Ruishi Qi | Curriculum Vitae

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Last updated on 23rd Aug, 2026

Research Areas

- Strongly correlated quantum matter in two-dimensional electron-hole systems.
- Tunable electron-hole matter: excitons, trions, biexcitons, and higher-order composite particles.
- Excitonic insulators, exciton condensates, exciton crystals, and exciton superfluid transport.
- Cryogenic optical, transport, and thermodynamic probes of quantum materials.

Academic Appointments

Stanford University — Palo Alto, CA, USA
Stanford Science Fellow — *2026 – present*
Faculty host: Prof. Tony F. Heinz

Education

Department of Physics, University of California, Berkeley — Berkeley, CA, USA
Ph.D. in physics — *2020 – 2026*
Advisor: Prof. Feng Wang
Thesis: Correlated exciton physics in van der Waals electron-hole bilayers
M.A. in physics — *2020 – 2022*
GPA: 4.0/4

School of Physics, Peking University — Beijing, China
B.S. in physics — *2016 – 2020*
GPA: 3.9/4; Rank: $1/200^{+}$
Advisor: Prof. Peng Gao
Undergraduate thesis: Probing phonon dispersion in individual BN nanotubes using STEM-EELS

Selected Publications

40^{+} research articles; 1000^{+} citations. Full publication record: Google Scholar.
†: equal contribution; ‡: corresponding author.

1. **Ruishi Qi**†‡, Qize Li†, Jiahui Nie, ..., Feng Wang‡. "Two-component exciton condensates in an electron-hole bilayer." *Nature* 654, 629-634 (2026).
2. **Ruishi Qi**†‡, Qize Li†, Zuocheng Zhang, ..., Feng Wang‡. "Gate-tunable biexcitons in electron-hole-electron trilayers." Under final editorial processing at *Science* (2026).
3. **Ruishi Qi**†, Qize Li†, Haleem Kim, ..., Feng Wang‡. "An exciton crystal in a moiré excitonic insulator." *Nature Physics* 22, 514-520 (2026).
4. **Ruishi Qi**†, Qize Li†, Zuocheng Zhang, ..., Feng Wang‡. "Competition between excitonic insulators and quantum Hall states in correlated electron-hole bilayers." *Nature Materials* 25, 35-41 (2026).
5. **Ruishi Qi**, Qize Li, Zuocheng Zhang, ..., Feng Wang‡. "Electrically controlled interlayer trion fluid in electron-hole bilayers." *Science* 390 (6770), 299-303 (2025).

6. **Ruishi Qi**[†], Andrew Y. Joe[†‡], Zuocheng Zhang, ..., Feng Wang[‡]. "Perfect Coulomb drag and exciton transport in an excitonic insulator." *Science* 388 (6744), 278-283 (2025).
7. **Ruishi Qi**[†], Andrew Y. Joe[†‡], Zuocheng Zhang, ..., Feng Wang[‡]. "Thermodynamic behavior of correlated electron-hole fluids in van der Waals heterostructures." *Nature Communications* 14, 8264 (2023).
8. **Ruishi Qi**[†], Ruochen Shi[†], Yuehui Li, ..., Peng Gao[‡]. "Measuring phonon dispersion at an interface." *Nature* 599, 399-403 (2021).
9. **Ruishi Qi**[†], Ning Li[†], Jinlong Du, ..., Peng Gao[‡]. "Four-dimensional vibrational spectroscopy for nanoscale mapping of phonon dispersion in BN nanotubes." *Nature Communications* 12, 1179 (2021).

Honors and Awards

Stanford Science Fellowship, Stanford University *2026 – 2029*
Jackson C. Koo Award in Condensed Matter, UC Berkeley *2026*
Alex Zettl Graduate Student Award in Physics, UC Berkeley *2026*
Kavli ENSI Graduate Student Fellowship, Kavli Energy NanoScience Institute *2023 – 2024*
Weiming Scholar, Peking University (top 1% in PKU) *2020*
Beijing Outstanding Undergraduate Thesis Award *2020*
Outstanding Graduate in Peking University *2020*
Outstanding Graduate of Beijing *2020*
Outstanding Undergraduate Research Project, Peking University *2020*
National Southwest Associated University Grand Scholarship (top 1% in PKU) *2019*
National Scholarship (China) (top 1% in PKU) *2018, 2019*
May Fourth Scholarship, Peking University *2017*

Teaching and Mentoring

Department of Physics, UC Berkeley
Graduate Student Instructor *2020 – 2021*
Physics 7A: Physics for Scientists and Engineers (Fall 2020, Spring 2021)
Led discussion and laboratory sections; graded homework and exams; held office hours.

Berkeley Physics Innovators Initiative (Pi^2)
Undergraduate Research Mentor *2023 – 2024*
Mentored Berkeley undergraduate researchers (selective funded research program).

Berkeley Physics International Education (BPIE)
Undergraduate Research Mentor *2022, 2025*
Mentored visiting undergraduate researchers.

Talks and Presentations

APS March Meeting, Denver *2026*
"Correlated exciton physics in strongly coupled electron-hole bilayers"

New Frontiers in Nanoscale Materials 2026 Symposium *2026*
"Excitonic insulators and condensates in electron-hole bilayers" (Poster)

Berkeley Condensed Matter Seminar *2025*
"Interlayer excitons and trions in electron-hole bilayers" (Invited)

APS March Meeting, Minneapolis *2024*
"Perfect Coulomb drag and exciton transport in an excitonic insulator"

Kavli ENSI 10th Anniversary Symposium *2024*
"Correlated interlayer excitons and trions in electron-hole bilayers" (Poster)

Research Experience

Department of Applied Physics, Stanford University Palo Alto, CA, USA
Postdoctoral fellow *2026 – present*
Edward L. Ginzton Laboratory (Faculty host: Prof. Tony F. Heinz)
- Optical spectroscopy of correlated quantum phases in van der Waals heterostructures.

Department of Physics, UC Berkeley Berkeley, CA, USA
Graduate Student Researcher *2021 – 2026*
Ultrafast nano-optics group (PI: Prof. Feng Wang)
- Established van der Waals electron-hole bilayers as a platform for correlated exciton phases, including interlayer excitons, trions, biexcitons, exciton condensates, and exciton crystals.
- Developed optical spectroscopy approaches for measuring compressibility, Coulomb drag, and transport properties in strongly interacting two-dimensional systems.

School of Physics, Peking University Beijing, China
Research Assistant *2020 – 2021*
Undergraduate Researcher *2018 – 2020*
Electron microscopy laboratory (PI: Prof. Peng Gao)
- Developed electron energy-loss spectroscopy techniques combining nanometer spatial resolution, high momentum resolution, and milli-electron-volt energy resolution.
- Investigated local lattice dynamics at heterointerfaces and nanostructures.

Physics and Astronomy Department, UCLA Los Angeles, CA, USA
Exchange visitor *2019*
Coherent imaging group (PI: Prof. Jianwei Miao)
- Atomic electron tomography reconstruction of 2D materials and moiré superlattices.

Complete Publication List

Preprints and Manuscripts under Review

1. **Ruishi Qi**[‡], Qize Li, Jiahui Nie, Feng Wang[‡]. "Understanding two-component spinor order in bilayer exciton condensates." Under review at *Physical Review Letters* (2026).

2. Ha-Leem Kim[†], Hyungbin Lim[†], Yuanyi Yang, **Ruishi Qi**, Ruichen Xia, Can Uzundal, Takashi Taniguchi, Kenji Watanabe, Feng Wang[‡]. "Optical voltage profiling of 2D semiconductors via proximal exciton sensing." Submitted. arXiv:2608.18382 (2026).

3. **Ruishi Qi**[†‡], Qize Li[†], Zuocheng Zhang, Jingxu Xie, Zhiyuan Cui, Takashi Taniguchi, Kenji Watanabe, Michael F. Crommie, Feng Wang[‡]. "Gate-tunable biexcitons in electron-hole-electron trilayers." Under final editorial processing at *Science* (2026).

4. Josue Rodriguez, **Ruishi Qi**, Catherine Xu, Feng Wang, James G. Analytis, Hossein Taghinejad[‡]. "Electrically controlled Heat Assisted Magnetic Recording in Intercalated 2D Magnets." Under revision at *npj Spintronics*. arXiv:2605.06645 (2026).

5. Zheyu Lu[†‡], Jiahui Nie[†], Tianle Wang, Rwik Dutta, **Ruishi Qi**, Jingxu Xie, Can Uzundal, Jianghan Xiao, Ziyu Wang, Yibo Feng, Kenji Watanabe, Takashi Taniguchi, James R. Chelikowsky, Archana Raja, Steven G. Louie, Mit H. Naik, Michael P. Zaletel, Feng Wang[‡]. "Tunable Interlayer Charge-transfer States in $MoSe_2/WS_2$ Moiré Superlattices." Under revision at *Nature Communications*.

arXiv:2605.05571 (2026).

6. Su-Di Chen[‡], **Ruishi Qi**, Ha-Leem Kim, Qixin Feng, Ruichen Xia, Dishan Abeysinghe, Jingxu Xie, Takashi Taniguchi, Kenji Watanabe, Dung-Hai Lee, Feng Wang[‡]. "Terahertz electrodynamics in a zero-field Wigner crystal." Under review at *Nature Physics*. arXiv:2509.10624 (2025).

Peer-Reviewed Articles

7. Trevor Chistolini[†], Ha-Leem Kim[†], Qiyu Wang[†], Su-Di Chen, Luke Pritchard Cairns, Ryan Patrick Day, Collin Sanborn, Hyunseong Kim, Zahra Pedramrazi, **Ruishi Qi**, Takashi Taniguchi, Kenji Watanabe, James G. Analytis, David I. Santiago, Irfan Siddiqi, Feng Wang[‡]. "Contactless cavity sensing of superfluid stiffness in atomically thin 4Hb-TaS_2." *Physical Review Letters* 137, 076002 (2026).

8. **Ruishi Qi**[†‡], Qize Li[†], Jiahui Nie, Ruichen Xia, Haleem Kim, Hyungbin Lim, Jingxu Xie, Takashi Taniguchi, Kenji Watanabe, Michael F. Crommie, Allan H. MacDonald, Feng Wang[‡]. "Two-component exciton condensates in an electron-hole bilayer." *Nature* 654, 629-634 (2026).

9. Zuocheng Zhang[†‡], **Ruishi Qi**[†], Jingxu Xie, Qize Li, Takashi Taniguchi, Kenji Watanabe, Michael F. Crommie, Feng Wang[‡]. "Orbital dependent Coulomb drag in electron-hole bilayer graphene heterostructures." *Physical Review Letters* 136, 126303 (2026).

10. Zheyu Lu[†‡], **Ruishi Qi**[†], Rwik Dutta[†], Jingxu Xie, Jiahui Nie, Ziyu Wang, Yibo Feng, Woochang Kim, Kenji Watanabe, Takashi Taniguchi, Archana Raja, Mit H. Naik, Steven G. Louie, Feng Wang[‡]. "Nature of emergent moiré excitations in $MoSe_2/WS_2$ moiré superlattices." *Nano Letters* 26 (12), 4096-4102 (2026).

11. **Ruishi Qi**[†], Qize Li[†], Haleem Kim, Jiahui Nie, Zuocheng Zhang, Ruichen Xia, Zhiyuan Cui, Jianghan Xiao, Takashi Taniguchi, Kenji Watanabe, Michael F. Crommie, Feng Wang[‡]. "An exciton crystal in a moiré excitonic insulator." *Nature Physics* 22, 514-520 (2026).

12. Bo Han, Ruochen Shi, Huining Peng, Yingjie Lv, **Ruishi Qi**, Yuehui Li, Jingmin Zhang, Jinlong Du, Pu Yu, Peng Gao[‡]. "Electron Microscopy Measurement of Picometer-Level Distortion Induced Local Phonons at a Defect." *Nano Letters* 26 (4), 1449-1454 (2026).

13. **Ruishi Qi**[†], Qize Li[†], Zuocheng Zhang, Jiahui Nie, Bo Zou, Zhiyuan Cui, Haleem Kim, Collin Sanborn, Sudi Chen, Jingxu Xie, Takashi Taniguchi, Kenji Watanabe, Michael F. Crommie, Allan H. MacDonald, Feng Wang[‡]. "Competition between excitonic insulators and quantum Hall states in correlated electron-hole bilayers." *Nature Materials* 25, 35-41 (2026).

14. **Ruishi Qi**, Qize Li, Zuocheng Zhang, Sudi Chen, Jingxu Xie, Yunbo Ou, Zhiyuan Cui, David D. Dai, Andrew Y. Joe, Takashi Taniguchi, Kenji Watanabe, Sefaattin Tongay, Alex Zettl, Liang Fu, Feng Wang[‡]. "Electrically controlled interlayer trion fluid in electron-hole bilayers." *Science* 390 (6770), 299-303 (2025).

15. Su-Di Chen, Qixin Feng, Wenyu Zhao, **Ruishi Qi**, Zuocheng Zhang, Dishan Abeysinghe, Can Uzundal, Jingxu Xie, Takashi Taniguchi, Kenji Watanabe, Feng Wang[‡]. "Direct Measurement of Terahertz Conductivity in a Gated Monolayer Semiconductor." *Nano Letters* 25 (19) 7998-8002 (2025).

16. **Ruishi Qi**[†], Andrew Y. Joe[†‡], Zuocheng Zhang, Jingxu Xie, Qixin Feng, Zheyu Lu, Ziyu Wang, Takashi Taniguchi, Kenji Watanabe, Sefaattin Tongay, Feng Wang[‡]. "Perfect Coulomb drag and exciton transport in an excitonic insulator." *Science* 388 (6744), 278-283 (2025).

17. Chao He, Ze Hua, Peiyi He, **Ruishi Qi**, Yuehui Li, Ruiwen Shao, Weikang Dong, Ruochen Shi, Yeliang Wang, Peng Gao[‡]. "Measurement of far-infrared surface phonon polaritons in AlN nanowires via electron microscope." *Chinese Physics B* 35, 037901 (2025).

18. Qixin Feng[†], Can B. Uzundal[†], Ruihan Guo, Collin Sanborn, **Ruishi Qi**, Jingxu Xie, Jianing Zhang, Junqiao Wu, Feng Wang[‡]. "Femtojoule All-optical Nonlinearity for Deep Learning with Incoherent Illumination." *Science Advances* 11, eads4224 (2025).

19. Peiyi He[†], Jiade Li[†], Cong Li, Ning Li, Bo Han, Ruochen Shi, **Ruishi Qi**, Jinlong Du, Pu Yu, Peng Gao[‡]. "Strongly confined Mid-infrared to Terahertz Phonon Polaritons in Ultra-thin $SrTiO_3$." *Science Advances* 11, eady7316 (2025).

20. Yue-Hui Li[†], Bo Han[†], Xiao-Long Yang, Rui-Lin Mao, Fa-Chen Liu, Ruo-Chen Shi, **Rui-Shi Qi**, Xiao-Rui Hao, Ning Li, Bing-Yao Liu, Xiao-Mei Li, Jin-Long Du, Ji Chen, Wu Li, Peng Gao[‡]. "Single-dislocation phonons: atomic-scale measurement and their thermal properties." *Chinese Physics Letters* 42, 066302 (2025).

21. Yoseob Yoon[‡], Zheyu Lu, Can Uzundal, **Ruishi Qi**, Wenyu Zhao, Sudi Chen, Qixin Feng, Woochang Kim, Mit H. Naik, Kenji Watanabe, Takashi Taniguchi, Steven G. Louie, Michael F. Crommie, Feng Wang[‡]. "Terahertz phonon engineering with van der Waals heterostructures." *Nature* 631, 771-776 (2024).

22. Jingxu Xie, Zuocheng Zhang, Haodong Zhang, Vikram Nagarajan, Wenyu Zhao, Ha-Leem Kim, Collin Sanborn, **Ruishi Qi**, Sudi Chen, Salman Kahn, Kenji Watanabe, Takashi Taniguchi, Alex Zettl, Michael F. Crommie, James Analytis, Feng Wang[‡]. "Low Resistance Contact to P-type Monolayer WSe_2." *Nano Letters* 24 (20), 5937-5943 (2024).

23. Zuocheng Zhang[†], Jingxu Xie[†], Wenyu Zhao, **Ruishi Qi**, Collin Sanborn, Shaoxin Wang, Salman Kahn, Kenji Watanabe, Takashi Taniguchi, Alex Zettl, Michael Crommie, Feng Wang[‡]. "Engineering correlated insulators in bilayer graphene with a remote Coulomb superlattice." *Nature Materials* 23, 189-195 (2024).

24. Ruochen Shi[†], Qize Li[†], Xiaofeng Xu, Bo Han, Ruixue Zhu, Fachen Liu, **Ruishi Qi**, Xiaowen Zhang, Jinlong Du, Ji Chen, Dapeng Yu, Xuetao Zhu, Jiandong Guo, Peng Gao[‡]. "Atomic-scale observation of localized phonons at $FeSe/SrTiO_3$ interface." *Nature Communications* 15, 3418 (2024).

25. Zhenyu Zhang, Tao Wang, Hailing Jiang, **Ruishi Qi**, Yuehui Li, Jinlin Wang, Shanshan Sheng, Ning Li, Ruochen Shi, Jiaqi Wei, Fang Liu, Shengnan Zhang, Xiaoqing Huo, Jinlong Du, Jingmin Zhang, Jun Xu, Xin Rong, Peng Gao, Bo Shen, Xinqiang Wang[‡]. "Probing Hyperbolic Shear Polaritons in β-Ga_2O_3 Nanostructures Using STEM-EELS." *Advanced Materials* 36, 2204884 (2024).

26. Jingyuan Yan, Ruochen Shi, Jiake Wei, Yuehui Li, **Ruishi Qi**, Mei Wu, Xiaomei Li, Bin Feng, Peng Gao, Naoya Shibata, Yuichi Ikuhara[‡]. "Nanoscale Localized Phonons at Al_2O_3 Grain Boundaries." *Nano Letters* 24, 11, 3323-3330 (2024).

27. **Ruishi Qi**[†], Andrew Y. Joe[†‡], Zuocheng Zhang, Yongxin Zeng, Tiancheng Zheng, Qixin Feng, Jingxu Xie, Emma Regan, Zheyu Lu, Takashi Taniguchi, Kenji Watanabe, Sefaattin Tongay, Michael F. Crommie, Allan H. MacDonald, Feng Wang[‡]. "Thermodynamic behavior of correlated electron-hole fluids in van der Waals heterostructures." *Nature Communications* 14, 8264 (2023).

28. Mei Wu, Ruochen Shi, **Ruishi Qi**, Yuehui Li, Jinlong Du, Peng Gao[‡]. "Four-dimensional electron energy-loss spectroscopy." *Ultramicroscopy* 253, 113818 (2023).

29. Mei Wu[†], Ruochen Shi[†], **Ruishi Qi**[†], Yuehui Li, Tao Feng, Bingyao Liu, Jingyuan Yan, Xiaomei Li, Zhetong Liu, Tao Wang, Tongbo Wei, Zhiqiang Liu, Jinlong Du, Ji Chen, Peng Gao[‡]. "Effects of localized interface phonons on heat conductivity in ingredient heterogeneous solids." *Chinese Physics Letters*, 40 (3), 036801 (2023).

30. Xiangdong Guo†, Ning Li†, Xiaoxia Yang‡, **Ruishi Qi**, Chenchen Wu, Ruochen Shi, Yuehui Li, Yang Huang, F. Javier García de Abajo, En-Ge Wang, Peng Gao, Qing Dai‡. "Hyperbolic whispering-gallery phonon polaritons in boron-nitride nanotubes." *Nature Nanotechnology* 18, 529-534 (2023).

31. Ning Li†, Ruochen Shi†, Yifei Li†, **Ruishi Qi**, Fachen Liu, Xiaowen Zhang, Zhetong Liu, Yuehui Li, Xiangdong Guo, Kaihui Liu, Ying Jiang, Xin-Zheng Li, Ji Chen, Lei Liu, En-Ge Wang, Peng Gao‡. "Phonon transition across an isotopic interface." *Nature Communications* 14, 2382 (2023).

32. Yue-Hui Li, **Rui-Shi Qi**, Ruo-Chen Shi, Jian-Nan Hu, Zhe-Tong Liu, Yuan-Wei Sun, Ming-Qiang Li, Ning Li, Can-Li Song, Lai Wang, Zhi-Biao Hao, Yi Luo, Qi-Kun Xue, Xu-Cun Ma, Peng Gao‡. "Atomic-scale probing of heterointerface phonon bridges in nitride semiconductor." *Proceedings of the National Academy of Sciences* 119 (8), e2117027119 (2022).

33. Ruixue Zhu†, Zhexin Jiang, Xinxin Zhang, Xiangli Zhong, Congbing Tan, Mingwei Liu, Yuanwei Sun, Xiaomei Li, **Ruishi Qi**, Ke Qu, Zhetong Liu, Mei Wu, Mingqiang Li, Boyuan Huang, Zhi Xu, Jinbin Wang, Kaihui Liu, Peng Gao‡, Jie Wang, Jiangyu Li, Xuedong Bai. "Dynamics of Polar Skyrmion Bubbles under Electric Fields." *Physical Review Letters* 129 (10), 107601 (2022).

34. Xiangdong Guo†, Ning Li†, Chenchen Wu, Xiaokang Dai, **Ruishi Qi**, Tianyu Qiao, Tuoyi Su, Dandan Lei, Nishuang Liu, Jinlong Du, Enge Wang, Xiaoxia Yang, Peng Gao, Qing Dai‡. "Studying Plasmon Dispersion of MXene for Enhanced Electromagnetic Absorption." *Advanced Materials* 34 (33), 2270237 (2022).

35. Yoseob Yoon, Zuocheng Zhang, **Ruishi Qi**, Andrew Y. Joe, Renee Sailus, Kenji Watanabe, Takashi Taniguchi, Sefaattin Tongay, Feng Wang‡. "Charge Transfer Dynamics in $MoSe_2$/hBN/WSe_2 Heterostructures." *Nano Letters* 22 (24), 10140-10146 (2022).

36. **Ruishi Qi**†, Ruochen Shi†, Yuehui Li, Yuanwei Sun, Mei Wu, Ning Li, Jinlong Du, Kaihui Liu, Chunlin Chen, Ji Chen, Feng Wang, Dapeng Yu, En-Ge Wang, Peng Gao‡. "Measuring phonon dispersion at an interface." *Nature* 599, 399-403 (2021).

37. **Ruishi Qi**†, Ning Li†, Jinlong Du, Ruochen Shi, Yang Huang, Xiaoxia Yang, Lei Liu, Zhi Xu, Qing Dai, Dapeng Yu, Peng Gao‡. "Four-dimensional vibrational spectroscopy for nanoscale mapping of phonon dispersion in BN nanotubes." *Nature Communications* 12, 1179 (2021).

38. Ning Li†, Xiangdong Guo†, Xiaoxia Yang‡, **Ruishi Qi**, Tianyu Qiao, Yifei Li, Ruochen Shi, Yuehui Li, Kaihui Liu, Zhi Xu, Lei Liu, F. Javier García de Abajo, Qing Dai, En-Ge Wang, Peng Gao‡. "Direct observation of highly confined phonon polaritons in suspended monolayer hexagonal boron nitride." *Nature Materials* 20, 43-48 (2021).

39. Shilong Zhao†, Erqing Wang†, Ebru Alime Üzer, Shuaifei Guo, **Ruishi Qi**, Junyang Tan, Kenji Watanabe, Takashi Taniguchi, Tom Nilges, Peng Gao, Yuanbo Zhang, Hui-Ming Cheng, Bilu Liu, Xiaolong Zou, Feng Wang‡. "Anisotropic moiré optical transitions in twisted monolayer/bilayer phosphorene heterostructures." *Nature Communications* 12, 3947 (2021).

40. Weikang Dong†, **Ruishi Qi**†, Tiansheng Liu, Yi Li, Ning Li, Ze Hua, Zirui Gao, Shuyuan Zhang, Kaihui Liu, Jiandong Guo, Peng Gao‡. "Broad-Spectral-Range Sustainability and Controllable Excitation of Hyperbolic Phonon Polaritons in α-MoO_3." *Advanced Materials* 32, 2002014 (2020).

41. Yuehui Li, **Ruishi Qi**, Ruochen Shi, Ning Li, Peng Gao‡. "Manipulation of surface phonon polaritons in SiC nanorods." *Science Bulletin* 65 (10), 820-826 (2020).

42. Yue-Hui Li†, Mei Wu†, **Rui-Shi Qi**, Ning Li, Yuan-Wei Sun, Cheng-Long Shi, Xue-Tao Zhu, Jian-Dong Guo, Da-Peng Yu, Peng Gao‡. "Probing lattice vibrations at SiO_2/Si surface and interface with nanometer resolution." *Chinese Physics Letters* 36 (2), 026801 (2019).

43. **Ruishi Qi**[†], Renfei Wang[†], Yuehui Li, Yuanwei Sun, Shulin Chen, Bo Han, Ning Li, Qing Zhang, Xinfeng Liu, Dapeng Yu, Peng Gao[‡]. "Probing far-infrared surface phonon polaritons in semiconductor nanostructures at nanoscale." *Nano Letters* 19 (8), 5070-5076 (2019).