Hossain, Tianlin Li, Yanwei Xiong, Cuong Le, Jesse Kuebler, Nina Raghavan, Lucia Fernandez-Ballester, Xia Hong, Alexander Sinitskii, Martin Centurion, “Ultrafast dynamics of ferroelectric polarization of NbOI₂ captured with femtosecond electron diffraction”, *Nature Communications* **16**, 8132 (2025).
4. Ilja Fescenko, Raman Kumar, Thitinun Gas-Osoth, Yifei Wang, Suvechhya Lamichhane, Tianlin Li, Adam Erickson, Nina Raghavan, Tom Delord, Cory D Cress, Nicholas Proscia, Samuel W LaGasse, Sy-Hwang Liou, Xia Hong, Jose J Fonesca, Toshu An, Carlos A Meriles, Abdelghani Laraoui, “Nitrogen-Vacancy Magnetometry of Edge Magnetism in WS₂ Flakes”, *Advanced Functional Materials* **35**, e12391 (2025).
5. Yuanyuan Zhang, Qiuchen Wu, Yifei Hao, Xia Hong*, “Ferroelectric Control of Anisotropic Magnetoresistance in Ultrathin Sr₂IrO₄ Films Toward 2D Metallic Limit”, *Advanced Physics Research* **4**, 2400208 (2025).
6. Takashi Komesu, Yuanyuan Zhang, Shiv Kumar, Amit Kumar, Yudai Miyai, Kenya Shimada, Peace Ikeoluwa Adegbite, Xia Hong, and P. A. Dowben*, “Emergence of a metallic surface state for narrow bandgap Mott insulator Sr₃Ir₂O₇(001) thin films”, under review in *Journal of Physics: Condensed Matter* **37**, 175002 (2025).
7. Peace Ikeoluwa Adegbite*, Arjun Subedi, Yuanyuan Zhang, Xia Hong, Takashi Komesu, and, P. A. Dowben, “The anomalous temperature dependent low energy electron diffraction intensity at epitaxial Sr₃Ir₂O₇ thin film surfaces”, *Journal of Physics: Condensed Matter* **37**, 165402 (2025).
8. Yifei Hao, Tianlin Li, and Xia Hong*, “(Feature Article) Interface Phenomena and Emerging Functionalities in Ferroelectric Oxide Based Heterostructures”, *Chemical Communications* **61**, 4924 (2025).
9. Jia Wang, Junzhe Kang, Stasiu Chyczewski, Ye Lin, Hanwool Lee, Wenjuan Zhu, Xia Hong*, “(Topical Review) Progress and Challenges in the Synthesis of Two-Dimensional van der Waals Ferroic Materials and Heterostructures”, *Journal of Physics D: Applied Physics* **58**, 063001 (2025).
10. Dawei Li*, Xinyi Hou, Fanyi Kong, Kun Wang, and Xia Hong*, “Giant Modulation of Second-Harmonic Generation in CuInP₂S₆ by Interfacing with MoS₂ Atomic Layers”, *ACS Nano* **18**, 32890 (2024).
11. Jingfeng Song, Tianlin Li, Wenhao Li, Zhiyong Xiao, Bo Chen, Dawei Li, Stephen Ducharme, Yongfeng Lu, Jinsong Huang, Rashid Zia, and Xia Hong*, “Enabling Fast Photoresponse in Hybrid Perovskite/MoS₂ Photodetectors by Separating Local Photocharge Generation and Recombination”, *Nano Letters* **24**, 14307 (2024).

12. Shizai Chu, Yifei Hao, Shaopeng Feng, Xia Hong, Keji Lai*, “Room-temperature Modulation of Microwave Conductivity in Ferroelectric-gated Correlated Oxides”, *Applied Physics Letters* **125**, 182902 (2024).
13. Yuanyuan Zhang, Yifei Hao, Le Zhang, Kun Wang, and Xia Hong*, “High Electroresistance in All-Oxide Ferroelectric Tunnel Junctions Enabled by a Narrow Bandgap Mott Insulator Electrode”, *Applied Physics Letters* **125**, 102904 (2024).
14. Tianlin Li, Hanying Chen, Kun Wang, Yifei Hao, Le Zhang, Kenji Watanabe, Takashi Taniguchi, Xia Hong*, “Transport Anisotropy in One-dimensional Graphene Superlattice in the High Kronig-Penney Potential Limit”, *Physical Review Letters* **132** (5), 056204 (2024).
15. Gauthami Viswan, Kun Wang, Daniel Sando, Robert Streubel, Xia Hong, Nagarajan Valanoor, Peter Dowben, “Magneto-capacitance at the Ni/BiInO₃ Schottky interface”, *ACS Applied Materials & Interfaces* **16** (3), 4108–4116 (2024).
16. Yifei Hao, Xuegang Chen, Le Zhang, Myung-Geun Han, Yuewen Fang, Hanghui Chen, Yimei Zhu, and Xia Hong*, “Record high room temperature resistance switching in ferroelectric-gated Mott transistors unlocked by interfacial charge engineering”, *Nature Communications* **14**, 8247 (2023). (Featured in Editor’s highlights. Selected as *Top 25 Physics Articles in 2023*)
17. Wenjuan Zhu*, Xia Hong, “(News & Views) Getting two-dimensional materials ready for industrial manufacturing”, *Nature Electronics* **6**, 931–932 (2023).
18. Qiuchen Wu, Kun Wang, Alyssa Simpson, Yifei Hao, Jia Wang, Dawei Li, and Xia Hong*, “Electrode Effect on Ferroelectricity in Free-Standing Membranes of PbZr_{0.2}Ti_{0.8}O₃”, *ACS Nanoscience Au* **3**, 482–490 (2023).
19. Xia Hong*, “(News & Views) Ferroelectric Hafnia Surface in Action”, *Nature Materials* **15**, 127 (2023).
20. Kun Wang, Du Li, Jia Wang, Yifei Hao, Hailey Anderson, Li Yang, and Xia Hong*, “Interface-Tuning of ferroelectricity and quadruple-well state in CuInP₂S₆ via ferroelectric oxide”, *ACS Nano* **17**, 15787(2003).
21. Yibo Wang, Sajib Kumar Saha, Tianlin Li, Yanwei Xiong, Kyle John Wilkin, Anil Adhikari, Michael J. Loes, Jehad Abourahma, Xia Hong, Shireen Adenwalla, Alexander Sinitskii, Martin Centurion “Ultrafast electron diffraction instrument for gas and condensed matter samples”, *Review of Scientific Instruments* **94**, 053001 (2023).
22. Wenjuan Zhu, Xia Hong, Peide D. Ye, and Yi Gu, “2D Piezoelectrics, pyroelectrics, and ferroelectrics”, *Journal of Applied Physics* **133**, 120402 (2023).
23. Dawei Li, Xi Huang, Qiuchen Wu, Le Zhang, Yongfeng Lu, and Xia Hong*, “Ferroelectric Domain Control of Nonlinear Light Polarization in MoS₂ via PbZr_{0.2}Ti_{0.8}O₃ Thin Films and Free-Standing Membranes”, *Advanced Materials* **35**, 2208825 (2023).
24. Jia Wang, Zahra Ahmadi, David Lujan, Xiaoqin Li, Jeffrey E. Shield, and Xia Hong*, “Physical Vapor Transport Growth of Antiferromagnetic CrCl₃ Flakes Down to Monolayer Thickness”, *Advanced Science* **10**, 2203548 (2023).
25. Jingfeng Song, Yubo Qi, Zhiyong Xiao, Seung-Hyun Kim, Angus. I. Kingon, Andrew M. Rappe, and Xia Hong*, “Domain Wall Enabled Hysteresis-Free Steep Slope Switching in MoS₂ Transistors”, *npj 2D Materials and Applications* **6**, 77 (2022).
26. Xia Hong*, “Imaging an Elusive Electronic Transition in Graphene”, *Physics* **15**, 127 (2022).

27. Hanying Chen, Tianlin Li, Yifei Hao, Anil Rajapitamahuni, Zhiyong Xiao, Stefan Schoeche, Mathias Schubert, and Xia Hong^{*}, “Remote Surface Optical Phonon Scattering in Ferroelectric Ba_{0.6}Sr_{0.4}TiO₃ Gated Graphene”, *Journal of Applied Physics* **132**, 154301 (2022). Featured on Cover.
28. Xia Hong^{*}, “(Viewpoint) Imaging an Elusive Electronic Transition in Graphene”, *Physics* **15**, 127 (2022).
29. Xiaoshan Xu^{*}, Corbyn Mellinger, Zhigang Cheng, Xuegang Chen, and Xia Hong^{*}, “(Perspective) Epitaxial NiCo₂O₄ Film as an Emergent Spintronic Material: Magnetism and Transport Properties”, *Journal of Applied Physics* **132**, 020901 (2022). Featured article.
30. Xuegang Chen, Qiuchen Wu, Myung-Geun Han, Yimei Zhu, and Xia Hong^{*}, “Anomalous Hall Effect and Perpendicular Magnetic Anisotropy in Ultrathin Ferrimagnetic NiCo₂O₄ Films”, *Applied Physics Letters* **120**, 242401 (2022). Featured article.
31. Tianlin Li, Le Zhang, Xia Hong^{*}, “(Review) Anisotropic Magnetoresistance and Planar Hall Effect in Correlated and Topological Materials”, *Journal of Vacuum Science & Technology A* **40**, 010807 (2022).
32. Xia Hong^{*}, “(Perspective) Nitride Perovskite Becomes Polar”, *Science* **374**, 1445 (2021).
33. Dawei Li, Shuo Sun, Zhiyong Xiao, Jingfeng Song, Ding-Fu Shao, Stephen Ducharme, Evgeny Tsymbal, and Xia Hong^{*}, “Giant Transport Anisotropy in ReS₂ Revealed via Nanoscale Conducting-Path Control”, *Physical Review Letters* **127**, 136803 (2021).
34. Yifei Hao, Tianlin Li, Yu Yun, Xin Li, Xuegang Chen, Jingfeng Song, Zahra Ahmadi, Jeffrey E. Shield, Xiaoshan Xu, and Xia Hong, “Tuning Negative Capacitance State in PbZr_{0.2}Ti_{0.8}O₃/SrTiO₃ Heterostructures via Layer Thickness Ratio”, *Physical Review Applied* **16**, 034004 (2021).
35. Alexey Lipatov, Michael J. Loes, Nataliia S. Vorobeveva, Saman Bagheri, Jehad Abourahma, Hanying Chen, Xia Hong, Yury Gogotsi, and Alexander Sinitskii, “High Breakdown Current Density in Monolayer Nb₄C₃T_x MXene”, *ACS Materials Letters* **3**, 1088 (2021).
36. Kun Wang, Yifei Hao, Le Zhang, Yuanyuan Zhang, Xuegang Chen, and Xia Hong^{*}, “Effect of Correlated Oxide Electrodes on Disorder Pinning and Thermal Roughening of Ferroelectric Domain Walls in Epitaxial PbZr_{0.2}Ti_{0.8}O₃ Thin Films”, *Physical Review Materials* **5**, 074402 (2021).
37. Dawei Li, Shuo Sun, Kun Wang, Zahra Ahmadi, Jeffrey E. Shield, Stephen Ducharme, and Xia Hong^{*}, “Assembly of close-packed ferroelectric polymer nanowires via interface-epitaxy with ReS₂”, *Advanced Materials* **33**, 2100214 (2021).
38. Archit Dhingra, Takashi Komatsu, Shiv Kumar, Kenya Shimada, Le Zhang, Xia Hong, and Peter A. Dowben, “Electronic band structure of iridates”, *Materials Horizons* **8**, 2151 (2021).
39. Xiang Zhang, Fei Wang, Zhipeng Wu, Yongfeng Lu, Xueliang Yan, Michael Nastasi, Yan Chen, Yifei Hao, Xia Hong, Bai Cui, “Direct Selective Laser Sintering of Hexagonal Barium Titanate Ceramics”, *Journal of the American Ceramic Society* **104**, 1271 (2021).
40. Hojoon Ryu, Kai Xu, Dawei Li, Xia Hong^{*}, and Wenjuan Zhu^{*}, “(Perspective) Empowering 2D Nanoelectronics via Ferroelectricity”, *Applied Physics Letters* **117**, 080503 (2020).
41. Yuewei Yin, Xuanyuan Jiang, M. A. Koton, J. E. Shield, Xuegang Chen, Yu Yun, Alpha T. N’Diaye, Xia Hong, and Xiaoshan Xu, “Spin Rectification and Electrically Controlled Spin Transport in Molecular-Ferroelectrics-Based Spin Valves”, *Physical Review Applied* **13**, 064011 (2020).
42. L. Zhang, X. Jiang, X. Xu, and X. Hong^{*}, “Abrupt enhancement of spin-orbit scattering time in ultrathin semimetallic SrIrO₃ close to the metal-insulator transition”, *APL Materials* **8**, 051108 (2020).

43. Prescott E. Evans, Takashi Komesu, Le Zhang, Ding-Fu Shao, Andrew J. Yost, Shiv Kumar, Eike F. Schwier, Kenya Shimada, Evgeny Tsymbal, Xia Hong, and P. A. Dowben, “Detection of decoupled surface and bulk states in epitaxial orthorhombic SrIrO₃ thin films”, *AIP Advances* **10**, 045027 (2020).
44. Dawei Li, Xi Huang, Zhiyong Xiao, Hanying Chen, Le Zhang, Yifei Hao, Jingfeng Song, Ding-Fu Shao, Evgeny Y. Tsymbal, Yongfeng Lu, and Xia Hong*, “Polar Coupling Enabled Nonlinear Optical Filtering at MoS₂/Ferroelectric Heterointerfaces”, *Nature Communications* **11**, 1422 (2020).
45. Bo Chen, Jingfeng Song, Xuezheng Dai, Ye Liu, Peter N Rudd, Xia Hong, and Jinsong Huang, “Synergistic Effect of Elevated Device Temperature and Excess Charge Carriers on the Rapid Light-Induced Degradation of Perovskite Solar Cells”, *Adv. Mater.* **31**, 1902413 (2019).
46. D. Li, C. Wei, J. Song, X. Huang, F. Wang, K. Liu, W. Xiong, X. Hong, B. Cui, A. Feng, L. Jiang, Y. Lu, “Anisotropic Enhancement of Second-Harmonic Generation in Monolayer and Bilayer MoS₂ by Integrating with TiO₂ Nanowires”, *Nano Lett.* **19**, 4195 (2019).
47. A. Rajapitamahuni, L. L. Tao, Y. Hao, J. Song, X. Xu, E. Y. Tsymbal, and X. Hong*, “Ferroelectric Polarization Control of Magnetic Anisotropy in PbZr_{0.2}Ti_{0.8}O₃/La_{0.8}Sr_{0.2}MnO₃ Heterostructures”, *Phys. Rev. Mater.* **3**, 021401(R) (2019).
48. Xuegang Chen, Xiaozhe Zhang, Myung-Geun Han, Le Zhang, Yimei Zhu, Xiaoshan Xu, and Xia Hong*, “Magnetotransport Anomaly in Room Temperature Ferrimagnetic NiCo₂O₄ Thin Films”, *Adv. Mater.* **31**, 1805260 (2019).
49. Jingfeng Song, Z. Xiao, B. Chen, S. Prockish, X. Chen, Stephen J. Huang, and X. Hong*, “Enhanced Piezoelectric Response in Hybrid Lead Halide Perovskite Thin Films via Interfacing with Ferroelectric PbZr_{0.2}Ti_{0.8}O₃”, *ACS Appl. Mater. Interfaces* **10**, 19218 (2018).
50. Dawei Li, Zhiyong Xiao, Sai Mu, Fei Wang, Ying Liu, Jingfeng Song, Xi Huang, Lijia Jiang, Jun Xiao, Lei Liu, Stephen Ducharme, Bai Cui, Xia Hong, Lan Jiang, Jean-Francois Silvain, Yongfeng Lu, “A Facile Space-Confined Solid-Phase Sulfurization Strategy for Growth of High-Quality Ultrathin Molybdenum Disulfide Single Crystals”, *Nano Lett.* **18**, 2021 (2018).
51. Peter A. Dowben, Christian Binek, Kai Zhang, Lu Wang, Wai-Ning Mei, J. P. Bird, U. Singiseti, Xia Hong, Kang L. Wang, and Dmitri Nikonov, “Towards a Strong Spin-Orbit Coupling Magnetoelectric Transistor”, *IEEE Journal of Exploratory Solid-State Computational Devices and Circuits* **4**, 1-9 (2018).
52. Xin Zhang, Alpha T. N'Diaye, Xuanyuan Jiang, Xiaozhe Zhang, Yuewei Yin, Patrick Rosa, Xuegang Chen, Xia Hong, Xiaoshan Xu, and Peter A. Dowben, “Indications of magnetic coupling effects in spin cross-over molecular thin films”, *Chem. Commun.* **54**, 944 (2018).
53. Shi Cao, Zhiyong Xiao, Chun-Pui Kwan, Kai Zhang, Jonathan P. Bird, Lu Wang, W.N. Mei, Xia Hong, Peter A. Dowben, “Moving towards the Magnetoelectric Graphene Transistor”, *Appl. Phys. Lett.* **111**, 182402 (2017).
54. Reza M Moghadam, Zhiyong Xiao, Kamyar Ahmadi-Majlan, Everett D Grimley, Mark Bowden, Phuong-Vu Ong, Scott A Chambers, James M Lebeau, Xia Hong, Peter V Sushko, Joseph H Ngai, “An Ultrathin Single Crystalline Relaxor Ferroelectric Integrated on a High Mobility Semiconductor”, *Nano Lett.* **17**, 6248-6257 (2017).
55. Xuegang Chen, Xin Zhang, Mark A. Koten, Hanghui Chen, Zhiyong Xiao, Le Zhang, Jeffrey E. Shield, Peter A. Dowben and Xia Hong*, “Interfacial Charge Engineering in Ferroelectric-Controlled Mott Transistors”, *Adv. Mater.* **29**, 1701385 (2017).
56. D.W. Li, Q.M. Zou, H. Rabiee Golgir, K. Keramatnejad, X. Huang, J.F. Song, Z.Y. Xiao, X. Hong, L. Jiang, J.F. Silvain, and Y.F. Lu, “Controlled Defect Creation and Removal in Graphene and MoS₂ Monolayers”, *Nanoscale* **9**, 8997 (2017).

57. Zhiyong Xiao, Jingfeng Song, David K. Ferry, Stephen Ducharme, Xia Hong^{*}, “Ferroelectric-Domain-Patterning-Controlled Schottky Junction State in Monolayer MoS₂”, *Phys. Rev. Lett.* **118**, 236801 (2017).
58. Dawei Li, Zhiyong Xiao, Hossein Rabiee Golgir, Li Jia Jiang, Vijay Raj Singh, Kamran Keramatnejad, Kevin E. Smith, Xia Hong, Lan Jiang, Jean-Francois Silvain, and Yongfeng Lu, “Large-Area 2D/3D MoS₂–MoO₂ Heterostructures with Thermally Stable Exciton and Intriguing Electrical Transport Behaviors”, *Advanced Electronic Materials* **3**, 1600335 (2017).
59. Haidong Lu, Bo Wang, Tao Li, Alexey Lipatov, Hyungwoo Lee, Anil Rajapitamahuni, Ruijuan Xu, Xia Hong, Saeedeh Farokhipoor, Lane W. Martin, Chang-Beom Eom, Long-Qing Chen, Alexander Sinitskii, and Alexei Gruverman, “Nanodomain Engineering in Ferroelectric Capacitors with Graphene Electrodes”, *Nano Lett.*, **16**, 6460–6466 (2016).
60. A. Rajapitamahuni, L. Zhang, M. A. Koton, V. R. Singh, J. D. Burton, E. Y. Tsymbal, J. E. Shield, and X. Hong^{*}, “Giant Enhancement of Magnetic Anisotropy in Ultrathin CMR Films via Nanoscale 1D Periodic Depth Modulation”, *Phys. Rev. Lett.* **116**, 187201 (2016).
61. Xia Hong^{*}, “(Topical Review) Emerging ferroelectric transistors with nanoscale channel materials: the possibilities, the limitations”, *J. Phys.: Condens. Matter* **28**, 103003 (2016).
62. L. Zhang, X. G. Chen, H. J. Gardner, M. A. Koton, J. E. Shield, and X. Hong^{*}, “Effect of Strain on Ferroelectric Field Effect in Strongly Correlated Oxide Sm_{0.5}Nd_{0.5}NiO₃”, *Appl. Phys. Lett.* **107**, 152906 (2015).
63. L. Zhang, H. J. Gardner, X. G. Chen, V. R. Singh, and X. Hong^{*}, “Strain Induced Modulation of the Correlated Transport in Epitaxial Sm_{0.5}Nd_{0.5}NiO₃ Thin Films”, *J. Phys.: Condens. Matter (Fast Track Communication)* **27**, 132201 (2015). (*IOP Select, featured in the Lab Talk of JPCM, Apr. 29, 2015*)
64. Z. Xiao, J. Hamblin, S. Poddar, S. Ducharme, P. Paruch, and X. Hong^{*}, “Effect of Thermal Annealing on Ferroelectric Domain Structures in Poly(vinylidene-fluoride-trifluorethylene) Langmuir-Blodgett Thin Films”, *J. Appl. Phys.* **116**, 066819 (2014).
65. V. Singh, L. Zhang, A. K. Rajapitamahuni, N. Devries, and X. Hong^{*}, “Nonlinear transport in nanoscale phase separated colossal magnetoresistive oxide thin films”, *J. Appl. Phys.* **116**, 033914 (2014).
66. Z. Xiao, S. Poddar, S. Ducharme, and X. Hong^{*}, “Domain wall roughness and creep in nanoscale crystalline ferroelectric polymers”, *Appl. Phys. Lett.* **103**, 112903 (2013).
67. A. Rajapitamahuni, Jason Hoffman, Charles Ahn, and X. Hong^{*}, “Examining Graphene Field Effect Sensors for Ferroelectric Thin Film Studies”, *Nano Lett.* **13**, 4374 (2013).
68. X. Hong^{*}, K. Zou, A. M. DaSilva, C. H. Ahn, and J. Zhu, “(Review) Integrating functional oxides with graphene”, *Solid State Commun.* **152**, 1365 (2012).
69. P. Paruch, A. B. Kolton, X. Hong, C. H. Ahn, and T. Giamarchi, “Thermal quench effects on ferroelectric domain walls”, *Phys. Rev. B* **85**, 214115 (2012).
70. X. Hong, K. Zou, B. Wang, S.-H. Cheng, and J. Zhu, “Evidence for spin-flip scattering and local moments in dilute fluorinated graphene”, *Phys. Rev. Lett.* **108**, 226602 (2012).
71. K. Zou, X. Hong, and J. Zhu, “Electron-electron interaction and electron-hole asymmetry in bilayer graphene”, *Phys. Rev. B* **84**, 085408 (2011).
72. J. Hoffman, X. Hong, and C.H. Ahn, “Device performance of ferroelectric/correlated oxide heterostructures for non-volatile memory applications”, *Nanotechnology* **22**, 254014 (2011).

73. X. Hong, S.-H. Cheng, C. Herding, and J. Zhu, “Colossal negative magnetoresistance in dilute fluorinated graphene”, *Phys. Rev. B* **83**, 085410 (2011).
74. K. Zou, X. Hong, D. Keefer, and J. Zhu, “Deposition of high-quality HfO_2 on graphene and the effect of remote substrate phonon scattering”, *Phys. Rev. Lett.* **105**, 126601 (2010).
75. X. Hong, J. Hoffman, A. Posadas, K. Zou, C.H. Ahn, and J. Zhu “Unusual resistance hysteresis in n -layer graphene field effect transistors fabricated on ferroelectric $\text{Pb}(\text{Zr}_{0.2}\text{Ti}_{0.8})\text{O}_3$ ”, *Appl. Phys. Lett.* **97**, 033114 (2010).
76. X. Hong, K. Zou, and J. Zhu, “Quantum scattering time and its implications on scattering sources in graphene”, *Phys. Rev. B* **80**, 241415 (*Rapid Communication*) (2009). Appeared in *Virtual Journal of Nanoscale Science & Technology* (Jan. 18, 2010 issue) and *Virtual Journal of Ultrafast Science* (Jan. 2010 issue).
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84. X. Hong, A. Posadas, and C. H. Ahn, “Examining the screening limit of field effect devices via the metal-insulator transition”, *Appl. Phys. Lett.* **86**, 142501 (2005).
85. X. Hong, F. Xiao, J. W. Reiner, A. Posadas, and C. H. Ahn, “Growth and characterization of $\text{La}_{0.8}\text{Sr}_{0.2}\text{MnO}_3/\text{Pb}(\text{Zr}_{0.2}\text{Ti}_{0.8})\text{O}_3/\text{La}_{0.8}\text{Sr}_{0.2}\text{MnO}_3$ heterostructures for three-dimensional circuit studies”, *Ann. Phys.* **13**, 15 (2004).
86. Y. Bason, L. Klein, J.-B. Yau, X. Hong, and C. H. Ahn, “Giant planar Hall effect in colossal magnetoresistive $\text{La}_{0.84}\text{Sr}_{0.16}\text{MnO}_3$ thin films”, *Appl. Phys. Lett.* **84**, 2593 (2004).
87. X. Hong, A. Posadas, A. Lin, and C. H. Ahn, “Ferroelectric-field-induced tuning of magnetism in the colossal magnetoresistive oxide $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$ ”, *Phys. Rev. B* **68**, 134415 (2003).
88. A. Lin, X. Hong, V. Wood, A. A. Verevkin, C. H. Ahn, R. A. McKee, F. J. Walker, and E. D. Specht, “Epitaxial growth of $\text{Pb}(\text{Zr}_{0.2}\text{Ti}_{0.8})\text{O}_3$ on Si and its nanoscale piezoelectric properties”, *Appl. Phys. Lett.* **78**, 2034 (2001).

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89. Le Zhang, Anil Rajapitamahuni, Yifei Hao, Xia Hong*, “Probing magnetic anisotropy in epitaxial $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3$ thin films and nanostructures via planar Hall effect”, *Proc. SPIE 10732*, Spintronics XI, 107320F (20 September 2018), doi: 10.1117/12.2319249.
90. Y. Bason, L. Klein, J.B. Yau, X. Hong, C.H. Ahn, “Characterization of the magnetic anisotropy in thin films of $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$ using the planar Hall effect”, *Proceedings of Second Seeheim Conference on Magnetism, Physica Status Solidi (c)* **1**, 3336-3338 (2004).

Patents

1. Charles Ahn, Lior Klein, Yosef Bason, Xia Hong, Jeng-bang Yau, “Magnetoelectronic devices based on colossal magnetoresistive thin films”. United States Patent 7684147.
2. Dmitri E. Nikonov, Christian Binek, Xia Hong, Jonathan P. Bird, Kang L. Wang, Peter W. Dowben, “Anti-Ferromagnetic Magneto-Electric Spin-Orbit Read Logic”. Patent Number: US 10,361,292 B2

Invited Talks, Seminars, and Colloquia

<i>Invited talk, MRS Spring Meeting</i>	Honolulu, HI	Scheduled
<i>Invited talk, 70th Annual Conference on Magnetism and Magnetic Materials</i>	West Palm Beach, FL	Oct. 31, 2025
<i>Invited talk, 31th International Workshop on Oxide Electronics</i>	Banff, Canada	Sep. 30, 2025
<i>Invited talk, MRS Spring Meeting</i>	Seattle, WA	Apr. 11, 2025
<i>Penn State Two-Dimensional Crystal Consortium Webinar</i>	Webinar	Mar. 27, 2025
<i>Invited talk, EMA 2025: Basic Science and Electronics Division Meeting</i>	Denver, CO	Feb. 26, 2025
<i>Invited talk, 7th International Workshop on Complex Oxides</i>	Cargèse, France	Apr. 29, 2024
<i>Invited talk, MRS Spring Meeting</i>	Seattle, WA	Apr. 26, 2024
<i>Invited talk, MRS Spring Meeting</i>	Seattle, WA	Apr. 24, 2024
<i>Condensed Matter Seminar, University of Iowa</i>	Iowa City, IA	Apr. 17, 2024
<i>Invited talk, EMA 2024: Basic Science and Electronics Division Meeting</i>	Denver, CO	Feb. 14, 2024
<i>Invited talk, 49th Conference on the Physics and Chemistry of Surfaces and Interfaces</i>	Santa Fe, NM	Jan. 17, 2024
<i>Feicuihu Distinguished Materials Scientists Forum, The Fifth Lecture, Materials and Engineering, Anhui University</i>	Hefei, China	Sep. 26, 2023
<i>Seminar, Institute of Solid State Physics, University of Science and Technology of China</i>	Hefei, China	Sep. 26, 2023
<i>Seminar, Department of Physics, University of Science and Technology of China</i>	Hefei, China	Sep. 25, 2023
<i>Invited talk, 2023 Boulder Workshop on Quantum Materials Synthesis</i>	Boulder, CO	July 26, 2023
<i>Seminar, Physics Department, Colorado School of Mines</i>	Golden, CO	Feb. 7, 2023

<i>Ruwei Shi Lecture Series in Physics</i> , Department of Physics, University of Science and Technology of China	<i>Virtual</i>	Nov. 1, 2022
<i>Seminar</i> , Wuhan National High Magnetic Field Center, Huazhong University of Science and Technology	Wuhan, China	Oct. 20, 2022
<i>Invited talk</i> , APS March Meeting	Chicago, IL	Mar. 15, 2022
<i>Invited talk</i> , Electronic Materials and Applications Conference	<i>Virtual</i>	Jan. 20, 2022
<i>Condensed Matter Physics Seminar</i> , Department of Physics, Penn State University	<i>Web Seminar</i>	Oct. 11, 2021
<i>Colloquium</i> , Department of Physics and Astronomy, University of Nebraska-Lincoln	Lincoln, NE	Sep. 9, 2021
<i>Invited talk</i> , Intel	<i>Web Talk</i>	Nov. 16, 2020
<i>Invited talk</i> , 2020 Magnetism and Magnetic Materials Virtual Conference	<i>Web Talk</i>	Nov. 6, 2020
<i>SRC LMD e-Workshop</i>	<i>Web Seminar</i>	Feb. 20, 2020
<i>Condensed Matter Seminar</i> , Physics Department, Temple University	Philadelphia, PA	Nov. 6, 2019
<i>Colloquium</i> , Department of Physics, University of Illinois at Chicago	Chicago, IL	Feb. 18, 2019
<i>Invited talk</i> , 4 th International Conference on 2D Materials and Technologies (ICON-2DMat 2018)	Melbourne, Australia	Dec. 12, 2018
<i>Complex Quantum Systems/Condensed Matter Seminar</i> , Department of Physics, University of Texas-Austin	Austin, TX	Sep. 20, 2018
<i>Invited talk</i> , 2018 SPIE Spintronics XI Conference	San Diego, CA	Aug. 19, 2018
<i>Seminar</i> , Institute of Physics, Chinese Academy of Sciences ¹⁵	Beijing, China	May 10, 2018
<i>Invited talk</i> , 2018 Conference on Electronic and Advanced Materials	New Orlando, FL	Jan. 18, 2018
<i>Condensed Matter Physics Seminar</i> , Department of Physics, Penn State University	University Park, PA	Oct. 18, 2017
<i>Condensed Matter Physics & Materials Science Seminar</i> , Brookhaven National Laboratory	Upton, NY	June 20, 2017
<i>Seminar</i> , SOEI Forum, School of Optical and Electronic Information, Huazhong University of Science and Technology	Wuhan, China	May 18, 2017
<i>Seminar</i> , Institute of Physics, New York University-Shanghai	Shanghai, China	May 10, 2017
<i>Invited talk</i> , 2016 Workshop on Innovative Nanoscale Devices and Systems (WINDS)	Kohala Coast, HI	Dec. 4, 2016
<i>ECE Colloquium</i> , Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign	Urbana, IL	Sep. 22, 2016
<i>Seminar</i> , School of Physics, Huazhong University of Science and Technology	Wuhan, China	May 11, 2016
<i>Seminar</i> , International Center for Quantum Materials, School of	Beijing, China	May 6, 2016

Physics, Peking University

<i>Institute for Materials Science & Engineering Seminar, Department of Physics, Washington University in St. Louis</i>	St. Louis, MO	Apr. 29, 2016
<i>SRC NRI e-Workshop</i>	<i>Web Seminar</i>	Oct. 20, 2015
<i>Seminar, IBM Watson Research Center</i>	Yorktown, NY	July 15, 2015
<i>Colloquium, Department of Physics, University of Northern Iowa</i>	Cedar Falls, IA	Apr. 22, 2015
<i>Hard Condensed Matter and AMO Seminar, School of Physics, Georgia Institute of Technology</i>	Atlanta, GA	Mar. 26, 2015
<i>NST Seminar, Center for Nanoscale Materials, Argonne National Laboratory</i>	Argonne, IL	Nov. 12, 2014
<i>Invited advocate for “Mott Memory”, 2014 ITRS-ERD Emerging Memory Device Assessment Workshop</i>	Albuquerque, NM	Aug. 26, 2014
<i>Invited talk, 3rd World Congress of Advanced Materials</i>	Chongqing, China	Jun. 8, 2014
<i>Invited guest speaker, Electrical and Computer Engineering Honor Society, University of Nebraska-Lincoln</i>	Lincoln, NE	Apr. 9, 2014
<i>Invited talk, 57th Midwest Solid State Conference</i>	Lawrence, KS	Sep. 28, 2013
<i>Invited talk, PSS Symposia on Quantum/Crystal, Graphene and New Particle Physics-2013</i>	Boston, MA	Sep. 5, 2013
<i>Invited talk, Crystal & Graphene Science Symposium-2012</i>	Boston, MA	Sep. 6, 2012
<i>NCMN Seminar, University of Nebraska-Lincoln</i>	Lincoln, NE	Nov. 9, 2011
<i>Invited talk, Conference for Undergraduate Women in Physics</i>	Lincoln, NE	Oct. 21, 2011
<i>Invited talk, Graphene Mini-Workshop</i>	Lincoln, NE	Mar. 28, 2011
<i>Invited talk, APS March Meeting</i>	Dallas, TX	Mar. 24, 2011
<i>Colloquium, Department of Physics, Missouri University of Science and Technology</i>	Rolla, MO	Mar. 25, 2010
<i>Colloquium, Department of Physics and Astronomy, University of Kentucky</i>	Lexington, KY	Feb. 24, 2010
<i>Colloquium, Department of Physics and Astronomy, University of Nebraska, Lincoln</i>	Lincoln, NE	Feb. 18, 2010
<i>Colloquium, Department of Physics, Lehigh University</i>	Bethlehem, PA	Feb. 11, 2010
<i>Condensed Matter Seminar 290 K, University of California, Berkeley</i>	Berkeley, CA	Feb. 1, 2010
<i>Colloquium, Physics Department, West Virginia University</i>	Morgantown, WV	Jan. 21, 2010
<i>Colloquium, Physics Department, Northeastern University</i>	Boston, MA	Nov. 16, 2009
<i>Invited talk, 21st International Symposium on Integrated Ferroelectrics and Functionalities</i>	Colorado Springs, CO	Sep. 29, 2009
<i>Seminar, IBM Watson Research Center</i>	Yorktown, NY	May 24, 2006
<i>CRISP Seminar, MRSEC Center, Yale University</i>	New Haven, CT	May, 2006

<i>Seminar</i> , Department of Physics, Penn State University	State College, PA	May 1, 2006
<i>Seminar</i> , Department of Physics, Rutgers University	Piscataway, NJ	Apr. 20, 2006
<i>Monday Evening Seminar</i> , Applied Physics, Yale University	New Haven, CT	Feb. 27, 2006
<i>SRC Seminar</i> , Advanced Micro Devices	Sunnyvale, CA	Oct. 3, 2005
<i>SRC Seminar</i> , Advanced Micro Devices	Sunnyvale, CA	Sep. 22, 2004
<i>Monday Evening Seminar</i> , Applied Physics, Yale University	New Haven, CT	Jan. 12, 2004

Research Advisees

Current Advisees

Postdoc: Tianlin Li, Qiuchen Wu

Graduate students: Yidi Luo, Abby Vasquez, Xiaohui Xiao, Yuanyuan Zhang

Undergraduate students: Hailey Anderson, Aram Pirali, Brandon Blodgett, Jesse Stebbing

Former Graduate Students/Graduation Years/Current Affiliations

Tianlin Li (PhD, 2024): Postdoc, Physics and Astronomy, UNL

Yifei Hao (PhD, 2024): Postdoc, Yale University

Jia Wang (PhD, 2023): Postdoc, University of Wisconsin-Madison

Kun Wang (PhD, 2023): Texas Instruments, Texas

Hanying Chen (Master, 2021): Staff, Holland Computing Center, UNL

Le Zhang (PhD, 2018): Process Engineer, Applied Materials

Anil Rajapitamahuni (PhD, 2017): Postdoc, Brookhaven National Laboratory

Zhiyong Xiao (PhD, 2017): Metrology Engineer, Seagate Technology

Former Postdocs/Current Affiliations

Dawei Li (2017-2021): Professor, Dalian University of Technology, China

Le Zhang (2018-2020): Process Engineer, Applied Materials

Xuegang Chen (2014-2019): Professor, Anhui University, China

Jingfeng Song (2016-2018): Senior Design Engineer, ASML

H Jeffery Gardner (2013-2014): Quality Engineer, Molex, Inc.

Vijay Raj Singh (2011-2014): Associate Professor, Central University of South Bihar Gaya, India

Professional Affiliations

American Physical Society

American Ceramic Society

American Chemical Society

American Vacuum Society