

Kai Fu

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Education

- Ph.D., Microelectronics and Solid State Electronics** 2008 - 2013
Suzhou Institute of Nano-Tech and Nano-Bionics (SINANO), Chinese Academy of Sciences (CAS)
Advisor: Prof. Baoshun Zhang, Prof. Min Lu
- B.S., Physics** 2004 - 2008
Ocean University of China

Professional Experience

- 09/2022 - present The University of Utah, Salt Lake City, UT, USA
Assistant Professor, Department of Electrical and Computer Engineering
- 06/2021 - 09/2022 Rice University, Houston, TX, USA
Research Scientist, Department of Electrical and Computer Engineering
- 01/2018 - 05/2021 Arizona State University, Tempe, AZ, USA
Assistant Research Scientist, School of Electrical, Computer & Energy Engineering
- 09/2015 - 12/2017 Suzhou Institute of Nano-Tech and Nano-Bionics (SINANO), Chinese Academy of Sciences (CAS), Suzhou, Jiangsu, China
Associate Professor, Master's Supervisor, Department of Nanofabrication Facility
- 10/2013 - 08/2015 Suzhou Institute of Nano-Tech and Nano-Bionics (SINANO), Chinese Academy of Sciences (CAS), Suzhou, Jiangsu, China
Postdoctoral Researcher, Department of Nanofabrication Facility

Honors & Awards

- 2019 Outstanding Reviewer Awards of Journal of Physics D: Applied Physics
- 2017 Second Prize Award for "Semiconductor Discrete Devices, Integrated Circuit Assembly and Scheduling (MEMS Key Structure Processing and Testing)" in the 8th High Skilled Talents Vocational Skills Competition of Suzhou Industrial Park
- 2016 Excellent Paper Award of National Symposium on Semiconductor Device Industry Development, Innovative Products and New Technology
- 2015 SINANO Outstanding Postdoctoral Researcher
- 2015 Excellent Paper Award of National Symposium on Semiconductor Device Industry Development, Innovative Products and New Technology
- 2014 Excellent Paper Award of National Symposium on Semiconductor Device Industry Development, Innovative Products and New Technology
- 2011 Merit Student of Graduate School of Chinese Academy of Sciences
- 2011 Suzhou Dushu Lake Scholarship

- 2010 Outstanding Youth Science and Technology Paper Award of the 6th Academic Exchange of Nuclear Technology Application of Beijing Nuclear Society and the National Academic Seminar of Nuclear Technology and Industrial Application of Radiation
- 2009 Outstanding Student Cadre of Graduate School of Chinese Academy of Sciences
- 2008 Outstanding Graduate of Shandong Province

Research Funding & Projects

1. Rice's Technology Development Fund
"Commercial-Ready 650V-Class GaN-on-GaN Power Diodes and Transistors for Electrical Vehicle Applications"
 \$25,000, 2021-2022, PI: Kai Fu, Co-PI: Yuji Zhao
2. 2019 ASU Ira A. Fulton Schools of Engineering Research Faculty / Research Scientists Support Seed Program
"GaN Neuron and Memory for High Temperature Neuromorphic Computing"
 \$7,500, 05/2019 - 12/2019, PI: Kai Fu, Co-PI: Yuji Zhao
3. Key Research and Development Program of Jiangsu Province
"R&D of common key technologies for high-performance enhancement-mode Si-based GaN power switching devices"
 ¥1,200,000, 06/2016 - 06/2019, PI: Kai Fu
4. National Natural Science Foundation of China
"Research on two-color detectors based on graphene and III-nitride"
 ¥280,000, 01/2015 - 12/2017, PI: Kai Fu
5. Jiangsu Provincial Postdoctoral Research Funding and Daily Funding Program (Highest Category)
"Study on the graphene based high sensitivity infrared detector and dual color integration"
 ¥80,000, 06/2014 - 12/2015, PI: Kai Fu
6. (Participant) DOE BES, Energy Frontier Research Center
"Ultra Materials for a Resilient, Smart Electricity Grid"
 \$12,400,000, 2020 - 2024, PI: Robert Nemanich and Stephen M. Goodnick
7. (Participant) DOE ARPA-E, PNDIODES Program
"Effective selective area doping for GaN vertical power transistors enabled by innovative materials engineering"
 \$ 2,849,988, 2017 - 2021, PI: Yuji Zhao
8. (Participant) NASA, HOTTech Program
"High temperature GaN Microprocessors"
 \$750,000, 2017 - 2020, PI: Yuji Zhao
9. (Participant) National Natural Science Foundation of China
"New materials and devices for ultraviolet and infrared dual color detection"
 ¥2,000,000, 01/2010 - 12/2013, PI: Baoshun Zhang
10. (Participant) National Natural Science Foundation of China
"Study on GaN based room temperature nuclear radiation detector"
 ¥376,000, 01/2009 - 12/2011, PI: Min Lu

Publications

Book Chapter

1. H. Fu, **K. Fu**, and Y. Zhao, "Vertical GaN on GaN power devices," chapter in "Wide Bandgap Semiconductor-Based Electronics," edited by Profs. Stephen J. Pearton and Ren Fan, IOP Science, 2020.

Journal Papers

1. **K. Fu**, Z. He, C. Yang, J. Zhou, H. Fu, and Y. Zhao, "GaN-on-GaN p-i-n diodes with avalanche capability enabled by eliminating surface leakage with hydrogen plasma treatment," *Appl. Phys. Lett.*, 121, 9, 092103, (2022).
2. M. Xu, D. Wang, **K. Fu (joint first author)**, D. H. Mudiyansele, H. Fu, and Y. Zhao, "A Review of Ultrawide Bandgap Materials: Properties, Synthesis, and Devices," *Oxford Open Materials Science*, itac004 (2022).
3. X. Zhang, X. Wei, P. Zhang, H. Zhang, L. Zhang, X. Deng, Y. Fan, G. Yu, Z. Dong, H. Fu, Y. Cai, **K. Fu (corresponding author)**, and B. Zhang, "Low Threshold Voltage Shift in AlGaIn/GaN MIS-HEMTs on Si Substrate Using SiN_x/SiO₂ as Composite Gate Dielectric," *Electronics*, 11, 6 (2022).
4. X. Wei, X. Zhang, X. Zhou, Y. Ma, W. Tang, T. Chen, W. Liu, W. Tang, G. Yu, Y. Fan, **K. Fu (corresponding author)**, Y. Cai, and B. Zhang, "Dual Current and Voltage Sensitivity Temperature Sensor Based on Lateral p-GaN/AlGaIn/GaN Hybrid Anode Diode," *IEEE Sensors Journal*, 21, 20, 22459-22463 (2021).
5. **K. Fu**, H. Fu, X. Deng, P.-Y. Su, H. Liu, K. Hatch, C.-Y. Cheng, D. Messina, R. V. Meidanshahi, P. Peri, C. Yang, T.-H. Yang, J. Montes, J. Zhou, X. Qi, S. M. Goodnick, F. A. Ponce, D. J. Smith, R. Nemanich, and Y. Zhao, "The impact of interfacial Si contamination on GaN-on-GaN regrowth for high power vertical devices," *Applied Physics Letters*, 118, 22, 222104 (2021).
6. H. Fu, **K. Fu (joint first author)**, S. Chowdhury, T. Palacios, and Y. Zhao, "Vertical GaN Power Devices: Device Principles and Fabrication Technologies--Part II," *IEEE Transactions on Electron Devices*, 68, 7, 3212-3222 (2021).
7. H. Fu, **K. Fu (joint first author)**, S. Chowdhury, T. Palacios, and Y. Zhao, "Vertical GaN Power Devices: Device Principles and Fabrication Technologies--Part I," *IEEE Transactions on Electron Devices*, 68, 7, 3200-3211 (2021).
8. H. Fu, **K. Fu (joint first author)**, H. Liu, K. A. Hatch, P. Peri, B. Li, T. Kim, D. H. Mudiyansele, S. R. Alugubelli, P. Su, C. Yang, D. C. Messina, X. Deng, C. Cheng, R. V. Meidanshahi, X. Huang, H. Chen, T. Yang, J. Zhou, A. M. Armstrong, A. A. Allerman, E. T. Yu, J. Han, S. M. Goodnick, D. J. Smith, R. J. Nemanich, F. A. Ponce, and Y. Zhao, "Selective Area Regrowth and Doping for Vertical Gallium Nitride Power Devices: Materials Challenges and Recent Progress," *Materials Today*, 49, 296-323 (2021).
9. **K. Fu**, X. Qi, H. Fu, P. Y. Su, H. Liu, T. H. Yang, C. Yang, J. Montes, J. Zhou, F. A. Ponce, and Y. Zhao, "Characterization of MOCVD regrown p-GaN and the interface properties for vertical GaN power devices," *Semiconductor Science and Technology*, 36, 1, 014005 (2020).
10. **K. Fu**, H. Fu, X. Huang, T. Yang, C. Cheng, P. R. Peri, H. Chen, J. Montes, C. Yang, J. Zhou, X. Deng, X. Qi, D. J. Smith, S. M. Goodnick, and Y. Zhao, "Reverse Leakage Analysis for As-Grown and Regrown Vertical GaN-on-GaN Schottky Barrier Diodes," *IEEE Journal of the Electron Devices Society*, 8, 74-83 (2020).
11. H. Fu, **K. Fu (joint first author)**, S. R. Alugubelli, C. Cheng, X. Huang, H. Chen, T. Yang, C. Yang, J. Zhou, J. Montes, X. Deng, X. Qi, S. M. Goodnick, F. A. Ponce, and Y. Zhao, "High Voltage Vertical GaN p-n Diodes With Hydrogen-Plasma Based Guard Rings," *IEEE Electron Device Letters*, 41, 1, 127-130 (2020).
- Most popular articles in [IEEE Electron Device Lett. in December 2019](#)
12. **K. Fu**, H. Fu, X. Huang, T. H. Yang, H. Chen, I. Baranowski, J. Montes, C. Yang, J. Zhou, and Y. Zhao, "Threshold switching and memory behaviors of epitaxially regrown gan-on-gan vertical p-n Diodes with High Temperature Stability," *IEEE Electron Device Letters*, 40, 3, 375-378 (2019).
- Highlighted on the Journal Cover of [IEEE Electron Device Lett.](#)
- Featured by [IEEE Spectrum](#), [Compound Semiconductor](#), etc.
- Most popular articles in [IEEE Electron Device Lett. in March 2019](#)
13. **K. Fu**, H. Fu, X. Huang, H. Chen, T. H. Yang, J. Montes, C. Yang, J. Zhou, and Y. Zhao, "Demonstration of 1.27 kV Etch-Then-Regrow GaN p-n Junctions with Low Leakage for GaN Power Electronics," *IEEE*

Electron Device Letters, 40, 11, 1728-1731 (2019).

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- Featured by Compound Semiconductor

14. H. Fu, **K. Fu (joint first author)**, H. Liu, S. R. Alugubelli, X. Huang, H. Chen, J. Montes, T. H. Yang, C. Yang, J. Zhou, F. A. Ponce, and Y. Zhao, "Implantation-and etching-free high voltage vertical GaN p-n diodes terminated by plasma-hydrogenated p-GaN: Revealing the role of thermal annealing," *Applied Physics Express*, 12, 5, 051015 (2019).
- Selected as "Spotlights 2019" in *Appl. Phys. Express*
15. L. Song, **K. Fu (corresponding author)**, J. Zhao, G. Yu, R. Hao, X. Zhang, F. Chen, Y. Fan, Y. Cai, and B. Zhang, "Influence factors and temperature reliability of ohmic contact on AlGaIn/GaN HEMTs," *AIP Advances*, 8, 3, 035213 (2018).
16. L. Song, **K. Fu (corresponding author)**, J. Zhao, G. Yu, R. Hao, Y. Fan, Y. Cai, and B. Zhang, "Degradation of AlGaIn/GaN metal-insulator-semiconductor high electron mobility transistors under off-state electrical stress," *Journal of Vacuum Science and Technology B: Nanotechnology and Microelectronics*, 36, 4, 042201 (2018).
17. R. Hao, N. Xu, G. Yu, L. Song, F. Chen, J. Zhao, X. Deng, X. Li, K. Cheng, **K. Fu (corresponding author)**, Y. Cai, X. Zhang, and B. Zhang, "Studies on Fabrication and Reliability of GaN High-Resistivity-Cap-Layer HEMT," *IEEE Transactions on Electron Devices*, 65, 4, 1314-1320 (2018).
18. **K. Fu**, H. Fu, H. Liu, S. R. Alugubelli, T. H. Yang, X. Huang, H. Chen, I. Baranowski, J. Montes, F. A. Ponce, and Y. Zhao, "Investigation of GaN-on-GaN vertical p-n diode with regrown p-GaN by metalorganic chemical vapor deposition," *Applied Physics Letters*, 113, 23, 233502 (2018).
19. L. Song, **K. Fu (corresponding author)**, Z. Zhang, S. Sun, W. Li, G. Yu, R. Hao, Y. Fan, W. Shi, Y. Cai, and B. Zhang, "Interface Si donor control to improve dynamic performance of AlGaIn/GaN MIS-HEMTs," *AIP Advances*, 7, 12, 125023 (2017).
20. Z. Zhang, G. Yu, X. Zhang, X. Deng, S. Li, Y. Fan, S. Sun, L. Song, S. Tan, D. Wu, W. Li, W. Huang, **K. Fu (corresponding author)**, Y. Cai, Q. Sun, and B. Zhang, "Studies on high-voltage GaN-on-Si MIS-HEMTs using LPCVD Si₃N₄ as gate dielectric and passivation layer," *IEEE Transactions on Electron Devices*, 63, 2, 731-738 (2016).
21. S. Sun, **K. Fu (corresponding author)**, G. Yu, Z. Zhang, L. Song, X. Deng, Z. Qi, S. Li, Q. Sun, Y. Cai, J. Dai, C. Chen, and B. Zhang, "AlGaIn/GaN metal-insulator-semiconductor high electron mobility transistors with reduced leakage current and enhanced breakdown voltage using aluminum ion implantation," *Applied Physics Letters*, 108, 1, 013507 (2016).
- Featured by *Semiconductor Today*
22. Z. Zhang, G. Yu, X. Zhang, S. Tan, D. Wu, **K. Fu (corresponding author)**, W. Huang, Y. Cai, and B. Zhang, "16.8 A/600 V AlGaIn/GaN MIS-HEMTs employing LPCVD-Si₃N₄ as gate insulator," *Electronics Letters*, 51, 15, 1201-1203 (2015).
23. Y. H. Liu, W. Cao, S. J. Li, Y. Li, S. C. Sun, **K. Fu (corresponding author)**, C. Q. Chen, and B. S. Zhang, "AlGaIn and graphene based UV-IR dual-color detectors," *Chinese Journal of Luminescence*, 36, 10, 1167-1170 (2015).
24. **K. Fu**, G. H. Yu, and M. Lu, "GaN-based PIN detectors for X-ray detector," *Chinese Journal of Luminescence*, 32, 7, 720-723 (2011).
25. **K. Fu**, G. Yu, C. Yao, G. Wang, M. Lu, and G. Zhang, "X-ray detectors based on Fe doped GaN photoconductors," *Physica Status Solidi - Rapid Research Letters*, 5, 5-6, 187-189 (2011).
- Featured by *SINANO News*, *CAS News*
- Featured by *ScienceNet.cn*, *ZGSXZS.com*, *antpedia.com*, *hqew.com*, etc.
26. **K. Fu**, G. H. Yu, and M. Lu, "Time response of GaN Schottky detector for X-ray detection," *Atomic Energy Science and Technology*, 44, SUPPL. 1, 449-452 (2010).
27. Z. He, **K. Fu**, M. Xu, J. Zhou, T. Li, and Y. Zhao, "Understanding the Breakdown Behavior of Ultrawide-Bandgap Boron Nitride Power Diodes Using Device Modeling," *Phys. Status Solidi RRL*, 2200397, (2023).
28. Y. Zhao, M. Xu, X. Huang, J. Lebeau, T. Li, D. Wang, H. Fu, **K. Fu**, X. Wang, J. Lin, and H. Jiang, "Toward high efficiency at high temperatures: Recent progress and prospects on InGaIn-Based solar cells," *Materials Today Energy*, 31, 101229, (2023).
29. A. Biswas, M. Xu, **K. Fu**, J. Zhou, R. Xu, A. B. Puthirath, J. A. Hachtel, C. Li, S. A. Iyengar, H. Kannan, X. Zhang, T. Gray, R. Vajtai, A. Glen Birdwell, M. R. Neupane, D. A. Ruzmetov, P. B. Shah, T. Ivanov, H. Zhu, Y. Zhao, and P. M. Ajayan, "Properties and device performance of BN thin films grown on GaN by pulsed laser deposition," *Appl. Phys. Lett.*, 121, 9, 092105, (2022).

30. M. Yuan, Q. Xie, **K. Fu**, T. Hossain, J. Niroula, J. A. Greer, N. Chowdhury, Y. Zhao, and T. Palacios, "GaN Ring Oscillators Operational at 500 °C Based on a GaN-on-Si Platform," *IEEE Electron Device Lett.*, 43, 11, pp. 1842-1845, (2022).
31. K. A. Hatch, D. C. Messina, H. Fu, **K. Fu**, Y. Zhao, and R. J. Nemanich, "External charge compensation in etched gallium nitride measured by x-ray photoelectron spectroscopy," *Journal of Applied Physics*, 131, 18, 185301 (2022).
32. T.-H. Kim, **K. Fu**, C. Yang, Y. Zhao, and E. T. Yu, "Electronic structure of epitaxially grown and regrown GaN pn junctions characterized by scanning Kelvin probe and capacitance microscopy," *Journal of Applied Physics*, 131, 1, 015704 (2022).
33. S. Ghosh, **K. Fu**, F. Kargar, S. Rumyantsev, Y. Zhao, and A. A. Balandin, "Low-frequency noise characteristics of GaN vertical PIN diodes—Effects of design, current, and temperature," *Applied Physics Letters*, 119, 24, 243505 (2021)
34. J. Zhou, H. Chen, **K. Fu**, and Y. Zhao, "Gallium oxide-based optical nonlinear effects and photonics devices," *Journal of Materials Research*, 36, 4832–4845 (2021).
- [Invited Feature Paper](#)
35. P. Ram peri, **K. Fu**, H. Fu, Y. Zhao, and D. J. Smith, "Effect of substrate morphology on stress-tested GaN-on-GaN vertical p-n diodes," *Microscopy and Microanalysis*, 27, S1, 1760-1761 (2021).
- [Selected as a Featured Article and identified as an AIP SciLight](#)
36. C. Yang, H. Fu, P. Peri, **K. Fu**, T. H. Yang, J. Zhou, J. Montes, D. J. Smith, and Y. Zhao, "Enhancement-Mode Gate-Recess-Free GaN-Based p-Channel Heterojunction Field-Effect Transistor With Ultra-Low Subthreshold Swing," *IEEE Electron Device Letters*, 42, 8, 1128-1131 (2021).
37. C. Yang, H. Fu, **K. Fu**, T.-H. Yang, J. Zhou, J. Montes, and Y. Zhao, "Low-leakage kV-class GaN vertical p–n diodes with non-destructive breakdown enabled by hydrogen-plasma termination with p-GaN extension," *Semiconductor Science and Technology*, 36, 7, 075009 (6pp) (2021).
38. T.-H. Yang, J. Brown, **K. Fu**, J. Zhou, K. Hatch, C. Yang, J. Montes, X. Qi, H. Fu, R. J. Nemanich, and Y. Zhao, "AlGaIn/GaN metal–insulator–semiconductor high electron mobility transistors (MISHEMTs) using plasma deposited BN as gate dielectric," *Applied Physics Letters*, 118, 7, 072102 (2021).
39. P. Peri, **K. Fu**, H. Fu, Y. Zhao, and D. J. Smith, "Characterization of As-Grown and Regrown GaN-on-GaN Structures for Vertical p-n Power Devices," *Journal of Electronic Materials*, (2021).
40. T. H. Yang, H. Fu, **K. Fu**, C. Yang, J. Montes, X. Huang, H. Chen, J. Zhou, X. Qi, X. Deng, and Y. Zhao, "Vertical GaN-on-GaN Schottky Barrier Diodes with Multi-Floating Metal Rings," *IEEE Journal of the Electron Devices Society*, 8, 857-863 (2020).
41. C. Yang, H. Fu, P. Y. Su, H. Liu, **K. Fu**, X. Huang, T. H. Yang, H. Chen, J. Zhou, X. Deng, J. Montes, X. Qi, F. A. Ponce, and Y. Zhao, "Demonstration of GaN-based metal-insulator-semiconductor junction by hydrogen plasma treatment," *Applied Physics Letters*, 117, 5, 052105 (2020).
42. C. Yang, H. Fu, V. N. Kumar, **K. Fu**, H. Liu, X. Huang, T. H. Yang, H. Chen, J. Zhou, X. Deng, J. Montes, F. A. Ponce, D. Vasileska, and Y. Zhao, "GaN Vertical-Channel Junction Field-Effect Transistors with Regrown p-GaN by MOCVD," *IEEE Transactions on Electron Devices*, 67, 10, 3972-3977 (2020).
43. P. Y. Su, H. Liu, C. Yang, **K. Fu**, H. Fu, Y. Zhao, and F. A. Ponce, "Lateral and vertical growth of Mg-doped GaN on trench-patterned GaN films," *Applied Physics Letters*, 117, 10, 102110 (2020).
44. B. Raghathamachar, Y. Liu, H. Peng, T. Ailiumaer, M. Dudley, F. S. Shahedipour-Sandvik, K. A. Jones, A. Armstrong, A. A. Allerman, J. Han, H. Fu, **K. Fu**, and Y. Zhao, "X-ray topography characterization of gallium nitride substrates for power device development," *Journal of Crystal Growth*, 544, 125709 (2020).
45. P. R. Peri, K. Hatch, D. Messina, **K. Fu**, Y. Zhao, R. Nemanich, and D. Smith, "Plasma Enhanced Atomic Layer-etched and Regrown GaN-on-GaN High Power p-n Diodes," *Microscopy and Microanalysis*, 840-842 (2020).
46. P. Peri, **K. Fu**, H. Fu, Y. Zhao, and D. J. Smith, "Structural breakdown in high power GaN-on-GaN p-n diode devices stressed to failure," *Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films*, 38, 6, 063402 (2020).
47. J. Montes, C. Kopas, H. Chen, X. Huang, T. H. Yang, **K. Fu**, C. Yang, J. Zhou, X. Qi, H. Fu, and Y. Zhao, "Deep level transient spectroscopy investigation of ultra-wide bandgap (2⁻01) and (001) β -Ga₂O₃," *Journal of Applied Physics*, 128, 20, 21859 (2020).
48. X. Huang, D. Li, P. Y. Su, H. Fu, H. Chen, C. Yang, J. Zhou, X. Qi, T. H. Yang, J. Montes, X. Deng, **K. Fu**, S. P. DenBaars, S. Nakamura, F. A. Ponce, C. Z. Ning, and Y. Zhao, "Anomalous carrier dynamics and localization effects in nonpolar m-plane InGaIn/GaN quantum wells at high temperatures," *Nano Energy*, 76, 105013 (2020).

49. J. Zhou, H. Chen, H. Fu, **K. Fu**, X. Deng, X. Huang, T. H. Yang, J. A. Montes, C. Yang, X. Qi, B. Zhang, X. Zhang, and Y. Zhao, "Demonstration of low loss β -Ga₂O₃ optical waveguides in the UV-NIR spectra," *Applied Physics Letters*, 115, 25, 251108 (2019).
50. T. H. Yang, H. Fu, H. Chen, X. Huang, J. Montes, I. Baranowski, **K. Fu**, and Y. Zhao, "Temperature-dependent electrical properties of β -Ga₂O₃ Schottky barrier diodes on highly doped single-crystal substrates," *Journal of Semiconductors*, 40, 1, 012801 (2019).
51. J. Montes, T. H. Yang, H. Fu, H. Chen, X. Huang, **K. Fu**, I. Baranowski, and Y. Zhao, "Effect of Proton Radiation on Ultrawide Bandgap AlN Schottky Barrier Diodes," *IEEE Transactions on Nuclear Science*, 66, 1, 91-96 (2019).
52. J. Montes, C. Yang, H. Fu, T. H. Yang, **K. Fu**, H. Chen, J. Zhou, X. Huang, and Y. Zhao, "Demonstration of mechanically exfoliated β -Ga₂O₃/GaN p-n heterojunction," *Applied Physics Letters*, 114, 16, 162103 (2019).
53. H. Liu, H. Fu, **K. Fu**, S. R. Alugubelli, P. Y. Su, Y. Zhao, and F. A. Ponce, "Non-uniform Mg distribution in GaN epilayers grown on mesa structures for applications in GaN power electronics," *Applied Physics Letters*, 114, 8, 082102 (2019).
54. X. Huang, W. Li, H. Fu, D. Li, C. Zhang, H. Chen, Y. Fang, **K. Fu**, S. P. Denbaars, S. Nakamura, S. M. Goodnick, C. Z. Ning, S. Fan, and Y. Zhao, "High-Temperature Polarization-Free III-Nitride Solar Cells with Self-Cooling Effects," *ACS Photonics*, 6, 8, 2096-2103 (2019).
55. X. Huang, R. Fang, C. Yang, **K. Fu**, H. Fu, H. Chen, T. H. Yang, J. Zhou, J. Montes, M. Koziicki, H. Barnaby, B. Zhang, and Y. Zhao, "Steep-slope field-effect transistors with AlGa_N/Ga_N HEMT and oxide-based threshold switching device," *Nanotechnology*, 30, 21, 215201 (2019).
56. J. Han, J. H. Zhao, J. Zhao, Y. H. Xing, X. Cao, **K. Fu**, L. Song, X. G. Deng, and B. S. Zhang, "Impact of Interface Treatment on Dynamic Characteristic of AlGa_N/Ga_N MIS-HEMTs," *Chinese Journal of Luminescence*, 40, 7, 915-921 (2019).
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58. S. R. Alugubelli, H. Fu, **K. Fu**, H. Liu, Y. Zhao, and F. A. Ponce, "Dopant profiling in p-i-n GaN structures using secondary electrons," *Journal of Applied Physics*, 126, 1, 015704 (2019).
59. S. R. Alugubelli, H. Fu, **K. Fu**, H. Liu, Y. Zhao, M. R. McCartney, and F. A. Ponce, "Determination of electronic band structure by electron holography of etched-and-regrown interfaces in GaN p-i-n diodes," *Applied Physics Letters*, 115, 20, 201602 (2019).
60. J. Zhao, Y. Xing, **K. Fu**, P. Zhang, L. Song, F. Chen, T. Yang, X. Deng, S. Zhang, and B. Zhang, "Influence of channel/back-barrier thickness on the breakdown of AlGa_N/Ga_N MIS-HEMTs," *Journal of Semiconductors*, 39, 9, 094003 (2018).
61. D. S. Zhao, R. Liu, **K. Fu**, G. H. Yu, Y. Cai, H. J. Huang, Y. Q. Wang, R. G. Sun, and B. S. Zhang, "An Al_{0.25}Ga_{0.75}N/GaN Lateral Field Emission Device with a Nano Void Channel," *Chinese Physics Letters*, 35, 3, 038103 (2018).
62. X. Huang, H. Chen, H. Fu, I. Baranowski, J. Montes, T. H. Yang, **K. Fu**, B. P. Gunning, D. D. Koleske, and Y. Zhao, "Energy band engineering of InGa_N/Ga_N multi-quantum-well solar cells via AlGa_N electron- and hole-blocking layers," *Applied Physics Letters*, 113, 4, 043501 (2018).
63. T. He, Y. Zhao, X. Zhang, W. Lin, **K. Fu**, C. Sun, F. Shi, X. Ding, G. Yu, K. Zhang, S. Lu, X. Zhang, and B. Zhang, "Solar-blind ultraviolet photodetector based on graphene/vertical Ga₂O₃ nanowire array heterojunction," *Nanophotonics*, 7, 9, 1557-1562 (2018).
64. R. Hao, D. Wu, **K. Fu**, L. Song, F. Chen, J. Zhao, Z. Du, B. Zhang, Q. Wang, G. Yu, K. Cheng, Y. Cai, X. Zhang, and B. Zhang, "10 A/567 V normally off p-GaN gate HEMT with high-threshold voltage and low-gate leakage current," *Electronics Letters*, 54, 13, 848-849 (2018).
65. H. Fu, X. Zhang, **K. Fu**, H. Liu, S. R. Alugubelli, X. Huang, H. Chen, I. Baranowski, T. H. Yang, K. Xu, F. A. Ponce, B. Zhang, and Y. Zhao, "Nonpolar vertical Ga_N-on-GaN p-n diodes grown on free-standing $\bar{1}10$ m-plane Ga_N substrates," *Applied Physics Express*, 11, 11, 111003 (2018).
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Conference Presentations and Abstracts

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2. **Kai Fu**, Chen Yang, Jingan Zhou, Tsung-Han Yang, Jossue Montes, Houqiang Fu, and Yuji Zhao, "GaN Vertical p-n Diodes with Avalanche Capability through Hydrogen Plasma Based Edge Termination," 2021 Compound Semiconductor Week (CSW 2021), May 2021, online meeting, Oral Presentation.
3. P. R. Peri, K. Hatch, D. Messina, **K. Fu**, Y. Zhao, R. Nemanich, and D. Smith, "Plasma enhanced atomic layer etched and regrown GaN-on-GaN high power p-n diodes," *2020 Microscopy & Microanalysis Meeting (M&M 2020)*, Aug 2020, Milwaukee, WI, Oral Presentation. (Online presentation due to COVID-19). [Selected for 2020 M&M Student Scholar Award]
4. J. Montes, H. Fu, H. Chen, X. Huang, T. H. Yang, **K. Fu**, C. Yang, J. Zhou, X. Qi, X. Deng, and Y. Zhao, "Examining deep-level defects in (-201) β -Ga₂O₃ by deep level transient spectroscopy," *The 62nd Electronic Materials Conference (EMC 2020)*, Jun 2020, Columbus, OH, Oral Presentation. (Online presentation due to COVID-19).
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Professional Activities

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- Editor of Electronics (ISSN 2079-9292) for Section Board of Power Electronics
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