Xiaofeng Qian

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Education

1997 – 2001 Bachelor of Science in Engineering Physics
Tsinghua University, Beijing, China

2002 – 2008 Doctor of Philosophy in Nuclear Science and Engineering
Massachusetts Institute of Technology, Cambridge, MA
Thesis: Electronic Structure and Transport in Molecular and Nanoscale Electronics
Advisor: Sidney Yip

Professional Experience

09/2021 – present Associate Professor, Department of Materials Science and Engineering
Texas A&M University College Station, TX

01/2015 – 08/2021 Assistant Professor, Department of Materials Science and Engineering
Texas A&M University College Station, TX

07/2014 – 12/2014 Research Scientist, Department of Nuclear Science and Engineering
Massachusetts Institute of Technology Cambridge, MA

08/2011 – 06/2014 Postdoctoral Associate, Department of Nuclear Science and Engineering
Massachusetts Institute of Technology Cambridge, MA

01/2008 – 07/2011 Postdoctoral Associate, Department of Materials Science and Engineering
Massachusetts Institute of Technology Cambridge, MA

07/2001 – 07/2002 Research Assistant, Key Laboratory of Particle & Radiation Imaging
Tsinghua University Beijing, China

Honors & Awards

- 2021 AZZ Faculty Fellow Award, Texas A&M University
- 2021 TEES Young Faculty Fellow Award, Texas A&M University
- 2020 Materials Today Rising Star Award in Quantum Materials

- 2018 NSF CAREER Award, Division of Materials Research, Condensed Matter and Materials Theory (DMR CMMT)
- 2006 Manson Benedict Fellowship
  Department of Nuclear Science and Engineering, Massachusetts Institute of Technology, Boston, MA
- 2005 Letter of Commendation for Outstanding Academic Performance, 2005
  Department of Nuclear Science and Engineering, Massachusetts Institute of Technology, Boston, MA
- 1999 Hosogoe Scholarship
  Tsinghua University, Beijing, China

Research Interests

- First-Principles Theory and Method Development
- Theory, Discovery, and Design of 2D Materials and Topological Materials
- Quantum Phases, Quantum Processes and Device Concepts of Functional Materials
- Electronic, Thermal, Ionic, and Excitonic Transport
- Multiscale Materials Modeling of Complex Physical and Chemical Processes

Methodology Development (http://people.tamu.edu/~feng/software.html)

- First-Principles Nonlinear Optics
- First-Principles Quasiatomic Orbitals and Tight-Binding Method
- First-Principles Green's Function Method Based Quantum Transport
- First-Principles Defect Physics
- Time-Dependent Density Functional Theory with Ultrasoft Pseudopotentials and PAW Method
- Many-Body Perturbation Theory in the GW Approach for Excited-State Properties (with Professor Paolo Umari at University of Padova, Italy, et al.)

Peer-Reviewed Journal Publications & Manuscripts Under Review

Google Scholar: http://scholar.google.com/citations?user=bK7fFKoAAAAJ
(total citations: **5,700**; ***h***-index: **34** ***i***10-index: **56**)

*: graduate students from Qian's group
†: co-first author
#: corresponding author

. . . . . **Publications Since Joining Texas A&M University** . . . . . .

1. Baiyu Zhang* and **Xiaofeng Qian**#, "Competing Superior Electronic Structure and Complex Defect Chemistry in Quasi-One-Dimensional Antimony Chalcogenide Photovoltaic Absorbers", **ACS Applied Energy Materials** 5, 492–502 (2022). doi: 10.1021/acsaem.1c03023

2. Joseph V. Handy, Justin L. Andrews, Baiyu Zhang*, Doyun Kim, Nattamai Bhuvanesh, Qing Tu, **Xiaofeng Qian**#, and Sarbajit Banerjee, "Topochemical stabilization and single-crystal transformations of a metastable 2D γ'-V_2O_5 intercalation cathode", **Cell Reports Physical Science** 3, 100712 (2022). doi: 10.1016/j.xcrp.2021.100712

3. Hexin Bai, Peng Chu, Jeng-Yuan Tsai, Nathan Wilson, **Xiaofeng Qian**, Qimin Yan, and Haibin Ling, "Graph neural network for Hamiltonian-based material property prediction", **Neural Computing and Applications** (2021). doi: 10.1007/s00521-021-06616-0

4. Zhuoliang Ni, Amanda V. Haglund, Hua Wang*, Bing Xu, Christian Bernhard, David G. Mandrus, **Xiaofeng Qian**, Eugene J. Mele, Charles L. Kane, and Liang Wu, "Imaging the Néel vector switching in the monolayer antiferromagnet $MnPSe_3$ with strain-controlled Ising order", **Nature Nanotechnology** 16, 782–787 (2021). doi: 10.1038/s41565-021-00885-5

5. Wenbin Li, **Xiaofeng Qian**, and Ju Li, "Phase transitions in 2D materials", **Nature Reviews Materials** 6, 829–846 (2021). doi: 10.1038/s41578-021-00304-0

6. Daniel A. Rhodes, Apoorv Jindal, Noah F. Q. Yuan, Younghun Jung, Abhinandan Antony, Hua Wang*, Bumho Kim, Yu-che Chiu, Takashi Taniguchi, Kenji Watanabe, Katayun Barmak, Luis Balicas, Cory R. Dean, **Xiaofeng Qian**, Liang Fu, Abhay N. Pasupathy, and James Hone, "Enhanced Superconductivity in Monolayer T_d-$MoTe_2$", **Nano Letters** 21, 2505–2511 (2021). doi: 10.1021/acs.nanolett.0c04935

7. Shuyuan Huyan, Yanfeng Lyu, Hua Wang*, Liangzi Deng, Zheng Wu, Bing Lv, Kui Zhao, Fei Tian, Guanhui Gao, Rui-Zhe Liu, Xiaojing Ma, Zhongjia Tang, Melissa Gooch, Shuo Chen, Zhifeng Ren, **Xiaofeng Qian**, and Ching-Wu Chu, "Interfacial Superconductivity Achieved in Parent $AEFe_2As_2$ (AE = Ca, Sr, Ba) by a Simple and Realistic Annealing Route", **Nano Letters** 21, 2191–2198 (2021). doi: 10.1021/acs.nanolett.0c04995

8. Ziyu Xiang, Mingzhou Fan, Guillermo Vazquez Tovar, William Trehem, Byung-Jun Yoon, **Xiaofeng Qian**, Raymundo Arroyave, and Xiaoning Qian, "Physics-constrained Automatic Feature Engineering for Predictive Modeling in Materials Science", **Proceedings of the AAAI Conference on Artificial Intelligence** 35, 10414-10421 (2021)

9. Aikaterini Flessa Savvidou, Judith K. Clark, Hua Wang*, Kaya Wei, Eun Sang Choi, Shirin Mozaffari, **Xiaofeng Qian**, Michael Shatruk, and Luis Balicas, "Complex Dirac-like Electronic Structure in Atomic Site-Ordered $Rh_3In_{3.4}Ge_{3.6}$", **Chemistry of Materials** 33, 1218–1227 (2021). doi: 10.1021/acs.chemmater.0c03943

10. Xing-Yu Ma, Hou-Yi Lyu, Kuan-Rong Hao, Yiming Zhao, **Xiaofeng Qian**, Qing-Bo Yan, and Gang Su, "Surface Functionalization Large Family of Two-Dimensional Ferroelectric Metals Discovered via Machine Learning",

Science Bulletin 15, 233-242 (2021). doi: 10.1016/j.scib.2020.09.010

11. Diana Al Husseini, Yashaswini Karanth, Junchao Zhou, Daniel Willhelm*, **Xiaofeng Qian**, Ricardo Gutierrez-Osuna, Gerard L. Coté, Pao Tai Lin, and Svetlana A. Sukhishvili, "Surface Functionalization Utilizing Mesoporous Silica Nanoparticles for Enhanced Evanescent-Field Mid-Infrared Waveguide Gas Sensing",
Coatings 11, 118 (2021). doi: 10.3390/coatings11020118

12. Hua Wang* and **Xiaofeng Qian**#, "Electrically and magnetically switchable nonlinear photocurrent in *PT*-symmetric magnetic topological quantum materials",
npj Computational Materials 6, 199 (2020). doi: 10.1038/s41524-020-00462-9

13. Jia Liang, Qiyi Fang, Hua Wang*, Rui Xu, Shuai Jia, Yuxuan Guan, Qing Ai, Guanhui Gao, Hua Guo, Kaijun Shen, Xiewen Wen, Tanguy Terlier, Gary P. Wiederrecht, **Xiaofeng Qian**#, Hanyu Zhu#, and Jun Lou#, "Perovskite-Derivative Valleytronics",
Advanced Materials 32, 2004111 (2020). doi: 10.1002/adma.202004111

14. Diana Al Husseini, Junchao Zhou, Daniel Willhelm*, Trevor Hastings, Gregory S. Day, Hong-Cai Zhou, Gerard L. Cote, **Xiaofeng Qian**, Ricardo Gutierrez-Osuna, Pao Tai Lin, and Svetlana A. Sukhishvili, "All-nanoparticle layer-by-layer coatings for Mid-IR on-chip gas sensing",
Chemical Communications 56, 14283-14286 (2020). doi: 10.1039/D0CC05513A

15. Kamal Choudhary, Kevin F. Garrity, Andrew C. E. Reid, Brian DeCost, Adam J. Biacchi, Angela R. Hight Walker, Zachary Trautt, Jason Hattrick-Simpers, A. Gilad Kusne, Andrea Centrone, Albert Davydov, Jie Jiang, Ruth Pachter, Gowoon Cheon, Evan Reed, Ankit Agrawal, **Xiaofeng Qian**, Vinit Sharma, Houlong Zhuang, Sergei V. Kalinin, Bobby G. Sumpter, Ghanshyam Pilania, Pinar Acar, Subhasish Mandal, Kristjan Haule, David Vanderbilt, Karin Rabe, and Francesca Tavazza, Raymundo Arroyave#, Patrick J. Shamberger#, and Sarbajit Banerjee#, "The joint automated repository for various integrated simulations (JARVIS) for data-driven materials design",
npj Computational Materials 6, 173 (2020). doi: 10.1038/s41524-020-00440-1

16. Diane G. Sellers, Erick J. Braham, Ruben Villarreal, Baiyu Zhang*, Abhishek Parija, Timothy D. Brown, Theodore E. G. Alivio, Heidi Clarke, Luis R. De Jesus, Lucia Zuin, David Prendergast, **Xiaofeng Qian**#, Raymundo Arroyave#, Patrick J. Shamberger#, and Sarbajit Banerjee#, "Atomic Hourglass and Thermometer Based on Diffusion of a Mobile Dopant in VO_2",
Journal of the American Chemical Society 142, 15513–15526 (2020). doi: 10.1021/jacs.0c07152

17. Kunyan Zhang, Yunfan Guo, Qingqing Ji, Ang-Yu Lu, Cong Su, Hua Wang*, Alexander A. Puretzky, David B. Geohegan, **Xiaofeng Qian**, Shiang Fang, Efthimios Kaxiras, Jing Kong, and Shengxi Huang, "Enhancement of van der Waals Interlayer Coupling through Polar Janus MoSSe",
Journal of the American Chemical Society 142, 17499–17507 (2020). doi: 10.1021/jacs.0c07051

18. Hua Wang*†, Jingshan Qi†, and **Xiaofeng Qian**#, "Electrically tunable high Curie temperature two-dimensional ferromagnetism in van der Waals layered crystals",
Applied Physics Letters 117, 083102 (2020). doi: 10.1063/5.0014865

19. Ziye Zhu, Baiyu Zhang*, Xiaofang Chen, **Xiaofeng Qian**, and Jingshan Qi, "Electric Field Control of Molecular Magnetic State by Two Dimensional Ferroelectric Heterostructure Engineering", **Applied Physics Letters** 117, 082902 (2020). doi: 10.1063/5.0012039

20. Jun Xiao, Ying Wang, Hua Wang*, C. D. Pemmaraju, Siqi Wang, Philipp Muscher, Edbert J. Sie, Clara M. Nyby, Thomas P. Devereaux, **Xiaofeng Qian**Xiang Zhang, and Aaron M. Lindenberg, "Berry curvature memory through electrically driven stacking transitions", **Nature Physics** 16, 1028-1034 (2020). doi: 10.1038/s41567-020-0947-0

21. Abhishek Pandey, Ping Miao, M. Klemm, Hua He, Hua Wang*, **Xiaofeng Qian**, Jeffrey W. Lynn, and Meigan C. Aronson, "Correlations and incipient antiferromagnetic order within the linear Mn chains of metallic Ti_4MnBi_2", **Physical Review B** 102, 014406 (2020). doi: 10.1103/PhysRevB.102.014406

22. Mohammad Taghinejad, Zihao Xu, Hua Wang*, Hossein Taghinejad, Kyu-Tae Lee, Sean P. Rodrigues, Ali Adibi, **Xiaofeng Qian**, Tianquan Lian, and Wenshan Cai, "Photocarrier-Induced Active Control of Second-Order Optical Nonlinearity in Monolayer MoS_2", **Small** 16, 1906347 (2020). doi: 10.1002/smll.201906347

23. Hua Wang* and **Xiaofeng Qian**, "Ferroicity-driven nonlinear photocurrent switching in time-reversal invariant ferroic materials", **Science Advances** 5, eaav9743 (2019). doi: 10.1126/sciadv.aav9743

24. Hua Wang* and **Xiaofeng Qian**, "Ferroelectric nonlinear anomalous Hall effect in few-layer WTe_2", **npj Computational Materials** 5, 119 (2019). doi: 10.1038/s41524-019-0257-1

25. Yong-Jie Hu, Ge Zhao, Baiyu Zhang*, Chaoming Yang, Mingfei Zhang, Zi-Kui Liu, **Xiaofeng Qian**, and Liang Qi, "Local electronic descriptors for solute-defect interactions in bcc refractory metals", **Nature Communications** 10, 4484 (2019). doi: 10.1038/s41467-019-12452-7

26. Liping Guo[†], Baiyu Zhang*[†], Smriti Ranjit, Jacob Wall, Swapnil Saurav, Adam J. Hauser, Guozhong Xing, Lin Li, **Xiaofeng Qian**[#], and Feng Yan[#], "Interface Engineering via Sputtered Oxygenated CdS:O Window Layer for Highly Efficient Sb_2Se_3 Thin Film Solar Cells with Efficiency above 7%", **Solar RRL** 3, 1900225 (2019). doi: 10.1002/solr.201900225

27. Leigang Li, Jianli Cheng, Hua Wang*, Jijie Huang, Xingyao Gao, Xuejing Wang, Shikhar Misra, Bruce Zhang, Jie Jian, Aiping Chen, Ping Lu, **Xiaofeng Qian**, Kesong Yang, and Haiyan Wang, "Interfacial Engineering Enabled Novel Bi-Based Layered Oxide Supercells with Modulated Microstructures and Tunable Physical Properties", **Crystal Growth & Design** 19, 7088-7095 (2019). doi: 10.1021/acs.cgd.9b00938

28. Liping Guo[†], Baiyu Zhang*[†], Shan Li, Lin Li, Guozhong Xing, Qian Zhang, **Xiaofeng Qian**[#], and Feng Yan[#], "Interfacial Engineering of Oxygenated Chemical Bath Deposited CdS Window Layer for Highly Efficient Sb_2Se_3 Thin Film Solar Cells", **Materials Today Physics** 10, 100125 (2019). doi: 10.1016/j.mtphys.2019.100125

29. Fenglei Shi, Jing He, Baiyu Zhang*, Jiaheng Peng, Yanling Ma, Wenlong Chen, Fan Li, Yong Qin, Yang Liu, Wen Shang, Peng Tao, Chengyi Song, Tao Deng, **Xiaofeng Qian**#, Jian Ye#, and Jianbo Wu#, "Plasmonic-Enhanced Oxygen Reduction Reaction of Silver/Graphene Electrocatalysts", **Nano Letters** 19, 1371-1378 (2019). doi: 10.1021/acs.nanolett.8b05053

30. Liping Guo, Corey Grice, Baiyu Zhang*, Scott Xing, Lin Li, **Xiaofeng Qian**, and Feng Yan, "Improved stability and efficiency of CdSe/Sb_2Se_3 thin-film solar cells", **Solar Energy** 188, 586-592 (2019). doi: 10.1016/j.solener.2019.06.042

31. Liping Guo†, Baiyu Zhang*†, Shan Li, Qian Zhang, Michael Buettner, Lin Li, **Xiaofeng Qian**#, and Feng Yan#, "Scalable and efficient Sb_2S_3 thin-film solar cells fabricated by close space sublimation", **APL Materials** 7, 041105 (2019). doi: 10.1063/1.5090773

32. Daniel Rossi, Hua Wang*, Yitong Dong, Tian Qiao, **Xiaofeng Qian**, and Dong Hee Son, "Light-Induced Activation of Forbidden Exciton Transition in Strongly Confined Perovskite Quantum Dots", **ACS Nano** 12, 12436-12443 (2018). doi: 10.1021/acsnano.8b06649

33. Liping Guo†, Baiyu Zhang*†, Ying Qin, Dawen Li, Lin Li, **Xiaofeng Qian**#, and Feng Yan#, "Tunable Quasi-One-Dimensional Ribbon Enhanced Light Absorption in Sb_2Se_3 Thin-film Solar Cells Grown by Close-Space Sublimation", **Solar RRL** 2, 1800128 (2018). doi: 10.1002/solr.201800128

34. Jingshan Qi#, Hua Wang*, Xiaofang Chen, and **Xiaofeng Qian**#, "Two-dimensional multiferroic semiconductors with coexisting ferroelectricity and ferromagnetism", **Applied Physics Letters** 113, 043102 (2018). doi: 10.1063/1.5038037

35. Jiangjing Wang, Ider Ronneberger, Ling Zhou, Lu Lu, Volker Deringer, Baiyu Zhang*, Lin Tian, Hongchu Du, Chunlin Jia, **Xiaofeng Qian**, Matthias Wuttig, Ricardo Mazzarello, and Wei Zhang, "Unconventional two-dimensional germanium dichalcogenides", **Nanoscale** 10, 7363-7368 (2018). doi: 10.1039/C8NR01747F

36. Qihang Zhang, Zhongkai Liu, Yan Sun, Haifeng Yang, Juan Jiang, Sung-Kwan M, Zahid Hussain, **Xiaofeng Qian**, Liang Fu, Shuhua Yao, Minghui Lu, Claudia Felser, Binghai Yan, Yulin Chen, and Lexian Yang, "Lifshitz Transitions Induced by Temperature and Surface Doping in Type-II Weyl Semimetal Candidate T_d-WTe_2", **Physica Status Solidi - Rapid Research Letter** 11, 1700209 (2017). doi: 10.1002/pssr.201700209

37. Hua Wang* and **Xiaofeng Qian**#, "Giant Optical Second Harmonic Generation in Two-Dimensional Multiferroics", **Nano Letters** 17, 5027-5034 (2017). doi: 10.1021/acs.nanolett.7b02268

38. Hua Wang* and **Xiaofeng Qian**#, "Two-Dimensional Multiferroics in Monolayer Group IV Monochalcogenides", **2D Materials** 4, 015042 (2017). doi: 10.1088/2053-1583/4/1/015042
News Release:"https://phys.org/news/2017-06-two-dimensional-multiferroics-monolayer-group-iv.html"

39. Hyun Deog Yoo, Yanliang Liang, Hui Dong, Junhao Lin, Hua Wang*, Yisheng Liu, Lu Ma, Tianpin Wu, Yifei Li, Qiang Ru, Yan Jing, Qinyou An, Wu Zhou, Jinghua Guo, Jun Lu, Sokrates T. Pantelides, **Xiaofeng Qian**, and Yan Yao, "Fast kinetics of magnesium monochloride cations in interlayer-expanded titanium disulfide for magnesium rechargeable batteries",
Nature Communications 8, 339 (2017). doi: 10.1038/s41467-017-00431-9

40. Junwei Liu†, Hua Wang*†, Chen Fang, Liang Fu, and **Xiaofeng Qian**#, "Van der Waals Stacking Induced Topological Phase Transition in Layered Ternary Transition Metal Chalcogenides",
Nano Letters 17, 467-475 (2017). doi: 10.1021/acs.nanolett.6b04487

41. Jingshan Qi#, Xiao Li, and **Xiaofeng Qian**#, "Electrically controlled band gap and topological phase transition in two-dimensional multilayer germanane",
Applied Physics Letters 108, 253107 (2016). doi: 10.1063/1.4954645

42. Hong Li, Alex W. Contryman, **Xiaofeng Qian**, Sina Moeini Ardakani, Yongji Gong, Xingli Wang, Jeffery M. Weisse, Chi Hwan Lee, Jiheng Zhao, Pulickel M. Ajayan, Ju Li, Hari C. Manoharan, and Xiaolin Zheng, "Optoelectronic crystal of artificial atoms in strain-textured molybdenum disulphide",
Nature Communications 6, 7381 (2015). doi: 10.1038/ncomms8381

43. Junwei Liu#, **Xiaofeng Qian**#, and Liang Fu#, "Crystal Field Effect Induced Topological Crystalline Insulators In Monolayer IV–VI Semiconductors",
Nano Letters 15, 2657-2261 (2015). doi: 10.1021/acs.nanolett.5b00308

44. **Xiaofeng Qian**, Paolo Umari, and Nicola Marzari, "First-principles investigation of organic photovoltaic materials C_{60}, C_{70}, [C_{60}]PCBM, and bis-[C_{60}]PCBM using a many-body G_0W_0-Lanczos approach",
Physical Review B 91, 245105 (2015). doi: 10.1103/PhysRevB.91.245105

45. **Xiaofeng Qian**, Yangyang Wang, Wenbin Li, and Ju Li, "Modelling of Stacked 2D Materials and Devices",
2D Materials 2, 032003 (2015). (Invited review article) doi: 10.1088/2053-1583/2/3/032003

Publications Before Joining Texas A&M University

46. Zhengqing Liu, Zongyou Yin, Casandra Cox, Michel Bosman, **Xiaofeng Qian**, Na Li, Hongyang Zhao, Yaping Du, Ju Li, and Daniel G Nocera, "Room temperature stable CO_x-free H_2 production from methanol with magnesium oxide nanophotocatalysts",
Science Advances 2, e1501425 (2016). doi: 10.1126/sciadv.1501425

47. Yunwei Mao, Ju Li, Yu-Chieh Lo, **Xiaofeng Qian**, and Evan Ma, "Stress-driven crystallization via shear-diffusion transformations in a metallic glass at very low temperatures",
Physical Review B 91, 214103 (2015). doi: 10.1103/PhysRevB.91.214103

48. **Xiaofeng Qian**, Mitsumoto Kawai, Hajime Goto, and Ju Li, "Effect of twin boundaries and structural polytypes on electron transport in GaAs",
Computational Materials Science 108, 258-263 (2015). doi: 10.1016/j.commatsci.2015.06.011

49. Akihiro Kushima, **Xiaofeng Qian**, Peng Zhao, Sulin Zhang, and Ju Li, "Ripplocations in van der Waals Layers",
Nano Letters 15, 1302-1308 (2015). doi: 10.1021/nl5045082

50. **Xiaofeng Qian**, Liang Fu, and Ju Li, "Topological insulator membrane with strain-tunable band gap",
Nano Research 8, 967-979 (2015). doi: 10.1007/s12274-014-0578-9

51. **Xiaofeng Qian**†, Junwei Liu†, Liang Fu, and Ju Li, "Quantum Spin Hall Effect in Two-Dimensional Transition Metal Dichalcogenides",
Science 346, 1344-1347 (2014). doi: 10.1126/science.1256815

52. Wenbin Li, **Xiaofeng Qian**, and Ju Li, "Envelope function method for electrons in slowly-varying inhomogeneously deformed crystals",
Journal of Physics: Condensed Matter 26, 455801 (2014). doi: 10.1088/0953-8984/26/45/455801

53. Menghao Wu, **Xiaofeng Qian**, and Ju Li, "Tunable Exciton Funnel Using Moiré Superlattice in Twisted van der Waals Bilayer",
Nano Letters 14, 5350-5357 (2014). doi: 10.1021/nl502414t

54. Junjie Niu, Akihiro Kushima, **Xiaofeng Qian**, Liang Qi, Kai Xiang, Yet-Ming Chiang, and Ju Li, "In situ electron microscopy of solid solution zone in $LiFePO_4$ battery electrode",
Nano Letters 14, 4005-4010 (2014). doi: 10.1021/nl501415b

55. Pavan Nukala, Rahul Agarwal, **Xiaofeng Qian**, Moon Hyung Jang, Sajal Dhara, Karthik Kumar, A.T. Charlie Johnson, Ju Li, and Ritesh Agarwal, "Direct observation of metal–insulator transition in single-crystalline germanium telluride nanowire memory devices prior to amorphization",
Nano Letters 14, 2201-2209 (2014). doi: 10.1021/nl5007036

56. Jingshan Qi, Xiao Li, **Xiaofeng Qian**, and Ji Feng, "Bandgap engineering of rippled MoS_2 monolayer under external electric field",
Applied Physics Letters 102, 173112 (2013). doi: 10.1063/1.4803803

57. Jian Yu Huang, Yu-Chieh Lo, Jun Jie Niu, Akihiro Kushima, **Xiaofeng Qian**, Li Zhong, Scott X. Mao and Ju Li, "Nanowire liquid pumps",
Nature Nanotechnology 8, 277–281 (2013). doi: 10.1038/nnano.2013.41

58. Ji Feng†, **Xiaofeng Qian**†, Cheng-Wei Huang, and Ju Li, "Strain-engineered artificial atom as a broad-spectrum solar energy funnel",
Nature Photonics 6, 866–872 (2012). doi: 10.1038/nnano.2013.41
Highlighted by the "News and Views", Arend van der Zande and James Hone, "***Inspired by strain***",
Nature Photonics 6, 804–806 (2012).

59. Ji Feng, Wenbin Li, **Xiaofeng Qian**, Jingshan Qi, Liang Qi, and Ju Li, "Patterning of graphene",
Nanoscale 4, 4883–4899 (2012). (Invited review article) doi: 10.1063/1.5055624

60. Jingshan Qi, **Xiaofeng Qian**[#], Liang Qi, Ji Feng, Daning Shi, and Ju Li[#], "Strain-engineering of band gaps in piezoelectric boron nitride nanoribbons",
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61. **Xiaofeng Qian**, Paolo Umari, and Nicola Marzari, "Photoelectron properties of DNA and RNA bases from many-body perturbation theory",
Physical Review B 84, 075103 (2011). doi: 10.1103/PhysRevB.84.075103

62. Paolo Umari, **Xiaofeng Qian**, Nicola Marzari, Geoffrey Stenuit, Luigi Giacomazzi, and Stefano Baroni, "Accelerating GW calculations with optimal polarizability basis",
Physica Status Solidi B - Basic Solid State Physics 248, 527–536 (2011). doi: 10.1002/pssb.201046264

63. Yang Liu, He Zheng, Xiao-Hua Liu, Shan Huang, Ting Zhu, Jiangwei Wang, Akihiro Kushima, Nicholas S. Hudak, Xu Huang, Sulin Zhang, Scott X. Mao, **Xiaofeng Qian**, Ju Li, and Jian Yu Huang, "Lithiation-induced embrittlement of multiwalled carbon nanotubes",
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64. Ju Li, Akihiro Kushima, Jacob Eapen, Xi Lin, **Xiaofeng Qian**, John C. Mauro, Phong Diep, and Sidney Yip, "Computing the viscosity of supercooled liquids: Markov network model",
PLoS ONE 6, e17909 (2011). doi: 10.1371/journal.pone.0017909

65. **Xiaofeng Qian**[#], Ju Li, and Sidney Yip, "Calculating phase-coherent quantum transport in nanoelectronics with ***ab initio*** quasiatomic orbital basis set",
Physical Review B 82, 195442 (2010). doi: 10.1103/PhysRevB.82.195442

66. Akihiro Kushima, Xi Lin, Ju Li, **Xiaofeng Qian**, Jacob Eapen, John C. Mauro, Phong Diep, and Sidney Yip, "Computing the viscosity of supercooled liquids. II. Silica and strong-fragile crossover behavior",
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Journal of Chemical Physics 130, 224504 (2009). doi: 10.1063/1.3139006

68. **Xiaofeng Qian**, Ju Li, Liang Qi, Cai-Zhuang Wang, Tzu-Liang Chan, Yong-Xin Yao, Kai-Ming Ho, and Sidney Yip, "Quasiatomic orbitals for ab initio tight-binding analysis",
Physical Review B 78, 245112 (2008). doi: 10.1103/PhysRevB.78.245112

69. Liang Qi, **Xiaofeng Qian**, and Ju Li, "Near neutrality of an oxygen molecule adsorbed on a Pt(111) surface",
Physical Review Letters 101, 146101 (2008). doi: 10.1103/PhysRevLett.101.146101

70. Tzu-Liang Chan, Yong-Xin Yao, Cai-Zhuang Wang, Wen-Cai Lu, Ju Li, **Xiaofeng Qian**, Sidney Yip, and Kai-Ming Ho, "Highly localized quasiatomic minimal basis orbitals for Mo from ab initio calculations",

Physical Review B 76, 205119 (2007). doi: 10.1103/PhysRevB.76.205119

71. **Xiaofeng Qian**, Ju Li, Xi Lin, and Sidney Yip, "Time-dependent density functional theory with ultra-soft pseudopotentials: Real-time electron propagation across a molecular junction", **Physical Review B** 73, 035408 (2006). doi: 10.1103/PhysRevB.73.035408

72. Jinpeng Chang, Ting Zhu, Ju Li, Xi Lin, **Xiaofeng Qian**, and Sidney Yip, "Multiscale modeling of defect nucleation and reaction: from bulk to nanostructures", **Solid Mechanics and its Applications** 115, 223–233 (2004). doi: 10.1007/978-1-4020-2111-4_22

Patents and Disclosures of Invention

Since Joining Texas A&M University

- Feng Yan, **Xiaofeng Qian**, and Lin Li, Thin Film Solar Cells and Methods of Making Thereof, US Patent Application No. 16/352,184 (Filed on March 13, 2019).

Before Joining Texas A&M University

- Ju Li, **Xiaofeng Qian**, and Ji Feng, Strain-engineered bandgaps, US Patent US9595624B2 (Publication: March 14, 2017).
- Ju Li, **Xiaofeng Qian**, and Menghao Wu, Engineered band gaps, US Patent US9484489B2 (Publication: November 1, 2016).

Book Chapters

Book Chapters Published Before Joining Texas A&M University

- Paolo Umari, **Xiaofeng Qian**, Nicola Marzari, Geoffrey Stenuit, Luigi Giacomazzi, and Stefano Baroni, "Accelerating GW calculations with optimal polarizability basis" in **Advanced Calculations for Defects in Materials: Electronic Structure Methods**, A. Alkauskas, P. Deák, J. Neugebauer, A. Pasquarello, and C. G. Van de Walle, Eds., ISBN: 9783527410248 (Wiley-VCH, 2011). Chapter 4, pp. 61-78.

Invited Seminars and Colloquia

1. **Xiaofeng Qian**, "Exploring Nonlinear Light-Matter Interaction and Electronic Structure in 2D Quantum Materials",
   Condensed Matter Seminar in the Department of Physics University of Massachusetts at Amherst, Amherst, MA (March 25, 2021)

2. **Xiaofeng Qian**, "Exploring Nonlinear Light-Matter Interaction and Electronic Structure in 2D Quantum Materials",
Seminar in the Department of Materials Science and Engineering University of Wisconsin-Madison, Madison, WI (March 11, 2021)

3. **Xiaofeng Qian**, "Exploring Light-Matter Interaction and Phase Transition in 2D Materials from First-Principles Theory",
Seminar in the Department of Materials Science and Engineering
University of Michigan, Ann Arbor, MI (January 31, 2020)

4. **Xiaofeng Qian**, "Nonlinear Optical and Photocurrent Responses of 2D Quantum Materials",
Complex Quantum Systems/Condensed Matter Seminar
University of Texas at Austin, Austin, TX (October 31, 2019)

5. **Xiaofeng Qian**, "Nonlinear Optical and Photocurrent Responses of 2D Quantum Materials",
Physics Colloquium
University of Arkansas, Fayetteville, AR (September 13, 2019)

6. **Xiaofeng Qian**, "Nonlinear Optical and Photocurrent Responses of 2D Quantum Materials",
Seminar in the Department of Materials Science and NanoEngineering
Rice University, Houston, TX (April 11, 2019)

7. **Xiaofeng Qian**, "Understanding Structural Phase Transition and Nonlinear Light-Matter Interaction in 2D Materials from First-Principles Theory",
Materials Engineering Seminar
University of Houston, Houston, TX (February 22, 2019)

8. **Xiaofeng Qian**, "Nonlinear Optical Responses of 2D Quantum Materials from First-Principles Theory",
Quantum Materials and Devices Seminar
Harvard University, Boston, MA (February 20, 2019)

9. **Xiaofeng Qian**, "Computation-Aided Materials Theory and Device Design for Photovoltaics and Electronics",
Materials Science and Engineering Colloquium
University of Houston, Houston, TX (February 13, 2015)

Conference Presentations and Abstracts

*: graduate students from Qian's group

. . . . . **Conference Presentation Since Joining Texas A&M University** . . . . . .

1. **Xiaofeng Qian**, "Exploring 2D Materials using Machine Learning Force Fields", ***2020 TMS Annual Meeting & Exhibition*** - Computational Thermodynamics and Kinetics, San Diego, CA (February 27, 2020) **[Invited]**

2. **Xiaofeng Qian**, "First-Principles Theory of Nonlinear Optical Responses in 2D Materials and Topological Materials", ***2020 TMS Annual Meeting & Exhibition*** - Computational Discovery and Design of Emerging Materials, San Diego, CA (February 25, 2020) **[Invited]**

3. **Xiaofeng Qian**, "First-Principles Theory of Nonlinear Optical Responses in 2D Materials", ***2019 Spring Meeting of the Materials Research Society***, Phoenix, AZ (April 22, 2019)

4. **Xiaofeng Qian**, "Modeling Complex Phenomena in 2D Materials Using First-principles Theory Based Machine Learning Force Field", ***2019 TMS Annual Meeting & Exhibition*** - Computational Approaches for Big Data, Artificial Intelligence and Uncertainty Quantification in Computational Materials Science, San Antonio, TX (March 14, 2019) **[Invited]**

5. **Xiaofeng Qian**, "First-Principles Theory of Nonlinear Optical Responses in 2D Materials", ***2019 Annual March Meeting of the American Physical Society***, Boston, MA (March 4, 2019)

6. Hua Wang* and **Xiaofeng Qian**, "Exploring and Understanding Quantum Nonlinear Optical Effect in 2D Materials", ***2018 Fall Meeting of the Materials Research Society***, Boston, MA (November 30, 2018)

7. Baiyu Zhang* and **Xiaofeng Qian**, "First-Principles Insights of Electronic Structure in Quasi-One Dimensional Van der Waals Materials", ***2018 Fall Meeting of the Materials Research Society***, Boston, MA (November 28, 2018) [**Poster**]

8. **Xiaofeng Qian**, "Theory and Device Concepts of Novel Electronic, Optoelectronic, and Topological 2D Materials", ***The 233rd ECS Meeting***, Seattle, WA (May 16, 2018) **[Invited]**

9. Hua Wang* and **Xiaofeng Qian**, "2D Materials: A Wonderland of Nonlinear Optical Responses", ***2018 Annual March Meeting of the American Physical Society***, Los Angeles, CA (March 9, 2018)

10. **Xiaofeng Qian**, "Giant Anisotropic Nonlinear Optical Responses in 2D Multiferroic Materials", ***2017 Fall Meeting of the Materials Research Society***, Boston, MA (November 30, 2017) **[Invited]**

11. **Xiaofeng Qian**, "Novel Electronic, Optoelectronic, and Topological Properties of 2D Materials and Their Heterostructures", ***The 64th Annual AVS International Symposium and Exhibition (AVS 64)***, Tampa, FL (November 3, 2017) **[Invited]**

12. **Xiaofeng Qian**, "Van der Waals Stacking Induced Topological Phase Transition in Layered Ternary Transition Metal Chalcogenides", ***2017 Annual March Meeting of the American Physical Society***, New Orleans, LA (March 14, 2017)

13. **Xiaofeng Qian**, "Two-Dimensional Multiferroics for Novel Multifunctional Mechano-Opto-Electronic Devices", ***2017 TMS Annual Meeting & Exhibition***, San Diego, CA (March 2017)

14. **Xiaofeng Qian**, "Controlling Topological Phase Transition in Van Der Waals Stacked 2D Materials for Topological Device Applications", ***2017 TMS Annual Meeting & Exhibition***, San Diego, CA (March 2017)

15. Hua Wang* and **Xiaofeng Qian**, "Two-Dimensional Multiferroics—Ferroelasticity, Ferroelectricity, Domain Wall, and Potential Mechano-Opto-Electronic Applications", ***2016 Fall Meeting of the Materials Research Society***, Boston, MA (December 2016)

16. **Xiaofeng Qian**, "Quantum Spin Hall Effect in 2D Transition Metal Dichalcogenides and Their van der Waals Heterostructure for Topological Field Effect Transistors", ***2015 Fall Meeting of the Materials Research Society***, Boston, MA (December 2015)

17. **Xiaofeng Qian**, "Quantum Spin Hall Effect in Two-Dimensional Transition Metal Dichalcogenides", ***2015 Annual March Meeting of the American Physical Society***, San Antonio, TX (March 2015)

. . . . . **Conference Presentation Before Joining Texas A&M University** . . . . . .

18. **Xiaofeng Qian**, "Strain-Engineering of Band Gap and Polarization in Boron Nitride Nanoribbons", ***2013 Fall Meeting of the Materials Research Society***, Boston, MA (December 2013) **[Invited]**

19. **Xiaofeng Qian**, "Straining Engineering of Emerging 2D Materials for Photovoltaics", ***Forum on Materials for Sustainable Energy***, MIT (March 2013)

20. **Xiaofeng Qian**, "Exploring Quantum Transport and Chemical Bonding using ***Ab Initio*** Quasiatomic Orbitals", ***The 23rd Annual Workshop on Electronic Structure Methods***, Philadelphia, PA (June 2011) **[Invited]**

21. **Xiaofeng Qian**, "Exploring Excited-State Properties of Organic Photovoltaic Materials using Many-Body Lanczos-GW Approach and Time-Dependent Density Functional Theory", ***2010 Psi-k Conference***, Berlin, Germany (September 2010)

22. **Xiaofeng Qian**, "Excited-State Properties of Organic Photovoltaic Materials from a Many-Body Lanczos GW Approach and Time-Dependent Density Functional Theory", ***2010 Annual March Meeting of the American Physical Society***, Portland, OR (March 2010)

23. **Xiaofeng Qian**, "Electronic and Optical Properties of Organic Photovoltaics: Fullerene and PCBM from GW-Lanczos Method and TDDFT", ***2009 Fall Meeting of the Materials Research Society***, Boston, MA (November 2009)

24. **Xiaofeng Qian**, "Quasiparticle Properties of DNA Bases from GW Calculations in a Wannier Basis", ***2009 Annual March Meeting of the American Physical Society***, Pittsburgh, PA (March 2009)

25. **Xiaofeng Qian**, "Electron Transport through Molecular Junctions: A TDDFT Approach", ***2004 Fall Meeting of the Materials Research Society***, Boston, MA (November 2004)

Student Presentations/Posters:

*: graduate students from Qian's group

†: presentations given by students from Qian's group

1. Daniel Willhelm*†, Nathan Wilson*, Tahir Cagin, Raymundo Arroyave, Ruth Pachter, and **Xiaofeng Qian**, "Exploring van der Waals 2D Heterostructures using a Combined Machine Learning and Density Functional Theory Approach", ***2020 TMS Annual Meeting & Exhibition*** - Computational Discovery and Design of Emerging Materials, San Diego, CA (February 25, 2020)

2. Nathan Wilson*†, Yang Yang, Raymundo Arroyave, and **Xiaofeng Qian**, "An Active Learning Approach for the Generation of Force Fields from DFT Calculations", ***2020 TMS Annual Meeting & Exhibition*** - Algorithm Development in Materials Science and Engineering, San Diego, CA (February 25, 2020)

3. Baiyu Zhang*†and **Xiaofeng Qian**, "Electronic Structure and Defect Physics in Emerging Quasi-1D Antimony Chalcogenide Optoelectronic Materials", ***2019 Fall Meeting of the Materials Research Society***, Boston, MA (December 4, 2019)

4. Hua Wang*†and **Xiaofeng Qian**, "Quantum Nonlinear Ferroic Optical Hall Effect", ***2019 Spring Meeting of the Materials Research Society***, Phoenix, AZ (April 25, 2019)

5. Hua Wang*†and **Xiaofeng Qian**, "Quantum Nonlinear Ferroic Optical Hall Effect", ***2019 Annual March Meeting of the American Physical Society***, Boston, MA (March 6, 2019)

6. Hua Wang*†and **Xiaofeng Qian**, "First-Principles Investigation of Nonlinear Optical Properties of 2D Materials", ***2018 Annual March Meeting of the American Physical Society***, Los Angeles, CA (March 7, 2018)

7. Hua Wang*†and **Xiaofeng Qian**, "First-Principles Investigations of Extraordinary Nonlinear Optical Properties in 2D Materials", ***2017 Fall Meeting of the Materials Research Society***, Boston, MA (November 28, 2017) **[Poster]**

8. Hua Wang*†and **Xiaofeng Qian**, "Two-Dimensional Multiferroics in Monolayer Group IV Monochalcogenides", ***2017 Annual March Meeting of the American Physical Society***, New Orleans, LA (March 16, 2017)

Teaching Experience

- Instructor, Texas A&M University
  - MSEN 325/325H Properties of Functional Materials
    Semesters: Spring 2020, Spring 2021
  - MSEN 601 Fundamental Materials Science and Engineering
    Semesters: Spring 2015, Spring 2017, Spring & Fall 2018, Spring & Fall 2019, Fall 2020, Fall 2021
  - MSEN/MEEN 222 Materials Science
    Semesters: Spring & Fall 2016, Fall 2017, Fall 2018

  - MSEN 681 Materials Seminar
    Semesters: Fall 2016, Spring & Fall 2017, Spring 2018
  - MSEN 604 Quantum Mechanics for Materials Scientists
    Semesters: Fall 2015

- Lecturer, Texas A&M University
  - Summer School On Computational Materials Science Across Scales, July 2019, July 2020
- Guest Lecturer, Texas A&M University
  - MSEN 205 Materials in Society, Fall 2018, Fall 2019
- Teaching Assistant, Massachusetts Institute of Technology
  - 3.320 Atomistic Computer Modeling of Materials, Spring 2008
  - 22.51 Interactions of Radiation with Matter, Spring 2003
  - 22.101 Applied Nuclear Physics, Fall 2002

Professional Services

Grant Reviewer:

- National Science Foundation
- Department of Energy
- ACS Petroleum Research Fund

Editorial Board Member:

- Scientific Reports, Nature Publishing Group (2017 - Present)

Program Committee:

- Served on the Chemistry and Physics of Materials Committee of the Minerals, Metals & Materials Society (TMS) (2016 - Present)
- Served on the Conference Program Committee for the AVS International Symposium and Exhibition on 2D Materials Focus Topic Program (2017 - 2018)

Conference Organization:

- Lead Organizer, Symposium QN01 "2D Layered Materials Beyond Graphene: Theory, Discovery, and Design" at the 2019 MRS Spring Meeting and Exhibition, Phoenix, AZ

- Co-organizer, Symposium EL03 "Emerging Low-Dimensional Chalcogenides for Electronics and Photonics" at the 2020 MRS Fall Meeting and Exhibition, Boston, MA
- Session Chair, Symposium "Computational Approaches for Big Data, Artificial Intelligence and Uncertainty Quantification in Computational Materials Science", Session "Uncertainty Quantification and AI-model Development in Atomistic Simulations" at the 2019 TMS Annual Meeting & Exhibition, San Antonio, TX
- Session Chair, Symposium EP03 "Beyond-Graphene 2D Materials—Synthesis, Properties and Device Applications", Session "EP03.15.11: Novel Heterostructure Devices—Fabrication and Properties" at the 2018 MRS Fall Meeting & Exhibit, Boston, MA
- Poster Session Judge, Symposium QN01 "2D Layered Materials Beyond Graphene: Theory, Discovery, and Design" at the 2019 MRS Spring Meeting & Exhibit, Phoenix, AZ
- Poster Session Judge, Symposium EP03 "Beyond-Graphene 2D Materials—Synthesis, Properties and Device Applications" at the 2018 MRS Fall Meeting & Exhibit, Boston, MA

Reviewer for Journals:

- 2D Materials
- ACS Applied Materials & Interfaces
- ACS Central Science
- ACS Energy Letters
- ACS Nano
- Acta Materialia
- Advanced Electronic Materials
- Advanced Materials
- Applied Physics Letters
- APL Materials
- Computational Materials Science
- Chemical Physics Letters
- Chemical Science
- Extreme Mechanics Letters
- Journal of Applied Physics
- Journal of the American Chemical Society
- Journal of Materials Science
- Journal of Materials Chemistry A
- Journal of Physics: Condensed Matter
- Journal of Physical Chemistry Letters
- Journal of Physical Chemistry
- Materials Letters
- Materials Research Express
- Materials Today
- Nano Letters
- Nano Research
- Nanoscale
- Nanoscale Horizons
- Nanotechnology
- Nature Communications Physics
- Nature Physics
- npj Computational Materials
- npj Quantum Materials
- Nature Publishing Group Asia Materials
- Physica Status Solidi B
- Physical Review Applied
- RSC Advances
- Science
- Science Advances
- Scientific Reports

Service to University:

- MSEN-PHYS Joint Faculty Search Committee (Fall 2019 - Spring 2020)
- Reviewer for TAMU Postdoc Travel Award applications (Spring & Fall 2017)

Service to College:

- Engineering Faculty Advisory Council (JFAC) (January 2015 - September 2016)
- Engineering Honors Coordinator Council (EHCC) (Spring 2018 – Summer 2019, Spring 2021 - Present)

Service to Department:

- MSEN Graduate Admission Committee (Fall 2019 - Present)
- MSEN Graduate Curriculum Committee (Spring 2019 - Present)
- MSEN Undergraduate Curriculum Committee (Fall 2018 - Present)
- MSEN Awards Committee (Spring 2019 - Present)
- MSEN Department Seminar, Co-Instructor (Fall 2016 - Spring 2018)
- MSEN Department Seminar Committee (Fall 2018 - Present)
- Department Coordinator for the MSEN Engineering Honors Program (Spring 2018 - Spring 2019, Spring 2021 - Present)
- Department Coordinator for the MSEN Fast Track Program (Spring 2018 - Spring 2019)
- Syllabus Development for the MSEN Undergraduate Program (Fall 2015)
- MSEN Ph.D. Qualifying Exam Committees (27 in total)
- Thesis Committees: Ph.D. (32 in total) and M.S. (8 in total)

Education and Outreach Activities:

- Co-organizer of annual ***Summer School on Computational Materials Science Across Scales (CMS3)*** at Texas A&M University, College Station, TX (2017 - Present)
- Presented a lecture about computational materials science to students in the National Science Foundation Research Experiences for Undergraduates (REU) Program in the Department of Materials Science and Engineering, Texas A&M University (Summer 2019)
- Participated in the Aggieland Saturday – annual campus-wide open house for prospective students and their families at Texas A&M University, College Station, TX (2016 - Present); Received positive feed back from parents of K-12 students.

- Participated in the STEM 4 Innovation Conference held at Texas A&M University, and introduced materials science demos to K-12 STEM educators, administrators, and counselors from across Texas (January 2020)

Professional Societies

- American Physical Society (APS)
- Materials Research Society (MRS)
- Mineral, Metals & Materials Society (TMS)

Media Coverage

- Texas A&M News, Chameleon-like material spiked with boron comes closer to mimicking brain cells (December 11, 2020)
  https://engineering.tamu.edu/news/2020/12/chameleon-like-material-spiked-with-boron-comes-closer-to-mimicking-brain-cells.html
- Texas A&M News, Rice and Texas A&M research collaboration uncovers new material for valleytronics applications (October 29, 2020)
  https://engineering.tamu.edu/news/2020/10/perovskites-synthesized-at-rice-university-show-potential-for-valleytronics-applications.html
  https://phys.org/news/2020-10-odds-good-unique-d-compound.html
- Stanford News, Stanford-led team shows how to store data using 2D materials instead of silicon chips (June 29, 2020)
  https://news.stanford.edu/2020/06/29/storing-data-2d-metals/
  https://phys.org/news/2020-06-team-d-materials-silicon-chips.html
- Texas A&M News, Two-dimensional multiferroics in monolayer group IV monochalcogenides (June 1, 2017)
  https://engineering.tamu.edu/news/2017/05/qian-wang-featured-in-2d-materials.html
  https://phys.org/news/2017-06-two-dimensional-multiferroics-monolayer-group-iv.html
- TACC Featured Stories, Exotic States Materialize with Supercomputers (February 11, 2015)
  https://www.tacc.utexas.edu/-/exotic-states-materialize-with-supercomputers
- MIT News, New 2-D quantum materials for nanoelectronics (November 20, 2014)
  http://web.mit.edu/newsoffice/2014/2-d-quantum-materials-for-nanoelectronics-1120
- MIT News, Watching fluid flow at nanometer scales (March 31, 2013)
  http://web.mit.edu/newsoffice/2013/nanowires-lift-liquids-like-tubes-0331.html
- MIT News, Funneling the sun's energy (November 25, 2012)
  http://web.mit.edu/newsoffice/2012/funneling-the-suns-energy-1125.html
- Physics World, Semiconductor funnel could boost solar cells (December 4, 2012)
  http://physicsworld.com/cws/article/news/2012/dec/04/semiconductor-funnel-could-boost-solar-cells