

## One Page Resume - Xiaohang Li

King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia 23955

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### **Education**

Ph.D. in Electrical Engineering with the highest honor, Georgia Tech, 2015, Advisor: Prof Russell D. Dupuis

M.S. in Electrical Engineering, Lehigh University, 2011, Advisor: Prof Nelson Tansu

B.S. in Applied Physics with the highest honor, Huazhong University of Science and Technology, 2008

### **Academic Experience**

Associate Professor of Electrical and Computer Engineering and Applied Physics

Principal Investigator of Advanced Semiconductor Laboratory

King Abdullah University of Science and Technology (KAUST), 01/2016-Present

Teaching: Distinguished Teaching Award Nominee (6/150), ECE 206 Device Physics (core), ECE 208 Semiconductor Optoelectronic Devices (core), ECE 335 UWBG Semiconductor Devices (elective)

Service: Creation of Technology Innovation and Entrepreneurship Program, Applied Physics Program, and Semiconductor Initiative; Members of Academic Council, Core Lab User Committee, ECE Committees on Faculty Search & Admission & Curriculum Reform, Visiting Student Programs, University Social Media Program

### **Prestigious Awards**

Harold M. Manasevit Young Investigator Award, American Association of Crystal Growth

40 under 40 Alumni Award, Georgia Institute of Technology

D. J. Lovell Scholarship, SPIE

Edison Prize, Edison Innovation Foundation

Graduate Student Fellowship, IEEE Photonics Society

### **Research Interests and Credentials**

Interests: Ultrawide bandgap (UWBG) semiconductor epitaxy, physics, devices, integrated circuits

Major achievements: First UWBG CMOS, Leading in UVC lasers, Leading in UWBG B-III-N (Page 5)

145 journal and 213 conference publications | 3 book chapters and 4 editorials | 22 issued and 10+ pending patents

Device physics software used by >70 institutions and companies | >120 invited and plenary talks and seminars

Key research results highlighted by technical media such as *Semiconductor Today* for numerous times

*A detailed list of publications can be found from Page 28*

### **Editorial Experience**

*Photonics Research* 2018-Present | *Journal of Semiconductor* 2021-Present | *Advanced Electronic Materials* 2023-Present

### **Conference Committee**

International conferences: CSW, IWN, ISGN, ICMOVPE, ODF, IWUMD

US conferences: EMC, OMVPE, ISSCG | Asian conferences: ICMAT, ISSMD, IFWS, IWPSD

### **Professional Society**

Vice Chair, Western Saudi Arabia Chapter, IEEE Electron Devices Society (EDS), 2018-Present

President, Lehigh University Student Chapter, IEEE Photonics Society, 2010-2011

### **Student and Postdoctoral Education**

Graduated 5 PhD, 20 MS students; and landed them to positions of faculty, research, industry

PhD thesis committee: 24 times | PhD proposal committee: 28 times | Master thesis committee: 12 times

Awards received by advisees: SPIE Optics and Photonics Education Scholarship, Oxford Instrument Image Competition Award, USTC Hundred Talent Full Professorship, News Feature, Top Conference Poster Awards

## Detailed CV - Xiaohang Li

### Basic Info

Xiaohang Li, Ph.D.

Associate Editor of *Photonics Research*, the Optical Society (OSA)

Editorial Board Member, *Journal of Semiconductor*

Vice Chair of Western Saudi Arabia Chapter, IEEE Electron Devices Society (EDS)

Founder of Polarization Toolbox

Principal Investigator of Advanced Semiconductor Laboratory

Associate Professor of Electrical and Computer Engineering (Primary), CEMSE Division

Associate Professor of Applied Physics (Secondary), PSE Division

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Email: [xiaohang.li@kaust.edu.sa](mailto:xiaohang.li@kaust.edu.sa)

Research Interests: ultrawide bandgap semiconductor materials, physics, devices, hardware

Webpages: [Laboratory](#) | [Polarization Toolbox](#) | [Google Scholar](#)

### Education

#### 1) **Ph.D., Georgia Institute of Technology, GA, USA, 2011-2015**

– Ph.D. in Electrical Engineering with minor in Physics

– Thesis title: III-nitride ultraviolet laser | Advisor: Prof. Russell D. Dupuis

– Research: growth, characterization, fabrication, and simulation of III-nitride UWBG materials, nanostructures, and devices applicable for optoelectronics and power electronics

#### 2) **Certificates of MBA Courses, Warton School, University of Pennsylvania, PA, 2013**

– Graded MBA courses including Accounting, Operation, Marketing, Corporate Finance

#### 3) **M.S., Lehigh University, PA, USA, 2008-2011**

– Research Assistant and M.S. in Electrical Engineering

– Advisor: Prof. Nelson Tansu

– Research: growth, characterization, fabrication, and simulation of GaN-based materials, nanostructures, and devices applicable for inorganic and organic optoelectronics

#### 4) **B.S., Huazhong University of Science and Technology, China, 2004-2008**

– B.S. in Applied Physics with the highest honor

### Selected Awards and Honors

1. Editor's Pick, *Applied Physics Letter*, 2020

#### 2. **The 40 under 40 Alumni Award, Georgia Institute of Technology, 2020**

*Selected along 39 other distinguished alumni under 40 years old including founder/CEO of unicorn startup and four-time Olympian*

3. IEEE North Jersey Section ED/CAS MTT/AP Chapters Award, 2019

#### 4. **Harold M. Manasevit Young Investigator Award, American Association of Crystal Growth (AACG), 2018**

*“for significant and innovative contributions in the MOVPE growth of state-of-the-art deep UV lasers, B-III-N alloys, III-oxides, and blue and green emitters.”*

*2018 is the 50<sup>th</sup> anniversary of the MOCVD invention by Dr. Manasevit*

*Selected biennially by experts including Nobel laureate and US NAE members*

**5. Official Nominee of KAUST Distinguished Teaching Award, KAUST, 2018**

*Six nominees out of 150 faculty at KAUST*

6. Member of Presidential Academic Council, KAUST, 2017-2019
7. Title of the Weekly Newsletter (1), Compound Semiconductor, 2017
8. Editor's Select, Applied Physics Letter, 2016
9. Representative of Georgia Institute of Technology, Global Young Scientist Summit, 2015

**10. Graduate Student Fellowship, IEEE Photonics Society, 2014**

*The highest award from IPS for graduate students with 10 recipients worldwide annually*

11. Steve W. Chaddick Fellowship, Georgia Institute of Technology, 2014
12. Anne Robinson Clough International Student Grant, Georgia Institute of Technology, 2014

**13. D. J. Lovell Scholarship, SPIE, 2013**

*"for research focusing on growing high-quality InAlGaN semiconductor material for ultraviolet devices such as laser diodes, LED, and detectors"*

*The most prestigious scholarship from SPIE*

**14. Edison Prize, Edison Innovation Foundation, 2013**

*The most prestigious award for Georgia Tech graduate students*

15. Member of Insight Engineering & Science Program, McKinsey & Company, 2013
16. Member of Bridge to BCG Program, Boston Consulting Group, 2013
17. Most Commercialize Prize, Georgia Institute of Technology, 2013
18. Best Product Showcase Prize, Georgia Institute of Technology, 2013
19. Innovation Alley, Lehigh Valley, TEDx, 2013
20. Immigrant Entrepreneurs and Innovators Champions of Change, the U.S. White House, 2013
21. Georgia Tech representative, ACC Startup Madness, 2013
22. Best Customer Discovery Award, Georgia Tech, 2012
23. First Place of Elevator Pitch Competition, Georgia Institute of Technology, 2012
24. Michael W Levin '87 Advanced Technology Award, Lehigh University, 2012
25. National Scholarship, China, 2008

**Selected Awards and Honors of My Advisees**

1. Prototypes for Humanity Exhibitor, United Nations Climate Change Conference (COP28), Dubai, UAE, 2023  
*Awarded to my PhD student Saravanan Yuvaraja*
2. Best Student Award, International Conference on Nitride Semiconductors (ICNS), Fukuoka, Japan, 2023  
*Awarded to my PhD student Zhiyuan Liu*
3. Sponsored Attendance, Future Investment Initiative (FII), Riyadh, Saudi Arabia, 2023  
*Awarded to my PhD student Vishal Khandelwal*
4. Best Student Poster Award (1<sup>st</sup> place), Semiconductor Photonics Workshop, Thuwal, Saudi Arabia, 2023  
*Awarded to my PhD student Yi Lu*
5. Best Student Poster Award (2<sup>nd</sup> place), Semiconductor Photonics Workshop, Thuwal, Saudi Arabia, 2023  
*Awarded to my PhD student Zhiyuan Liu*
6. Best Student Poster Award, International Workshop on Nitride Semiconductors (IWN), Berlin, Germany, 2022

- Awarded to my PhD student Zhiyuan Liu*
7. HSE Delta Award, KAUST, 2022  
*Awarded to my technician Mingtao Nong*
  8. Best Poster Award, Future of Semiconductors Forum, Riyadh, Saudi Arabia, 2022  
*Awarded to my PhD student Yi Lu*
  9. 1<sup>st</sup> Place, Research Open Week Presentation, KAUST, 2021  
*Awarded to my PhD student Yi Lu*
  10. Academic Excellence Award, CEMSE, KAUST, 2021  
*Awarded to my PhD student Zhiyuan Liu*
  11. Academic Excellence Award, CEMSE, KAUST, 2020  
*Awarded to my PhD student Ronghui Lin*
  - 12. SPIE Optics and Photonics Education Scholarship (\$4,000 USD tier), 2020**  
*Awarded to my PhD student Ronghui Lin*
  13. 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> Prizes, KAUST-Asia Wide Bandgap Semiconductor Workshop, 2019  
*Awarded to my advisees Che-Hao Liao, Xiao Tang, Yi Lu, Feras Alqatari, Ronghui Lin, Rongyu Lin*
  14. News Features, Semiconductor Today, 2019  
*ACS Photonics Paper of Maocheng Shan, a PhD student I advised remotely. Only one work is shown as the News Features on the top of the homepage one time*
  - 15. Scanning Electron Microscopy Image Competition, Oxford Instruments, 2019**  
*Awarded to my PhD student Ronghui Lin*
  - 16. Hundred Talent Full Professorship, University of Science and Technology of China, 2018**  
*Awarded to my postdoc Haiding Sun*
  - 17. Fullbright Scholarship, Fulbright–Hays Program (won by my student Carlos Torres), 2017**  
*Awarded to my student Carlos Torres*
  18. Title of the Weekly Newsletter (2), Compound Semiconductor, 2017  
*My postdoc Haiding Sun's Applied Physics Letter paper*
  19. Exploration Award, Whale Foundation, 2017  
*Awarded to my visiting student Kaikai Liu*
  20. Outstanding Student Award, UESTC (won by my student Jingtao Li), 2017  
*Awarded to my visiting student Jingtao Li*
  21. Poster Award, KAUST-NSF Conference on Electronic Materials, Devices and Systems for a Sustainable Future, 2017  
*Awarded to my postdoc Haiding Sun*

### **Professional Experience**

- 1) 06/2021-Present, Associate Professor, King Abdullah University of Science and Technology (KAUST), Saudi Arabia**
  - Electrical and Computer Engineering Program, Division of Computer, Electrical, Mathematical Science and Engineering (CEMSE) Division
  - Applied Physics Program, Physical Science and Engineering (PSE) Division
  - PI of Advanced Semiconductor Laboratory
- 2) 01/2016-06/2021, Associate Professor, King Abdullah University of Science and Technology (KAUST), Saudi Arabia**

- Electrical and Computer Engineering Program, Division of Computer, Electrical, Mathematical Science and Engineering (CEMSE) Division
  - Applied Physics Program, Physical Science and Engineering (PSE) Division
  - PI of Advanced Semiconductor Laboratory
- 3) 1/2020-Present, Editor of Special Issue, Advanced Electronic Materials and Advanced Materials Interfaces, Wiley**
- Lead Guest Editor of Special Issue *Progresses and frontiers in Ultrawide Bandgap Semiconductors*
- 4) 1/2020-Present, Editorial Board Member, Journal of Semiconductor**
- In the areas of wide bandgap semiconductor
- 5) 1/2019-Present, Founder, Polarization Toolbox**
- Designed and created the first software to systematically study III-nitride polarization and the first machine learning software for III-nitride polarization based on research done at KAUST.
  - These two cloud-based software programs are being used by researchers and engineers from over 70 universities, research institutes, and companies around the world:
    - *University of California Santa Barbara, Mie University, TU Wien, IMEC, University of Sheffield, Nanjing University, King Abdullah University of Science and Technology, Jilin University, Anna University, Ningbo Institute of Materials Technology and Engineering (CAS), Institute of Semiconductor (CAS), Hebei University of Technology, Xiamen University, Zhengzhou University, Nanjing University of Posts and Telecommunications, Huazhong University of Science and Technology, SRM Institute of Science and Technology, Indian Institute of Technology Delhi, Peking university, Slovak Academy of Sciences, RIKEN, Tyndall National Institute, Indian Institute of Science, Advanced Micro-Fabrication Equipment, Xiamen Changelight, ASML, CrayoNano, École polytechnique fédérale de Lausanne, University of Queensland, Australian National University, Ulm University, Johannes Gutenberg University of Mainz, National Chiao Tung University, Facebook, Georgia Institute of Technology, Centre national de la recherche scientifique, University of Arkansas, Saitama University, Institut Lafayette, University of California San Diego, Institute of Semiconductors NAS Ukraine, Technical University of Berlin, University of Eastern Finland, German University in Cairo, National Cheng Kung University, Wuhan University, Central South University, Hebei Semiconductor Research Institute, Nanchang University, Cornell University, Sun Yat-sen University, University of Bath, Shenzhen University, King Abdulaziz University, Stony Brook University, New Jersey Institute of Technology, Sivas Cumhuriyet University, Indian Institute of Technology Madras, Indian Institute of Science Education and Research, S. N. Bose National Centre for Basic Sciences, Indian Institute of Technology Kharagpur, Madras Institute of Technology, Central Electronics Engineering Research Institute, KLE Technological University, University of Utah, Indian Institute of Technology Roorkee, University at Buffalo, Arizona State University, Indian Institute of Technology Bombay, University of Pisa, Suzhou Institute of Nano-Tech and Nano-Bionics (CAS), North China Electric Power University, Xinyang Normal University, Beijing Jiaotong University, North Carolina State University.*
- 6) 11/2018-Present, Associate Editor, Photonics Research, the Optical Society (OSA)**
- Associate Editor for the areas of semiconductor lasers, LEDs, and photodetectors
- 7) 11/2018-Present, Vice Chair, Western Saudi Arabia Chapter, IEEE Electron Devices Society (EDS)**
- Working with Chair to organize different local events and increase the number of members
- 8) 06/2018-08/2019, Lead Guest Editor, Photonics Research, the Optical Society (OSA)**

- Lead Guest Editor of Special Issue *Semiconductor UV Photonics*
- PR ranks 10th out of 94 optics and photonics journals in the latest Journal Citation Reports
- 9) **09/2015-12/2015, Visiting Professor, Portland State University, Portland, OR, USA**
  - Visiting Professor at Departments of Physics and Electrical and Computer Engineering
- 10) **07/2011-08/2015, Georgia Institute of Technology, Atlanta, GA, USA**
  - Research Assistant of Center for Compound Semiconductors
- 11) **07/2008-05/2011, Lehigh University, Bethlehem, PA USA**
  - Research Assistant of Center for Optical Technologies

### **Notable Contributions and Achievements**

*From works led by my KAUST group*

- 1) Integrated circuits based on 10 (world record) vertically stacked transistors (DRC 2023)
- 2) First Ga<sub>2</sub>O<sub>3</sub>/NiO CMOS (DRC 2023)
- 3) Thickest AlN on silicon by MOCVD (under review)
- 4) First UWBG pseudo CMOS (IEEE TED 2023)
- 5) First UWBG flash memory (JJAP 2023)
- 6) GaN HEMTs with record-high current on/off ratio (Adv. Mat. 2023)
- 7) First electronic isolation of WBG devices (APL 2022)
- 8) Record-short wavelength GaN UVC laser (ACS Photonics 2021)
- 9) State-of-the-art  $\beta$ -(Al<sub>x</sub>Ga<sub>1-x</sub>)<sub>2</sub>O<sub>3</sub> alloy (Appl. Phys. Lett. 2021)
- 10) Record-high B composition in wurtzite BAlN alloy (Appl. Phys. Lett. 2020)
- 11) First N-polar tunnel junction LED (ACS Photonics 2020)
- 12) First III-nitride hyperuniformity laser (Laser Photonics Rev. 2020)
- 13) First epitaxial Ga<sub>2</sub>O<sub>3</sub> flexible device (arXiv:2008.00172 2020)
- 14) First dual-reactor III-oxide and III-nitride MOCVD system (Oct 2019)
- 15) First GaN quantum well deep UV laser (ACS Photonics 2019)
- 16) First three-dimensional device band diagram for III-nitride LED and laser (Optica 2019)
- 17) First UV LED without electron blocking layer (IEEE Photonics J 2019)
- 18) First AlN/Ga<sub>2</sub>O<sub>3</sub> device proposal (arXiv:1901.05111 2019)
- 19) First machine learning software for III-nitride semiconductors (Jan 2019)
- 20) First polarization-focused software for III-nitride semiconductors (Dec 2018)
- 21) First III-nitride dual-polarity quantum wells (Adv. Funct. Mater. 2018)
- 22) First demonstration of  $\alpha$ -,  $\beta$ - and  $\epsilon$ -Ga<sub>2</sub>O<sub>3</sub> films grown by MOCVD (Cryst. Growth Des. 2018)
- 23) First polarization parameters of boron-incorporated III-nitride alloys (Appl. Phys. Lett. 2017(3))
- 24) First report of band structures of boron-incorporated III-nitride alloys (Phys. Status Solidi B 2017(2))
- 25) First report of band offset of boron-incorporated III-nitride alloys (Appl. Phys. Lett. 2017(2))
- 26) Revelation of working principle of TMAI preflow for AlN MOCVD (Appl. Phys. Lett. 2017(1))

*Before KAUST*

- 27) Record-high boron content in monocrystalline wurtzite BAlN (Phys. Status Solidi B 2017(1))
- 28) First deep UV surface stimulated emission from semiconductors (Appl. Phys. Lett. 2015(2))
- 29) First TE-TM optical polarization switch of semiconductor lasers (Appl. Phys. Lett. 2015(1))
- 30) Record low-threshold deep UV semiconductor laser on sapphire substrates (Appl. Phys. Lett. 2014)
- 31) First semiconductor laser below 260 nm on sapphire substrates (Appl. Phys. Lett. 2014)

### **Works Featured in English Media**

1. “KAUST researchers develop a tough memory device for space missions,” Asian Gallium Oxide Alliance

- <http://agoa.top/en/News/details.html?id=551>
2. “KAUST researchers develop a tough memory device for space missions,” Space Daily
  - <https://www.techexplorist.com/kaust-researchers-develop-tough-memory-device-space-missions/66961/>
3. “Gallium Oxide Offers New Hope for Electronics in Space,” AZO Materials
  - <https://www.azom.com/news.aspx?newsID=61764>
4. “Tough memory device aims for space missions,” KAUST Discovery
  - [https://discovery.kaust.edu.sa/en/article/21728/k2004\\_tough-memory-device-aims-for-space-missions/](https://discovery.kaust.edu.sa/en/article/21728/k2004_tough-memory-device-aims-for-space-missions/)
5. “Gallium Oxide Flash Memory (KAUST & IIT),” Semiconductor Engineering
  - [https://www.semiconductor-today.com/news\\_items/2023/jul/kaust-060723.shtml](https://www.semiconductor-today.com/news_items/2023/jul/kaust-060723.shtml)
6. “Gallium oxide flash memory,” Semiconductor Today
  - [https://www.semiconductor-today.com/news\\_items/2023/jul/kaust-060723.shtml](https://www.semiconductor-today.com/news_items/2023/jul/kaust-060723.shtml)
7. “2D metal contacts stop transistor leakage currents in their tracks,” KAUST Discovery
  - <https://discovery.kaust.edu.sa/en/article/21257/2d-metal-contacts-stop-transistor-leakage-currents-in-their-tracks/>
8. “Sensors that operate at high temperatures and in extreme environments,” Science Daily
  - <https://www.chinadaily.com.cn/a/202212/09/WS6392a935a31057c47eba3968.html>
9. “Why Chinese talent and collaboration is central to KAUST's success,” China Daily
  - <https://www.chinadaily.com.cn/a/202212/09/WS6392a935a31057c47eba3968.html>
10. “Meta-lens offers superior off-axis focus,” Phys.org
  - <https://phys.org/news/2022-10-meta-lens-superior-off-axis-focus.html>
11. “Faculty in Focus: Xiaohang Li,” KAUST Official
  - <https://www.youtube.com/watch?v=8vkVPb2SNns&t=715s>
12. “Chasing Answers Episode 4,” National Geographic
  - <https://www.youtube.com/watch?v=8vkVPb2SNns&t=715s>
13. “Why now is the time to localize semiconductors?” Saudi Gazette
  - <https://www.saudigazette.com.sa/article/619139/SAUDI-ARABIA/Why-now-is-the-time-to-localize-semiconductors>
14. “Exclusive: Asrar Damdam, Founder Of Uvera, Is Using Technology To Address The \$1T Food Waste Crisis,” Forbes
  - <https://www.forbesmiddleeast.com/innovation/under-30/food-for-thought>
15. “Breaking ultrawide-bandgap semiconductor records is just like baking bread,” Tech Xplore
  - <https://techxplore.com/news/2021-03-ultrawide-bandgap-semiconductor-bread.html>
16. “Breaking records like baking bread,” KAUST Discovery
  - <https://discovery.kaust.edu.sa/en/article/1097/breaking-records-like-baking-bread>
17. “First claim of nitrogen-polar III-nitride tunnel-junction light-emitting diodes,” Semiconductor Today
  - [http://www.semiconductor-today.com/news\\_items/2020/jul/kaust-300720.shtml](http://www.semiconductor-today.com/news_items/2020/jul/kaust-300720.shtml)
18. “KAUST Ph.D. student receives SPIE 2020 Optics and Photonics Education Scholarship,” KAUST
  - <https://cemse.kaust.edu.sa/news/kaust-phd-student-receives-spie-2020-optics-and-photonics-education-scholarship>
19. “Extremely thin gallium nitride wells enable deep ultraviolet lasing,” Semiconductor Today
  - [http://www.semiconductor-today.com/news\\_items/2019/oct/kaust-301019.shtml](http://www.semiconductor-today.com/news_items/2019/oct/kaust-301019.shtml)
20. “Overlaid optical metalenses have new properties,” Laser Focus World
  - <https://www.laserfocusworld.com/optics/article/14037483/overlaid-optical-metalenses-have-new-properties>

21. “Scientists Develop Effortless Way of Producing Multifunctional Metalenses,” AZO Nano
  - [http://www.semiconductor-today.com/news\\_items/2018/nov/smi\\_191118.shtml](http://www.semiconductor-today.com/news_items/2018/nov/smi_191118.shtml)
22. “Pitching a winning business idea,” KAUST Discovery
  - <https://www.kaust.edu.sa/en/news/pitching-a-winning-business-idea>
23. “Flat lenses with a twist,” Phys.org & KAUST Discovery
  - <https://phys.org/news/2019-07-flat-lenses.html>
  - <https://discovery.kaust.edu.sa/en/article/858/flat-lenses-with-a-twist>
24. “SMI supporting NSF INTERN program and science exchange programs,” Semiconductor Today
  - [http://www.semiconductor-today.com/news\\_items/2018/nov/smi\\_191118.shtml](http://www.semiconductor-today.com/news_items/2018/nov/smi_191118.shtml)
25. “NSF’s INTERN program prepares students for STEM careers outside of academia,” US National Science Foundation (NSF)
  - <https://www.youtube.com/watch?v=sDJ1C3nhjc4>
26. “KAUST demonstrates nanowire GRIN SCH diode for efficient UV-LED/laser applications,” Semiconductor Today
  - [http://www.semiconductor-today.com/news\\_items/2018/jul/kaust\\_230718.shtml](http://www.semiconductor-today.com/news_items/2018/jul/kaust_230718.shtml)
27. “NIMTE and KAUST Team Enhance UV Luminescence,” Compound Semiconductor
  - [https://compoundsemiconductor.net/article/104559/NIMTE\\_and\\_KAUST\\_team\\_enhance\\_UV\\_luminescence](https://compoundsemiconductor.net/article/104559/NIMTE_and_KAUST_team_enhance_UV_luminescence)
28. “Strain engineering higher hole density in N-polar aluminum gallium nitride,” Semiconductor Today
  - [http://www.semiconductor-today.com/news\\_items/2018/may/kaust\\_250518.shtml](http://www.semiconductor-today.com/news_items/2018/may/kaust_250518.shtml)
29. “KAUST’s Xiaohang Li wins Manasevit Young Investigator Award for research on III-nitrides and III-oxides,” Semiconductor Today
  - [http://www.semiconductor-today.com/news\\_items/2018/apr/kaust\\_190418.shtml](http://www.semiconductor-today.com/news_items/2018/apr/kaust_190418.shtml)
30. “Controlling the crystal structure of gallium oxide,” Phys.org & KAUST Discovery
  - <https://discovery.kaust.edu.sa/en/article/509/controlling-the-crystal-structure>
  - <https://phys.org/news/2018-05-crystal-gallium-oxide.html>
31. “Diluted potassium hydroxide is all what it takes to boost AlGaIn nanowire UV LEDs,” EE News LED Lighting
  - <http://www.eenewsled.com/news/diluted-potassium-hydroxide-all-what-it-takes-boost-algan-nanowire-uv-leds/page/0/1>
32. “KAUST Team Heats Up MOCVD,” Compound Semiconductor
  - [https://compoundsemiconductor.net/article/104053/KAUST\\_Team\\_Heats\\_Up\\_MOCVD](https://compoundsemiconductor.net/article/104053/KAUST_Team_Heats_Up_MOCVD)
33. “Building crystals on a very hot surface,” Phys.org & KAUST Discovery
  - <https://phys.org/news/2018-04-crystals-hot-surface.html>
  - <https://discovery.kaust.edu.sa/en/article/507/building%20acrystals-on-a-very-hot-surface>
34. “Reducing the loss of light at the surface of semiconductor nanostructures,” Phys.org
  - <https://phys.org/news/2018-03-loss-surface-semiconductor-nanostructures.html>
35. “KAUST And SMI Show One-step Tuning Of Gallium Oxide Phases,” Compound Semiconductor
  - [https://compoundsemiconductor.net/article/103722/KAUST\\_shows\\_one-step\\_tuning\\_of\\_Gallium\\_Oxide\\_phases](https://compoundsemiconductor.net/article/103722/KAUST_shows_one-step_tuning_of_Gallium_Oxide_phases)
36. “Cleaning nanowires to get out more light,” KAUST Discovery & Nanotech Now
  - <https://discovery.kaust.edu.sa/en/article/476/cleaning%20ananowires-to-get-out-more-light>
  - [http://www.nanotech-now.com/news.cgi?story\\_id=55012](http://www.nanotech-now.com/news.cgi?story_id=55012)
37. “Fine tuning boron content in nitride alloys,” Semiconductor Today
  - [http://www.semiconductor-today.com/news\\_items/2018/feb/kaust\\_020218.shtml](http://www.semiconductor-today.com/news_items/2018/feb/kaust_020218.shtml)

38. “UESTC students visit CEMSE Laboratories during a one week Winter Camp at KAUST,” KAUST CEMSE
  - <https://cemse.kaust.edu.sa/Pages/UESTC%20students%20visit%20CEMSE.aspx>
39. “Taking control at the junction,” KAUST Discovery
  - <https://discovery.kaust.edu.sa/en/article/466/taking-control-at-the-junction>
40. “KAUST Team Cleans Nanowires For More Efficient UVLEDs,” Compound Semiconductor
  - [https://compoundsemiconductor.net/article/103117/KAUST\\_Team\\_Cleans\\_Nanowires\\_For\\_More\\_Efficient\\_UVLEDs](https://compoundsemiconductor.net/article/103117/KAUST_Team_Cleans_Nanowires_For_More_Efficient_UVLEDs)
41. “KAUST/Georgia Tech team determines band alignment at BAIN/AlGaN heterojunction,” Semiconductor Today
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### **Scientific Community Leadership Experience**

- 1) **Vice Chair** of Western Saudi Arabia Chapter, IEEE Electron Devices Society 2018-Present
- 2) **President** of Lehigh University Student Chapter, IEEE Photonics Society 2010-2011
  - Significantly increased the number of members and events
- 3) **Advisor** of Lehigh University Student Chapter, SPIE 2010-2011
- 4) **Treasurer** of Lehigh University Student Chapter, IEEE Photonics Society 2009-2010

### **Professional Membership**

OSA, IEEE, IEEE Photonics, SPIE, MRS

### **Research Funding Programs**

1. **PI**, National Capability Center for Semiconductor (NCCS); Source of Support: Research, Development and Innovation Authority (RDIA), Saudi Arabia; Award Amount: SAR 19,768,724; My Portion: NA; Period: 07/01/2024-06/30/2027
2. **PI**, Ultrawide bandgap gallium oxide logic-in-memory for harsh environments; Source of Support: Semiconductor Initiative; Award Amount: \$ 200,000; My Portion: \$150,000; Period: 01/01/2024-06/30/2025
3. **Co-I**, Heterogeneous integration for future mobility; Source of Support: Semiconductor Initiative; Award Amount: \$650,000; My Portion: \$162,500; Period: 12/01/2022-06/30/2026
4. **PI**, Operation Subcommittee; Source of Support: Semiconductor Initiative; Award Amount: \$ 400,000; My Portion: NA; Period: 12/01/2022-06/30/2024
5. **PI**, To develop >10  $\mu\text{m}$  crack-free AlN thin film on planar Si substrates with improved material quality by MOCVD; Source of Support: Impact Acceleration Funding; Award Amount: \$ 100,000; My Portion: \$100,000; Period: 07/01/2022-06/30/2023
6. **PI**, Ultrawide bandgap CMOS; Source of Support: Near-Term Grand Challenge; Award Amount: \$ 1,800,000; My Portion: \$1,643,500; Period: 04/01/2022-03/31/2024
7. **Co-PI**, Novel phenomena enabled by artificial chiral structures; Source of Support: Competitive Research Grant (CRG); Award Amount: \$ 1,049,970; My Portion: \$350,000; Period: 04/01/2021-03/31/2024
8. **PI**, KAUST-Asia Wide Bandgap Semiconductor Workshop; Source of Support: KAUST Workshop Support; Award Amount: \$35,000; My Portion: \$35,000; Period: 08/01/2019-12/31/2019
9. **PI**, Collaborative development of B-containing III-nitride semiconductor ternary alloys for solid-state neutron detectors; Source of Support: Competitive Research Grant (CRG); Award Amount: \$840,000; My Portion: \$575,000; Period: 04/01/2019-03/31/2022
10. **Co-PI**, Research and development on the epitaxial structure of deep-UV LED with high internal quantum efficiency; Source of Support: Guangdong Academy of Sciences; Award Amount: ¥300,000 (\$42,361); My Portion: ¥100,000 (\$14,120); Period: 01/01/2019-12/31/2020.
11. **PI**, Investigation of Controlled Bending Strain for Enhanced Deep UV LED Efficiency; Source of Support: Competitive Research Grant (CRG); Award Amount: \$840,000; My Portion: \$530,000; Period: 04/01/2018-03/31/2021

12. **Co-PI**, Optical field manipulation and efficient electric injection of AlGaIn based deep ultraviolet lasers; Source of Support: National Natural Science Foundation (China); Award Amount: ¥670,000; My Portion: ¥200,000; Period: 01/01/2018-12/31/2021
  13. **PI**, Fundamental studies of BAlN and BGaIn wide bandgap semiconductors; Source of Support: GCC Research Council; Award Amount: \$240,000; My Portion: \$240,000; Period: 01/01/2017-12/31/2019
  14. **Co-PI**, Low cost, high stability and high efficiency monolithic solar hydrogen fuel nano-generator; Source of Support: SABIC; Award Amount: \$445,178; My Portion: \$0; Period: 09/01/2016-08/31/2018
  15. **PI**, KAUST Baseline Fund; Source of Support: KAUST; Award Amount: \$2,400,000; My Portion: \$2,400,000; Period: 01/31/2016-01/30/2022
  16. **PI**, KAUST Startup Fund; Source of Support: KAUST; Award Amount: \$700,000; My Portion: \$700,000; Period: 01/31/2016-01/31/2018
  17. **PI**, KAUST Startup Chemical Fund; Source of Support: KAUST; Award Amount: \$100,000; My Portion: \$100,000; Period: 01/31/2016-01/31/2018
- Below are programs in which I was one of the primary researchers before I became a faculty at KAUST:*
18. Collaborative Research: Fundamental Studies of the Properties of B-III-N Wide-Bandgap Semiconductor Alloys; PI: Russell D. Dupuis; Source of Support: NSF; Award Amount: \$300,000; Period: 07/01/2014-06/30/2017
  19. Advanced Middle-UV Coherent Optical Sources; PI: Russell D. Dupuis; Source of Support: DARPA; Award Amount: \$2,000,000; Period: 2010-2013
  20. High Efficiency Organic Lighting Emitting Devices for Lighting; PI: Nelson Tansu; Source of Support: DOE; Total Award Amount: \$950,000; Period: 07/01/2009-06/30/2013
  21. Investigation of Microsphere Convective Deposition for Photonic, Biological, and Materials Applications; PI: Nelson Tansu; Source of Support: NSF; Award Amount: \$300,000; Period: 08/15/2008-08/14/2012
  22. Nanostructure Engineering of III-Nitride Active Regions for High- Performance Visible Emitters and Lasers; PI: Nelson Tansu; Source of Support: NSF; Award Amount: \$ 270,000; Period: 07/01/2007-06/30/2011
  23. FRG: Nano-patterning of Sapphire Substrates for Improved III-Nitride Growth; PI: Nelson Tansu; Source of Support: NSF; Award Amount: \$ 320,000; Period: 08/15/2007-08/14/2010

### **Consulting/Mentoring Experience**

- **Consultant, Community Consulting Team, Atlanta, GA** Jan 2014-Jul 2014
  - Took major initiative and responsibility in a team to consult a major nonprofit for child safety, Safe Kid Georgia under Children's Healthcare of Atlanta, to transform its structure to better fit in the digital age
  - Interviewed staff and attended board meeting to understand existing inefficiency
  - Researched best-in-industry practices which are transformed into actionable plans based on client's budget
  - Result: the solutions were well acknowledged and adopted by the client and its board, which are expected to double the client budget and operation efficiency within three years by extensive automation
- 5) **Participant of Insight Engineering & Science Program, McKinsey & Company** Summer 2013
  - This is an extremely selective program, wherein 40 participants were selected from 1,000+ applicants from top U.S. Ph.D. programs
  - Worked with McK consultants to help a server manufacturer to identify market entry strategy of a new technology to achieve its maximum potential
  - Analyzed competition landscape to seek the best exit

– Surveyed client executives to understand internal constraints

6) **Participant of Bridge to BCG Program, Boston Consulting Group** Summer 2013

- Worked with top candidates and BCG consultants to help a cosmetic manufacturer to improve bottom line and market share
- Analyzed SKUs to streamline the product mix to cut undesired cost
- Proposed new in-store display strategy to increase market share

**Entrepreneurship Experience**

• **Cofounder, CloudSolar, Boston, MA, USA** 2014-2016

- Invent new models to greatly lower the barrier of investment for organizations and individuals in solar energy
- Manage daily activities of 13 people in the utility & regulation, engineering & procurement & construction, back-end & front-end web development, and marketing groups
- Analyze federal and state regulations and propose ways to liquidate the energy credits for maximized revenue
- Take charge of connecting and building relations with venture capitals in greater Boston area
- Result: the company is growing rapidly and has been selected by Harvard i-Lab VIP. Successfully launched crowd-funding campaign with the first month proceeds of ~\$500,000 with customers from all over the world and the US. Covered by major media including Wall Street Journal, Techcrunch, CNBC, NPR, Yahoo Finance, Boston Globe etc. Selected to be incubated at the Innovation Labs, Harvard University

• **Advisor, Flow Medical, Atlanta, GA, USA** 2013-2016

- Incubated at the Innovation Labs, Harvard University
- Help founding team lay out strategies of innovation, prototyping, production, fund raising and marketing
- Introduce key contacts for business development and fund raising
- Result: the team has bypassed the initial ‘confusing’ stage and is actively building the products for fund raising. Besides, the team has won the most competitive award for social entrepreneurship at Georgia Tech

• **Cofounder, UVNITY, Atlanta, GA, USA** 2012-2014

- Invent some of the first products and technologies to revolutionize portable water purification
- Work with strategic partners like Atlanta Department of Watershed Management for technology development
- Use lean startup strategy to conduct intensive customer discovery
- Manage a 20-people multi-disciplinary team on marketing, finance, legal, sales, strategy, manufacturing etc
- Result: the business and go-to-market strategy were established within a short period of time and the business has received many prestigious business awards in Atlanta and other places. Selected to be incubated at Advanced Technology Development Center (ATDC), Georgia Tech

**Service & Leadership at KAUST**

1. **Chair of Taskforce, Academic Program in Technology Innovation and Entrepreneurship, KAUST**

September 2023-Present

To fulfill the vision of the new KAUST strategy, I am appointed by the President to be the chair of a taskforce to create the first MS degree in technology entrepreneurship to train a new generation of young entrepreneurs in technology and business.

**2. Member, Steering Committee, Nanofabrication Core Lab, KAUST**

January 2023-Present

Appointed by the Vice President for Research to discuss the Review Report and collect feedback from the faculty at large. The committee will also establish subcommittees to tackle the various technical platforms within a particular Core Lab. Thereafter, the committee will produce a draft report with recommendations two months after the first meeting.

**3. Coordinator of Founding Taskforce, Semiconductor Initiative, KAUST**

August 2022-Present

In light of the fast-changing R&D and commercial situations in the semiconductor area, I am appointed by the President to be part of a taskforce to create a semiconductor initiative to significantly enhance the KAUST semiconductor research including visibility, area identification, and synergy with global and local entities.

**4. Chair of Education Subcommittee, Founding Taskforce, Innovation Hub Initiative, KAUST**

August 2022-July 2023

Appointed by the President to develop a White Paper on KAUST's positioning and strategy for China. The TF should consult across the academic spectrum at KAUST and also international advisors with relevant experience and connections. The deliverable of the TF is a recommendation for a holistic vision and plan, that will provide a basis for the administration to make decisions on specific activities to take on and allocation of needed resources.

**5. Member, Admission Committee, Electrical and Computer Engineering Program, KAUST**

May 2022-Present

The faculty search committee is in charge of hiring strategy, and attracting and evaluating applicants. In this period, I have co-organized the first faculty recruiting webinar of the program to perspective candidates from top-ranking universities in North America.

**6. Member, Search Committee, Electrical and Computer Engineering Program, KAUST**

May 2020-June 2022

The faculty search committee is in charge of hiring strategy, and attracting and evaluating applicants. In this period, I have co-organized the first faculty recruiting webinar of the program to perspective candidates from top-ranking universities in North America.

**7. Member, User Committee, Imaging & Characterization Core Lab, KAUST**

February 2020-June 2022

The user committee of the Imaging & Characterization Core Labs comprises four KAUST faculty. It connects the operation with faculty and advises the Core Lab leadership on important issues including procurement and maintenance.

**8. Advisor, Coronavirus Task Force, KAUST**

January-March 2020

This is an informal role. I have alerted the university about the seriousness of the novel coronavirus when the outbreak started in Wuhan which help form the beginning of the KAUST response. I have been asked by the Coronavirus Task Force to monitor local situations and social media. I have been asked by the Coronavirus Task Force to translate the quarantine and campus entry documents from English to Chinese. I have been asked to help form evidences about the positive values of mask wearing, which help make mask wearing mandatory in public indoor spaces on campus.

**9. Lead, Task Force for Strategy about China, KAUST**

November 2019-Present

This is an informal role. As the leading member, I work with other faculty from the three academic divisions to develop strategy about opportunities in China related to student and faculty recruitment,

marketing, advertisement, branches, and joint degree. I have presented to and discussed with the academic leadership and the relevant departments ranging from Admission, International Office to Global Branding and Communication.

**10. Member, University Academic Council, KAUST**

November 2017-November 2019

The Academic Council, on behalf of the Professorial Faculty, provides counsel and recommendations to the President regarding matters pertinent to the academic life of the University. Other members and I have successfully pushed for the formation of the Air Quality Task Force leading to the air quality monitor installation and relevant policy changes depending on the air quality.

**11. Member, Electrical Engineering Curriculum Reform Committee, KAUST**

November 2018-February 2019

The committee aims to propose meaningful changes to structures of core courses and qualify exam.

**12. Founding Task Force, Applied Physics Program, KAUST**

2017-2019

As the only member of the founding task force from the Electrical Engineering program, I work with faculty from other programs in the task force to create the Applied Physics Program.

**13. KAUST CEMSE and EE websites, KAUST**

September 2016

I have advised the contractor about how to improve the CEMSE and EE websites.

**Service & Leadership: Conference Committee**

**1. Technical Program Committee, International Conference of Metalorganic Vapor Phase Epitaxy (ICMOVPE)**

Las Vegas, Nevada, May 12-17, 2024

**2. Co-Chair of Wide Bandgap Electronic Materials Symposium, International Conference on Materials for Advanced Technologies (ICMAT)**

Singapore, July 4-9, 2023

**3. Program Committee co-chair, Photonic and Optoelectronic Devices and Related Technologies, Compound Semiconductor Week**

Jeju, Korea, May 29-June 2, 2023

**4. Chair, Organization Committee, Future of Semiconductors Forum**

Thuwal, Saudi Arabia, May 15-18, 2023

**5. International Advisory Committee, International Symposium on Semiconductor Material and Devices (ISSMD)**

Bhubaneswar, India, December 16-18, 2022

**6. Chair, Compound Semiconductor Weekend**

Ann Arbor, Michigan, USA, Sept 2-5, 2022

**7. Program Committee, National MOCVD Conference**

Taiyuan, Shanxi, China, August 16-19, 2022

**8. Program Committee, Compound Semiconductor Week**

Ann Arbor, Michigan, USA, June 1-3, 2022

**9. Co-Chair, Organization Committee, Future of Semiconductors Forum**

Riyadh, Saudi Arabia, March 30-31, 2022

**10. Steering Committee, International Workshop on Physics of Semiconductor Devices (IWPSD)**

Delhi, India, December 14-17, 2021

**11. Program Committee, China International Forum on Solid State Lighting (SSL-China)**

Shenzhen, Guangdong, China, November 28-30, 2021

- 12. Program Committee, International Forum on Wide Bandgap Semiconductors (IFWS)**  
Shenzhen, Guangdong, China, November 28-30, 2021
- 13. Program Committee, China International Forum on Solid State Lighting (SSL-China)**  
Shenzhen, Guangdong, China, November 21-23, 2020
- 14. Program Committee, International Forum on Wide Bandgap Semiconductors (IFWS)**  
Shenzhen, Guangdong, China, November 21-23, 2020
- 15. International Advisory Committee, International Symposium on Semiconductor Materials and Devices (ISSMD)**  
Jalandhar, India, October 31-November 2, 2020
- 16. International Program Committee, International Workshop on Nitride Semiconductors (IWN)**  
**Program: Novel Materials and Nano**  
Berlin, Germany, August 23-28, 2020
- 17. Program Committee, National MOCVD Conference**  
Tunxi, Anhui, China, August 4-7, 2020
- 18. Technical Committee, Electronic Material Conference (EMC)**  
Columbus, OH, USA, June 24-26, 2020
- 19. Program Committee, International Symposium on the Growth of III-Nitrides (ISGN-8)**  
San Diego, CA, USA, May 31-June 4, 2020
- 20. Program Committee, International Conference on Optics-Photonics Design and Fabrication (ODF'20)**  
Taoyuan, Taiwan, China, June 2-4, 2020
- 21. Chair of Program Committee, KAUST-Asia Workshop on Wide Bandgap Semiconductor (KAWS)**  
KAUST, Saudi Arabia, November 28-December 3, 2019  
As the main organizer and the program committee chair of the workshop, I have built the framework of the workshop and put together the program including invited/plenary speakers and poster session. It is the first conference in KAUST's history where majority of attendees paid all of the expenses and conference registration fees.
- 22. Program Committee, China International Forum on Solid State Lighting (SSL-China)**  
Shenzhen, Guangdong, China, November 25-27, 2019
- 23. Program Committee, International Forum on Wide Bandgap Semiconductors (IFWS)**  
Shenzhen, Guangdong, China, November 25-27, 2019
- 24. Program Committee, US Biennial Workshop on Organometallic Vapor Phase Epitaxy (OMVPE)**  
Granby, Colorado, USA, July 21-August 2, 2019
- 25. Program Committee, International Summer School on Crystal Growth (ISSCG)**  
Keystone, Colorado, USA, July 21-August 2, 2019
- 26. Technical Committee, Electronic Material Conference (EMC)**  
Ann Arbor, MI, USA, June 26-28, 2019
- 27. Organizing Committee, International Workshop on UV Materials and Devices (IWUMD)**  
Kunming, China, December 9-12, 2018
- 28. International Program Committee, International Workshop on Nitride Semiconductors (IWN)**  
**Program: Crystal Growth**  
Kanazawa, Japan, November 13-17, 2018
- 29. Technical Committee, Electronic Material Conference (EMC) 2018**  
Santa Barbara, CA, USA, June 27-29, 2018

30. **International Program Committee, International Conference of Metalorganic Vapor Phase Epitaxy (ICMOVPE)**  
Nara, Japan, June 3-8, 2018
31. **Technical Committee, Electronic Material Conference (EMC) 2017**  
South Bend, IN, USA, June 28-30, 2017
32. **Technical co-Chair, KAUST-US NSF Research Conference on Interactive Electronics 2017**  
KAUST, Saudi Arabia, January 30-February 1, 2017

#### ***Conference Session Chairing***

1. **International Conference on Nitride Semiconductors (ICNS)**  
Seattle, WA, USA, July 2019  
Session Title: BN Epitaxy
2. **International Conference on Emerging Electronics (ICEE)**  
Bangalore, India, December 2018  
Session Title: WBG: Growth & Characterization
3. **International Conference on Metalorganic Vapor Phase Epitaxy**  
Nara, Japan, June 2018  
Session Title: 2D Materials
4. **International Workshop UV Materials and Devices (IWUMD)**  
Fukuoka, Japan, November 2017  
Session Title: Material Growth
5. **SPIE Optics and Photonics**  
San Diego, CA, USA, August 2017  
Session Title: UV and Higher Energy Materials and Light Sources
6. **Electronic Material Conference (EMC)**  
South Bend, IN, USA, June 2017  
Session Title: Nitride Wide Bandgap Epitaxy
7. **International Workshop on Nitride Semiconductors (IWN)**  
Orlando, FL, USA, October 2016  
Session Title: Epitaxial Growth of (Al,Ga)N

#### **Service & Leadership: Professional Society Committee**

1. Siegman School Selection Committee, the Optical Society (OSA) Foundation, 2019

#### **Service & Leadership: Project Review**

1. Future Research Frontiers, Huazhong University of Science and Technology (HUST), 2018

#### **Service & Leadership: Academic Thesis Committee**

##### **PhD thesis**

1. Committee chair, Saravanan Yuvaraja, Electrical and Computer Engineering, KAUST, May 2023  
Thesis title: Revolutionizing integrated electronics: ambipolar transistors and 3D metal-oxide integration for smart circuits  
Advisor: Prof. Xiaohang Li
2. External examiner, Thomas O'Connor, University College Cork, March 2024  
Thesis title: Modelling and growth of boron containing alloys of III-Nitrides for their application in the Ultraviolet range  
Advisor: Prof. Peter Parbrook
3. Committee chair, Chuanju Wang, Electrical and Computer Engineering, KAUST, February 2023  
Thesis title: Interface engineering for GaN HEMTs

- Advisor: Prof. Xiaohang Li
4. External examiner, Ahmed Razeen, Nanyang Technological University, January 2024  
Thesis title: Growth and Characterisation of GaN/AlGa<sub>N</sub> Nanostructures for Ultraviolet Applications  
Advisor: Prof. Sudhiranjan Tripathy, Prof. A/P. K. Radhakrishnan
  5. Committee chair, Yi Lu, Electrical and Computer Engineering, KAUST, June 2023  
Thesis title: Ultrawide Bandgap Semiconductors Modeling, Epitaxy, Processing, and Applications for Ultraviolet Emission and Detection  
Advisor: Prof. Xiaohang Li
  6. Committee chair, Feras Alqatari, Material Science and Engineering, KAUST, May 2023  
Thesis title: MOCVD Growth and Characterization of B<sub>G</sub>aN Alloys  
Advisor: Prof. Xiaohang Li
  7. External examiner, Sonachand Adhikari, Australia National University, January 2023  
Thesis title: Growth and Characterisation of GaN/AlGa<sub>N</sub> Nanostructures for Ultraviolet Applications  
Advisor: Prof. Hoe Tan
  8. Committee member, Wen Zhao, Mechanical Engineering, KAUST, November 2022  
Thesis title: Nonlinear Dynamics of Electrically Actuated Micro Beams for Improved Sensing and Actuation  
Advisor: Prof. Mohammad I. Younis
  9. Committee chair, Rongyu Lin, Electrical and Computer Engineering, KAUST, November 2022  
Thesis title: Wide Bandgap Semiconductor Device Design via Machine Learning  
Advisor: Prof. Xiaohang Li
  10. Committee member, Jingxuan Kang, Materials Science and Engineering, KAUST, August 2022  
Thesis title: Novel Carrier Selective Contacts of Silicon Based Solar Cells  
Advisor: Prof. Stefaan De Wolf
  11. Committee member, Chenhui Zhang, Materials Science and Engineering, KAUST, July 2022  
Thesis title: Topological Spin Textures in Emerging Layered Magnets  
Advisor: Prof. Xixiang Zhang
  12. Committee member, Adama Mballo, University of Lorraine, December 2021  
Thesis title: Semiconductor-graphene hybrid structures and optoelectronic devices  
Advisor: Prof. Abdallah Ougazzaden
  13. Committee chair, Ronghui Lin, Electrical Engineering, KAUST, November 2020  
Thesis title: Design and topological optimization of nanophotonic devices  
Advisor: Prof. Xiaohang Li
  14. Committee member, Ida Marie Eriksdatter Høiaas, Faculty of Information Technology and Electrical Engineering, Norwegian University of Science and Technology (NUST), August 2020  
Thesis title: Semiconductor-graphene hybrid structures and optoelectronic devices  
Advisor: Prof. Helge Weman
  15. Committee member, Shaobo Tu, Materials Science and Engineering, KAUST, May 2020  
Thesis title: Design and synthesis of mxene derived materials for advanced electronics and energy harvesting applications  
Advisor: Prof. Xixiang Zhang
  16. Committee member, Yan Wen, Materials Science and Engineering, KAUST, May 2020  
Thesis title: Spin Current Detection and Current Induced Switching in Magnetic Multilayers  
Advisor: Prof. Xixiang Zhang

17. Committee member, Sherjeel Khan, Electrical Engineering, KAUST, May 2019  
Proposal title: Integration Strategy for Standalone Compliant Interactive Systems for Add-on Electronics  
Advisor: Prof. Muhammad Hussain
18. Committee member, Yi Tian, Electrical Engineering, KAUST, April 2019  
Proposal title: Multi-scale and Complex Metallic Structure Networks for Novel Solar Energy Harvesting-Conversion Applications  
Advisor: Prof. Andrea Fratalocchi
19. Committee member, Valerio Mazzone, Electrical Engineering, KAUST, April 2019  
Proposal title: Complex photonic materials for cryptography, holograms and memories  
Advisor: Prof. Andrea Fratalocchi
20. Committee member, Ehson Fawad Nasir, Electrical Engineering, KAUST, October 2018  
Thesis title: Mid-IR Laser Absorption Diagnostics for Shock Tube and Rapid Compression Machine Experiments  
Advisor: Prof. Aamir Farooq
21. Committee member, Idris A. Ajia, Material Science and Engineering, KAUST, April 2018  
Thesis title: Optical and temporal carrier dynamics investigations of III-nitrides for semiconductor lighting  
Advisor: Prof. Iman Roqan
22. Committee member, Bilal Janjua, Electrical Engineering, KAUST, April 2017  
Thesis title: Nitride-based quantum-confined structures for ultraviolet-visible optical devices on silicon substrates  
Advisor: Prof. Boon Ooi
23. Committee member, Aftab Hussain, Electrical Engineering, KAUST, November 2016  
Thesis title: Extending Moore's Law for silicon CMOS using more-Moore and more-than-Moore technologies  
Advisor: Prof. Muhammad Hussain
24. Committee member, Hang Li, Materials Science and Engineering, KAUST, June 2016  
Thesis title: Spin orbit torque in ferromagnetic semiconductors  
Advisor: Prof. Aurelien Manchon

### **PhD proposal**

1. Committee chair, G. I. M. García, Applied Physics, KAUST, December 2023  
Thesis title: AlN and Ga<sub>2</sub>O<sub>3</sub> high frequency self-switching diodes for space applications  
Advisor: Prof. Xiaohang Li
2. Committee chair, Hassan Bhatti, Mechanical Engineering, KAUST, May 2023  
Thesis title: Innovative Cooling Solutions for Gallium Oxide Devices: A Comprehensive Investigation into Thermal Management Strategies  
Advisor: Prof. Xiaohang Li
3. Committee chair, Zahrah Alnakhli, Electrical and Computer Engineering, KAUST, May 2023  
Thesis title: All-dielectric metalenses integrated devices for controlling emission  
Advisor: Prof. Xiaohang Li
4. Committee chair, Na Xiao, Electrical and Computer Engineering, KAUST, May 2023  
Thesis title: High-Performance Sputtered Indium Oxide Thin Film Transistors for Monolithic Integration with Micro-Light-Emitting Diode Displays  
Advisor: Prof. Xiaohang Li
5. Committee chair, Dhanu Chettri, Electrical and Computer Engineering, KAUST, December 2022

- Thesis title: Heterogeneous ultra-wide bandgap electronics  
Advisor: Prof. Xiaohang Li
6. Committee chair, Mritunjay Kumar, Electrical and Computer Engineering, KAUST, December 2022  
Thesis title: Monolithic Integration of UWBG CMOS and HEMT for Power and RF electronics  
Advisor: Prof. Xiaohang Li
  7. Committee chair, Vishal Khandelwal, Electrical and Computer Engineering, KAUST, November 2022  
Thesis title:  
Advisor: Prof. Xiaohang Li
  8. Committee member, Aijaz Lone, Electrical and Computer Engineering, KAUST, November 2022  
Thesis title: Magnetic Soliton Devices for Neuromorphic Computing  
Advisor: Prof. Hossein Fariborzi
  9. Committee member, Zhanibek Bizak, Electrical and Computer Engineering, KAUST, September 2022  
Thesis title: Nano-gap based Arithmetic Logic Unit design  
Advisor: Prof. Khaled Salama
  10. Committee chair, Chuanju Wang, Electrical and Computer Engineering, KAUST, July 2022  
Thesis title: Interfacial studies of heterogeneous heterojunctions  
Advisor: Prof. Xiaohang Li
  11. Committee member, Hanin Algaidi, Materials Science and Engineering, KAUST, March 2022  
Thesis title: Electrical transport in layered 2D-vdW bonded magnetic materials  
Advisor: Prof. Xixiang Zhang
  12. Committee member, Yinchang Ma, Materials Science and Engineering, KAUST, March 2022  
Thesis title: Magnetic ferroelectric, and photoelectric properties of vdW material CuCrP2S6: theory, characterization, and applications  
Advisor: Prof. Xixiang Zhang
  13. Committee member, Chen Liu, Materials Science and Engineering, KAUST, March 2022  
Thesis title: Investigating and controlling magnetism in magnetic skyrmions host materials  
Advisor: Prof. Xixiang Zhang
  14. Committee chair, Feras Alqatari, Material Science and Engineering, KAUST, January 2022  
Thesis title: Epitaxial Growth and Electronic Structure of High Boron Composition Cubic B GaN  
Advisor: Prof. Xiaohang Li
  15. Committee chair, Yi Lu, Electrical and Computer Engineering, KAUST, January 2022  
Thesis title: Heterogeneous Integration of III-Nitride and III-Oxide Semiconductors: from Modeling, to Epitaxy, Fabrication, and Device Characterization  
Advisor: Prof. Xiaohang Li
  16. Committee member, Fengjun Zhuo, Applied Physics, KAUST, August 2021  
Thesis title: Topological transport and magnetization dynamics in ferromagnetic and antiferromagnetic systems  
Advisor: Prof. Udo Schwingenschlogl
  17. Committee chair, Rongyu Lin, Electrical and Computer Engineering, KAUST, August 2021  
Thesis title: Wide Bandgap Semiconductor Device Design via Machine Learning  
Advisor: Prof. Xiaohang Li
  18. Committee member, Chenhui Zhang, Materials Science and Engineering, KAUST, July 2021

Thesis title: Critical Magnetic Behavior and Topological Spin Textures in Layered Magnetic Materials

Advisor: Prof. Xixiang Zhang

19. Committee member, Jingxuan Kang, Materials Science and Engineering, KAUST, July 2021  
Thesis title: Novel Carrier-Selective Contacts and Passivating Contacts for Silicon Solar cells  
Advisor: Prof. Stefaan De Wolf
20. Committee member, Saravanan Yuvaraja, Electrical Engineering, KAUST, June 2020  
Thesis title: Organic Electronics: An innovative 2 in 1 solution to tackle environmental pollution  
Advisor: Prof. Khaled Salama
21. Committee chair, Ronghui Lin, Electrical Engineering, KAUST, April 2019  
Thesis title: Nanophotonics for visible and UV applications  
Advisor: Prof. Xiaohang Li
22. Committee member, Shaobo Tu, Materials Science and Engineering, KAUST, March 2019  
Thesis title: Design and synthesis of mxene derived materials for advanced electronics and energy harvesting applications  
Advisor: Prof. Xixiang Zhang
23. Committee member, Yan Wen, Materials Science and Engineering, KAUST, November 2018  
Thesis title: Spin Current Detection in Metallic Non-magnetic/Antiferromagnetic Bilayer  
Advisor: Prof. Xixiang Zhang
24. Committee member, Yi Tian, Electrical Engineering, KAUST, July 2018  
Proposal title: 3D Multi-Scale Complex Metal-Dielectric Junction Matrix for Carbon-Free Energy Harvesting-Conversion Applications  
Advisor: Prof. Andrea Fratolocchi
25. Committee member, Sherjeel Khan, Electrical Engineering, KAUST, May 2018  
Proposal title: Integration Strategy for Standalone Compliant Interactive Systems for Add-on Electronics  
Advisor: Prof. Muhammad Hussain
26. Committee member, Valerio Mazzone, Electrical Engineering, KAUST, April 2018  
Proposal title: Complex photonic materials for cryptography  
Advisor: Prof. Andrea Fratolocchi
27. Committee member, Areej Aljarb, Materials Science and Engineering, KAUST, December 2017  
Proposal title: Controlling the Orientation of 2D Transition Metal Dichalcogenides on Different Substrate  
Advisor: Prof. Lain-Jong (Lance) Li
28. Committee member, Bidoor Alsaif, Electrical Engineering, KAUST, June 2017  
Proposal title: High-Resolution and High-Sensitivity Spectroscopy in the Mid-Infrared Region for Gas sensing  
Advisor: Prof. Aamir Farooq

#### **Master thesis**

1. Committee member, Yuanjie Sun, Applied Physics, KAUST, April 2023  
Thesis title: Theoretical Investigation on the Formation Energy and Electronic Properties of pristine and doped Boron Gallium Nitride  $B_xGa_{1-x}N$  ( $x < 0.2$ )  
Advisor: Prof. Udo Schwingenschloegl & Xiaohang Li
2. Committee member, Yuanjie Sun, Applied Physics, KAUST, April 2023  
Thesis title: Identifying phase transitions of disordered topological systems by unsupervised learning

- Advisor: Prof. Udo Schwingenschloegl
3. Committee member, Yue Yuan, Materials Science and Engineering, KAUST, November 2022  
Thesis title: Commercial chemical vapor-deposited hexagonal boron nitride: how far is it from mechanically exfoliated-like quality?  
Advisor: Prof. Mario Lanza
  4. Committee member, Wenbo Yan, Materials Science and Engineering, KAUST, April 2022  
Thesis title: Optical management of perovskite cell enable 29% four-terminal perovskite/Si tandem device  
Advisor: Prof. Stefaan De Wolf
  5. Committee member, Fatimah Alowa, Materials Science and Engineering, KAUST, July 2021  
Thesis title: Computational Study of the Thermoelectric Performance of Barium Chalcogenide Perovskites  
Advisor: Prof. Udo Schwingenschloegl
  6. Committee chair, Zahrah Alnakhli, Electrical Engineering, KAUST, July 2020  
Thesis title: Broadband Reflective Metalens in Visible Band Based on Bragg Reflector Multilayers for VECSEL Applications  
Advisor: Prof. Xiaohang Li
  7. Committee chair, Ahmad Al Sulami, Electrical Engineering, KAUST, April 2020  
Thesis title: A First Principle Investigation of Band Alignment in Emerging III-Nitride Semiconductors  
Advisor: Prof. Xiaohang Li
  8. Committee chair, Andris Erglis, Electrical Engineering, KAUST, January 2019  
Thesis title: Bose-Einstein Condensation of Light in Disordered Nano Cavities at Room Temperature  
Advisor: Prof. Xiaohang Li
  9. Committee member, Marim Hakami, Materials Science and Engineering, KAUST, June 2019  
Thesis title: Graphene Growth by Chemical Vapor Deposition  
Advisor: Prof. Pedro Costa
  10. Committee chair, Feras Alqatari, Materials Science and Engineering, KAUST, April 2019  
Thesis title: Theoretical and Experimental Studies of Optical Properties of BAlN and BGaN Alloys  
Advisor: Prof. Xiaohang Li
  11. Committee member, Chen Gong, Materials Science and Engineering, KAUST, June 2018  
Thesis title: The effect of geometric confinement on the formation and stability of skyrmionic bubbles  
Advisor: Prof. Xixiang Zhang
  12. Committee member, Yahya Zakaria, Materials Science and Engineering, Qatar University, May 2017  
Thesis title: Er-doped III-nitride Semiconductors  
Advisor: Prof. Talal Al Tahtamouni

### **Service & Leadership: Student Engagement and Recruiting**

1. **KAUST Gifted Student Programs Engagement Event** Phoenix, AZ, Jan 2018  
I joined some other KAUST faculty to engage and mentor the 500+ students KAUST has sponsored who study for bachelor degree in the US.
2. **KAUST Gifted Student Programs Engagement Event** Atlanta, GA, Jan 2017  
I joined some other KAUST faculty to engage and mentor the 500+ students KAUST has sponsored who study for bachelor degree in the US.

3. **Organizer of Undergraduate Student Winter Camp at KAUST** Oct 2017-Feb 2018  
I initiated and organized the winter camp for 22 undergraduate students and 2 staffers from University of Electronic Science and Technology of China (UESTC) to visit KAUST for a week in Feb 2018. It is the first visiting program where the students cover the costs to come to KAUST since KAUST was founded.
4. **Advisor of Chinese Social Networks for KAUST** Oct 2017-Present  
I advise and make plan for the KAUST Admission Office to execute the social network strategy.
5. **Created and operate admin platform of Wechat for Electrophysics Track** May 2016-Oct 2017  
Wechat is the largest social media platform in China. I created the first “Admin Platform” for electrophysics track to post announcement to recruit students.
6. **Manage KAUST’s largest online community in China** Oct 2015-Present  
KAUST Tieba is the largest online forum of perspective KAUST Chinese students for full-time and intern positions. The students post all kinds of questions from living, studying to researching at KAUST. I have answered numerous questions, which has encouraged numerous students, postdocs, and staff to apply to KAUST.  
Link: <http://tieba.baidu.com/f?kw=kaust&ie=utf-8>
7. **KAUST Microelectronics Winter Camp** Sept 2018-Present  
I have been part of the camp established by Prof Muhammad Hussain to establish the school to attract the students all over the world to join the microelectronics research at KAUST, including recruiting students, teaching, organizing events, etc.
8. **KAUST Photonics Summer School** Mar 2016-Present  
I have worked with Prof Andrea Fratalocchi to establish the camp to attract the students all over the world to join the photonics research at KAUST, including recruiting students, teaching, organizing events, etc.
9. **KAUST blog website** Jul 2016-Oct 2016  
I have worked with KAUST Process & Technology Department (IT) to improve and streamline the designs and structures of blog websites.
10. **Building UESTC student pipeline** Dec 2015-Present  
UESTC has top-ranked Electrical Engineering related majors in China. I have built the student pipeline that has landed more than 15 MS/PhD and PhD students at KAUST and dozens of visiting students.

### Teaching Experience

*I have a wide range of teaching and mentoring experiences both inside and outside the classroom.*

#### **Teaching**

1. **Instructor**, Electrical and Computer Engineering, KAUST  
*ECE 335 UWBG Devices*
2. **Instructor**, Electrical and Computer Engineering, KAUST  
*ECE 390B Special Topics in Solid State Devices*
3. **Instructor**, Electrical and Computer Engineering, KAUST  
*ECE 208 Semiconductor Optoelectronic Devices (EE Core Course)*
4. **Speaker**, Electrical and Computer Engineering, KAUST  
*ECE 298/398 Graduate Seminar*
5. **Instructor**, Electrical Engineering, King Abdullah University of Science and Technology  
*ECE 206 Device Physics (created by me and became a Core Course)*  
Selected student feedbacks:

*“Your presentation yesterday was great! Actually it was the only presentation that I could concentrate from the beginning to the end so far.”*

*“I am writing this email to thank you for your seminar today. I was so inspired by your story and the tips you gave. It is so far the best lecture I ever attended in KAUST. I believe that your story must be shared with the larger community of KAUST and I know that many of my friends would love to attend. So please let me know if you will ever give this lecture again.”*

*“This is the only class I never get sleepy. The classroom atmosphere is terrific. You gave up the convenience of teaching with PPT, instead, adopt blackboard writing in class so that we can understand more easily, which saved us a lot of time.”*

*“Very good instructor, teaching style is student oriented. The whole course is well organized almost step-by-step learning.”*

*“The instructor does very well job at preparing for the lecture and making the expectations clear from both the students and himself.”*

*“The quizzes although hectic, give you the opportunity to learn material that is hard to cover on the midterm. I also believe the professors lecture notes were great.”*

*“I like to way he makes the class active and always let student participate.”*

*“The concepts of quantum mechanics is covered in this course. It helped me to lay the foundation for the future work.”*

6. **Guest blogger** for Edison Innovation Foundation, Newark, NJ Summer 2013  
Educate the foundation’s readers, mainly K-12 students and parents, about the latest research and technologies. The foundation has 99,310 followers in Facebook.
7. **Instructor** for Ph.D. preliminary exam, Georgia Tech, Atlanta, GA Fall 2011  
Taught 15 graduate students who were not familiar with microsystem and electromagnetics about the basic principles, knowledge, and practices  
Made quiz to prepare them for the Ph.D. preliminary exam  
All the students I taught passed the exam
8. **Instructor** of K-12 outreach programs, Georgia Tech & Lehigh University 2009-2015  
Please refer to the “Outreach Lectures and Seminars” as below
9. **Instructor** of Shuren High School, Wuhan, China Spring 2006  
Most of the students’ parents were from poor families coming to cities for a job. Thus the parents had very low income and poor education background  
Taught 40 students high school physics  
Help the students navigate difficulties and pressure in the real life
10. **Teaching assistant** of undergraduate course C++, HUST, Wuhan, China Spring 2006  
Assisted the lecturer to help 30 students on their homework and knowledge  
Organized exam workshops to prepare the students for the mid-term and final exam

### Advising and Mentoring

- 1) **Itzel Alcalá Rivas (Visiting student)**  
January 2024-March 2024  
She is pursuing the BS degree at National Autonomous University of Mexico.
- 2) **Dev Chadha (Visiting student)**  
January 2024-March 2024  
He is pursuing the BS degree at Jamil Millia Islamia.

- 3) **Juan Huerta Salcedo (MS student)**  
August 2023-December 2023  
He obtained his BS degree from National Autonomous University of Mexico.
- 4) **Leo Raj Solay (PhD student)**  
August 2023-Present  
He obtained his MS degree at Amity University.
- 5) **Zixian Jiang (PhD student)**  
August 2023- Present  
He obtained his BS degree at University of Electronic Science and Technology of China (UESTC).
- 6) **Jorge Esteban Bolio (Visiting student)**  
January 2023-June 2023  
He is pursuing his BS degree at National Autonomous University of Mexico.
- 7) **Patsy Miranda (PhD student)**  
August 2022-Present  
She obtained his BS degree at National Autonomous University of Mexico.
- 8) **Tingang Liu (PhD student)**  
August 2022-Present  
He obtained his BS degree at University of Electronic Science and Technology of China (UESTC).
- 9) **Paul Sanchez (Visiting student)**  
August 2022-Janurary 2023  
He is pursuing his BS degree at National Autonomous University of Mexico.
- 10) **Zixian Jiang (Visiting student)**  
August 2022-December 2022  
He is pursuing his BS degree at University of Electronic Science and Technology of China (UESTC).
- 11) **Francesco Blanda (Visiting student)**  
July 2022-December 2022  
He is pursuing his MS degree in Physics from University of Pisa.
- 12) **Camilo Monsalve Maya (Visiting student)**  
March 2022-September 2022  
He is pursuing his BS degree in Physical Engineering from National University of Colombia
- 13) **Ganesh Mainali (PhD student)**  
August 2021-Present  
He obtained his MS degree from Kwangwoon University.
- 14) **Tingang Liu (Visiting student)**  
August 2021-December 2021  
He is pursuing his BS degree at University of Electronic Science and Technology of China (UESTC).
- 15) **Masooma Aladhab (MS student)**  
August 2021-May 2023  
She obtained his BS degree from King Faisal University.
- 16) **Alaa Almushaikeh (MS student)**  
August 2021-Janurary 2022  
She was an engineer from King Abdulaziz City for Science and Technology.
- 17) **Raul Ricardo Vázquez (MS student)**  
August 2021-Present  
He obtained his BS degree from National Autonomous University of Mexico.

**18) Manoj Kumar Rajbhar (PhD student)**

August 2021-Present

He obtained his MS degree from University of Hyderabad.

**19) Ahmad Al Sulami (Visiting student)**

May 2021-August 2021

He received his MS degree from KAUST.

**20) Mingtao Nong (Lab specialist)**

March 2021-Present

He obtained his BS degree from Xiamen University.

**21) Wen Gu (Visiting student)**

January 2021-September 2021

He is pursuing his MS degree from Institute of Semiconductor, Chinese Academy of Science.

**22) Saravanan Yuvaraja (PhD student)**

January 2021-Present

He obtained his MS degree from Amity University.

**23) Na Xiao (PhD student)**

August 2020-Present

She obtained her MS degree from Soochow University.

**24) Dhanu Chettri (PhD student)**

August 2020-Present

He obtained his MS degree from Manipur University.

**25) Glen Isaac Maciel García (PhD student)**

August 2020-Present

He obtained his BS degree from National Autonomous University of Mexico.

**26) José Manuel Taboada (PhD student)**

August 2020-Present

He obtained his BS degree from National Autonomous University of Mexico.

**27) Mtritunjay Kumar (PhD student)**

August 2020-Present

He obtained his MS degree from Indian Institute of Technology IIT Dhanbad.

**28) Vishal Khandelwal (PhD student)**

August 2020-Present

He obtained his MS degree from Indian Institute of Technology IIT Jodhpur.

**29) Zhiyuan Liu (PhD student)**

August 2020-Present

He obtained his BS degree from University of Electronic Science and Technology of China.

**30) Maocheng Shan (Visiting student)**

August 2020-February 2021

Maocheng is an visiting student from Huazhong University of Science and Technology (HUST) and Wuhan National Laboratory for Optoelectronics (WNLO).

**31) Kishor Upadhyaya (Visiting student)**

March-August 2020

He is pursuing his PhD degree at Visvesvaraya Technological University and Jawaharlal Nehru Centre for Advanced Scientific Research.

**32) Chuanju Wang (PhD student)**

January 2020-Present

He obtained his MS degree from Tsinghua University.

**33) Daniel De Jesus Pliego Sosa (Visiting student)**

January 2020

He is pursuing his BS degree at National Autonomous University of Mexico.

**34) Sergei Filnov (Visiting student)**

January 2020

He is pursuing his BS degree at Saint Petersburg State University.

**35) Vladyslav Hnapovskyi (Visiting student)**

January 2020

He is pursuing his MS degree at Taras Shevchenko National University of Kiev.

**36) Yubin Huang (Lab assistant)**

August 2019-December 2020

Yubin is a lab assistant in my lab. She helps event organization, lab management, and procurement.

**37) Yi Lu (PhD student)**

August 2019-Present

He obtained his MS degree from Institute of Semiconductor, Chinese Academy of Sciences.

**38) Victor Paiva de Oliveira (MS student)**

August 2019-May 2021

He obtained his BS degree from Federal University of Rio Grande do Norte.

**39) Zhiyuan Liu (Visiting student)**

August 2019-January 2020

He is pursuing his BS degree at University of Electronic Science and Technology of China (UESTC).

**40) Yue Wang (Visiting student)**

June 2019-December 2019

She is pursuing her BS degree at University of Electronic Science and Technology of China (UESTC).

**41) Yujie Qin (Visiting student)**

September 2019-December 2019

She is pursuing her BS degree at from University of Electronic Science and Technology of China (UESTC).

**42) Gaia Da Prato (Visiting student)**

July 2019-September 2019

She is pursuing her BS degree in Physics from University of Pisa.

**43) Emanuele Troiani (Visiting student)**

July 2019-September 2019

He is pursuing his BS degree in Physics from University of Pisa.

**44) Andrei Luferau (Visiting student)**

July 2019-November 2019

He is pursuing his Master of Electronics and Nanoelectronics Electrotechnical University LETI.

**45) Yara Banda (Visiting student)**

July 2019-August 2019

She is pursuing her BS degree in Electrical & Computer Engineering from King Abdulaziz University.

**46) Shubin Krishna (Postdoctoral fellow)**

June 2019-July 2022

He received his PhD in Physics at CSIR-National Physical Laboratory, under the supervision of Prof Govind Gupta.

**47) Hessa I. Alabdan (Visiting student)**

June 2019-July 2019

She is pursuing her MS degree in Material Physics from Abdulrahman Bin Faisal University.

**48) Wen Gu (Visiting student)**

February 2019-July 2019

He is pursuing his MS degree from Institute of Semiconductor, Chinese Academy of Science.

**49) Victor Paiva de Oliveira (Visiting student)**

March 2019-May 2019

He obtained his BS degree in Electrical Engineering from Federal University of Rio Grande do Norte.

**50) Xiao Tang (Lab Researcher)**

February 2019-June 2022

Xiao is a lab assistant in my lab. He is involved in Ga<sub>2</sub>O<sub>3</sub> device research.

**51) Thomas Winkler (Visiting student)**

February 2019

He obtained his BS degree in Physics from Johannes Gutenberg University of Mainz.

**52) Stef Koenis (Visiting student)**

February 2019

He obtained his BS degree in Physics from University of Twente.

**53) Artem Shushanian (PhD student)**

February 2019-May 2019

He obtained his MS degree in Chemical Science from Novosibirsk State University.

**54) Tinh Tran (Postdoctoral fellow)**

October 2018-June 2020

He received his PhD in Materials Science and Engineering at National Chiao Tung University, under the supervision of Prof Edward Yi Chang.

**55) Pavel Kirilenko (PhD student)**

August 2018- May 2019

He obtained his MS degree in Physics from Novosibirsk State University.

**56) Rongyu Lin (PhD student)**

August 2018-December 2022

He obtained his MS degree in Physics from Southern University of Science and Technology (SUSTech).

**57) Roman Zamchii (PhD student)**

August 2018-January 2019

He obtained his MS degree in Physics from Saint Petersburg State University.

**58) Ahmad Al Sulami (MS student)**

August 2018-July 2020

He received his BS degree in Physics from University of Texas Austin.

**59) Zahra Alnakhli (PhD student)**

August 2018-Present

She received BS from Taibah University and Master of Nanotechnology from Flinders University.

**60) Chenxin Xiong (Visiting student)**

August 2018-February 2019

She is pursuing her BS degree in Software Engineering from Central South University.

**61) Xuechun Zhang (Visiting student)**

August 2018-February 2019

She is pursuing her BS degree in Applied Chemistry from University of Electronic Science and Technology of China (UESTC).

**62) Yi Lu (Visiting student)**

April 2018-October 2018

He is pursuing his MS degree from Institute of Semiconductor, Chinese Academy of Science.

**63) Wei Guo (Visiting researcher)**

August 2018-August 2019

Wei Guo is a researcher at Ningbo Institute of Materials Technology & Engineering (NIMTE).

**64) Erick López-Méndez (Visiting student)**

August 2018-February 2019

He is pursuing his BS degree in Engineering Physics from Tecnológico de Monterrey.

**65) Dmitry Arkhipov (Visiting student)**

July 2018-November 2018

He is pursuing his BS degree in Physics from Saint Petersburg State University.

**66) Anja Dobravec (Visiting student)**

July 2018

She is pursuing his MS degree in Physics from University of Ljubljana.

**67) Mark Berčan (Visiting student)**

July 2018

He is pursuing his BS degree in Physics from University of Ljubljana.

**68) Francesco Blanda (Visiting student)**

July 2018-September 2018

He is pursuing his BS degree in Physics from University of Pisa.

**69) Rahaf H. Shalabi (Visiting student)**

May 2018-December 2018

She is pursuing her BS degree in Electrical Engineering from Effat University.

**70) Maocheng Shan (PhD student)**

March 2018-December 2022

Maocheng is a PhD student at Huazhong University of Science and Technology (HUST). His formal advisor is Prof Jiangnan Dai at HUST. However, his main advisor is me for his PhD study.

**71) Guozheng Zhang (Visiting student)**

January 2018-June 2018

He is pursuing his BS degree in Electrical Engineering and Automation from Hebei University of Technology.

**72) Zhongjie Ren (Visiting student)**

December 2017-May 2018

He is pursuing his BS degree in Opto-Electronic Engineering from Huazhong University of Science and Technology.

**73) Joseph Hsin-Hung Yao (Postdoctoral fellow)**

January 2018-December 2018

He received his PhD in Photonics and Optoelectronics at National Chiao Tung University, under the supervision of Prof Shing-Chung Wang.

**74) Che-Hao Liao (Postdoctoral fellow)**

October 2017-February 2022

He received his PhD in Photonics and Optoelectronics at National Taiwan University, under the supervision of Prof Chih-Chung Yang.

**75) Feras Al Qatari (PhD student)**

August 2017-Present

He received his BS degree in Materials Science and Engineering from University of Maryland.

**76) Wenzhe Guo (PhD student)**

June 2017-Jan 2018

He received his BS degree in Integrated Circuit Design and Integrated System from University of Electronic Science and Technology of China (UESTC).

**77) Jingtao Li (Visiting student)**

August 2017-January 2018

He is pursuing his BS degree in Microelectronic Science and Engineering from University of Electronic Science and Technology of China (UESTC).

**78) Kaikai Liu (Visiting student)**

July 2017-March 2018

He is pursuing his BS degree in Applied Physics from Huazhong University of Science and Technology.

**79) Xinwei Liu (Visiting student)**

July 2017-March 2018

He is pursuing his BS degree in Electronic Science and Technology from Huazhong University of Science and Technology.

**80) Sergio Valdes (Visiting student)**

July 2017-March 2018

He is pursuing his BS degree in Mechanical and Electrical Engineering from Instituto Tecnológico de Monterrey.

**81) Carlos Torres (Visiting student)**

July 2017-August 2018

He received his MS degree at Center for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV).

**82) Fatimah Alowa (Visiting student)**

May 2017-September 2017

She is pursuing her BS degree in Mechanical Engineering and Physics from Boston University.

**83) Abdulmohsen Alowayed (Visiting student)**

May 2017-September 2017

He is pursuing her BS degree in Mechanical Engineering from Massachusetts Institute of Technology (MIT).

**84) Yangrui Hu (Visiting student)**

January 2017-July 2017

She is pursuing his BS degree in Applied Physics from University of Science and Technology of China (USTC).

**85) Wenzhe Guo (Visiting student)**

November 2016-July 2017

He is pursuing his BS degree in Integrated Circuit Design and Integrated System from University of Electronic Science and Technology of China (UESTC).

**86) Raheef A. Aljefri (Visiting student)**

October 2016-May 2017

She is pursuing his BS degree in Electrical Engineering from Effat University.

**87) Esraa Alghamdi (Visiting student)**

October 2016-May 2017

She is pursuing his BS degree in Electrical Engineering from Effat University.

**88) Sarah Alsaggaf (MS student)**

September 2016-February 2017

She obtained his BS degree in Physics from King Abdulaziz University.

**89) Altynay Kaidarova (MS student)**

September 2016-January 2017

She obtained his BS degree in Electronics and Communication from University of Liverpool.

**90) Ronghui Lin (PhD student)**

August 2016-December 2020

He obtained his MS degree in Mechanical Engineering from University of Science and Technology of China (USTC).

**91) Muwei Zhang (Visiting student)**

August 2016-August 2017

He is pursuing his BS degree in Electronic Science and Technology from Huazhong University of Science and Technology.

**92) Haiding Sun (Postdoctoral fellow)**

June 2016-October 2018

He received his PhD in Electrical Engineering at Boston University, USA, under the supervision of Prof Ted Moustakas.

**93) Renad A. Aljefri (Visiting student)**

June 2016-May 2017

She is pursuing his BS degree in Electrical Engineering from Effat University.

**94) Hamad Alotaibi (Visiting student)**

May 2016-January 2017

He is pursuing his BS degree in Electrical Engineering from King Fahd University of Petroleum and Minerals (KFUPM).

**95) Kuang-Hui Li (PhD student)**

May 2016-December 2018

He obtained his dual BS degrees in Physics and Mathematics from National Chiao Tung University.

**96) Feng Wu (Visiting student)**

March 2016-March 2017

Feng is an exchange PhD student at KAUST from Huazhong University of Science and Technology (HUST) and Wuhan National Laboratory for Optoelectronics (WNLO). He obtained his BS degree in Optoelectronics at HUST.

**97) Nasir Alfaraj (PhD student)**

February 2016-July 2017

He obtained his BS degree at West Michigan University and MS degree at KAUST, both in Electrical Engineering.

**98) Ibrahim Aldabbagh**

Mar 2016-July 2016

Ibrahim is studying in Electrical Engineering at University of California, San Diego (UCSD) under the KAUST Gifted Students Program (KGSP) Scholarship.

**99) Christine Hang and Shauvik Choudhary**

Mar 2014-Dec 2016

Christine and Shauvik are Vietnamese American and Indian students, respectively at Georgia Institute of Technology. I have advised them to start and run companies on their inventions regarding stroke risk reduction and reduction of configuration complexity across different Android platforms. With my help, they have grown the business and won the first place of ACC School Startup Madness and highest award of Georgia Tech Ideas 2 Serve Competition

**100) Laura Mejia-Suarez**

Jan 2013-Jul 2016

Laura is a Hispanic American student at Lehigh University. I have mentored her since her junior year academically and found her a paid internship in Atlanta, GA. Recently, my recommendation letter has helped her get into the graduate program at Lehigh University.

**101) Khin Latt**

Jan 2013-Dec 2016

Kihn is from a small Southeast Asian country, Myanmar. He was a student at Lehigh University. I have mentored him academically since his junior year. Recently, I helped him to get a well-paid software engineering position in Atlanta.

**102) Entrepreneurial Finance and Private Equity Program, Georgia Tech, Atlanta**

Aug 2013-Oct 2013

- Worked with four graduate students majored in Quantitative & Computational Finance
- Provided business and technical guidance and help them navigate the course challenge

**103) Engineers for a Sustainable World Organization, Georgia Tech, Atlanta, GA**

Feb 2013-Dec 2013

- Worked with this organization to develop non-profit water purification solutions for the 3<sup>rd</sup> world
- Provided business and technical guidance and help them in fund raising
- Protected and commercialized intellectual properties created in this process

**104) Integrated Product Development Program, Lehigh University, Bethlehem, PA**

Jan 2013-Dec 2013

- Guided 12 undergraduate students to develop portable water purification products
- Established development strategy, goal and oversee their activities
- Help students protected and commercialized intellectual properties created in this process

*Mentoring experience is described through the students or organizations I have advised, which does not include the junior students (10+) I mentored in my previous labs at Lehigh University and Georgia Tech for research skills and career development.*

**Research and Teaching Interests**

My research is positioned at the cross-roads of interdisciplinary electrical engineering, applied physics, material science and engineering, and biomedical engineering. Specifically, I am interested in the investigation of the physics, growth, fabrication, and characterization of semiconductor especially III-V optoelectronic and electronic devices. The device applications include visible LED and solar cells for energy saving and energy generation applications, UV LED and lasers for biomedical and communication

applications, and FET, HFET, and HBT for power electronic applications. In addition, I am also interested in HFET based biochemical sensing and III-V-on-Si devices for post-Si computing chips. Fundamental knowledge from quantum mechanics, quantum electronics / optics, solid state physics, semiconductor physics, and electromagnetics will be used to solve problems related to semiconductor, optoelectronics and energy. In addition, I am interested in the development of extremely high temperature MOCVD reactors.

As my academic pursuit started in applied physics which further extended into electrical engineering in the graduate school, my teaching interests encompass courses in the areas of basic physics, electromagnetics and electronic device fabrication (sophomore/junior), photonic and optoelectronic devices (graduate), applied quantum mechanics (graduate), physics of semiconductor devices (senior/graduate). My mentorship crosses graduate students, undergraduate students, K-12 students and K-12 educators.

### **Other Professional Experience**

- 1) **Invited Judge** of Poster Competition of IWPSD, India 2019
- 2) **Invited Judge** of Undergraduate Poster Competition, KAUST 2018
- 3) **Invited Judge** of Undergraduate Research Symposium, Georgia Tech 2013-2014
- 4) **Invited Judge** of Capstone Design Expo, Georgia Tech 2013-2014
- 5) **Tour guide** of Scientific Facilities for Board of Trustee, Lehigh University 2010-2011

### **Patents**

1. Chinese Patent #ZL201880075677.8: SEMICONDUCTOR DEVICES HAVING HETEROJUNCTIONS OF AN INDIUM GALLIUM NITRIDE TERNARY ALLOY LAYER AND A SECOND III-NITRIDE TERNARY ALLOY LAYER (issued)
2. Chinese Patent # 201880078302.7: FORMING III-NITRIDE ALLOYS (issued)
3. Chinese Patent #ZL201880075712.6: SEMICONDUCTOR DEVICES HAVING HETEROJUNCTIONS OF AN INDIUM ALUMINUM NITRIDE TERNARY ALLOY LAYER AND A SECOND III-NITRIDE TERNARY ALLOY LAYER (issued)
4. Chinese Patent #ZL201880078771.9: METHODS FOR FORMING GRADED WURTZITE III-NITRIDE ALLOY LAYERS (issued)
5. Chinese Patent #ZL201880075723.4: SEMICONDUCTOR DEVICES HAVING HETEROJUNCTIONS OF A BORON ALUMINUM NITRIDE TERNARY ALLOY LAYER AND A SECOND III - NITRIDE TERNARY ALLOY LAYER (issued)
6. Chinese Patent #ZL201880075777.0: SEMICONDUCTOR DEVICES HAVING HETEROJUNCTIONS OF A BORON GALLIUM NITRIDE TERNARY ALLOY LAYER AND A SECOND III-NITRIDE TERNARY ALLOY LAYER (issued)
7. Chinese Patent #ZL201880075529.6: SEMICONDUCTOR DEVICES HAVING HETEROJUNCTIONS OF AN ALUMINUM GALLIUM NITRIDE TERNARY ALLOY LAYER AND A SECOND III NITRIDE TERNARY ALLOY LAYER (issued)
8. E.P. Patent #3,569,035: SUSCEPTORS FOR INDUCTION HEATING WITH THERMAL UNIFORMITY (Issued)
9. Chinese Patent #ZL201880067455.1: III-NITRIDE SEMICONDUCTOR DEVICES HAVING A BORON NITRIDE ALLOY CONTACT LAYER AND METHOD OF PRODUCTION (issued)
10. J.P. Patent #7,138,714: (Issued)

11. J.P. Patent #7,065,857: サセフター (Issued)
12. U.S. Patent #11,339,478: Susceptor (Issued)
13. J.P. Patent #7,039,705: I i i 族窒化物合金の形成 (Issued)
14. U.S. Patent #11,264,238: Forming III-nitride alloys (Issued)
15. J.P. Patent #7,024,073: 窒化ホウ素合金中間層を有する高電子移動度トランシスタ及び製造方法 (Issued)
16. U.S. Patent #11,233,143: High electron mobility transistor having a boron nitride alloy interlayer and method of production (Issued)
17. Chinese Patent #ZL 2018 8 0060084.4: 具有氮化硼合金电子阻挡层的光电器件及制造方法 (issued)
18. U.S. Patent #10,916,424: Methods for forming graded wurtzite III-nitride alloy layers (Issued)
19. Chinese Patent #ZL201780056663.7: Susceptor Device, Chemical Vapor Deposition Apparatus, and Deposition Methods (issued)
20. U.S. Patent #11,069,834: Optoelectronic device having a boron nitride alloy electron blocking layer and method of production (Issued)
21. U.S. Patent #9,024,292: Monolithic semiconductor light emitting devices and method of making the same (Issued)
22. U.S. Patent #8,569,737: Broadband light emitting diodes and method for producing same (Issued)
23. Chinese Patent #CN200976041Y: 磁感应线走向测量仪 (Issued)

### **Book Chapters and Editorials**

1. Chapter 4: *III-N Wide Bandgap Deep-Ultraviolet Lasers and Photodetectors*, Volume 96, *Semiconductors and Semimetals* series, ISBN: 9780128095843, Elsevier, 2017. [<link>](#)
2. Chapter 16: *Future Developments in MOVPE, Metalorganic Vapor Phase Epitaxy (MOVPE): Growth, Materials Properties and Applications*, ISBN: 9781119313021, Wiley, 2019. [<link>](#)
3. Chapter 7: *Ultraviolet Lasers, Nanoscale Semiconductor Lasers*, ISBN: 9780128141625, Elsevier, 2019. [<link>](#)
4. (Editorial) *Sapphire Substrates Slash the Cost of Deep UV Lasers*, *Compound Semiconductor Magazine Editorial*, June 2016. [<pdf>](#)
5. (Editorial) *The Beginning of Semiconductor UV Optoelectronics*, *Chinese Laser Press*, Jan 2020. [<link>](#)

### **Journal Publications since KAUST**

#### **Papers with my group as the leading author (underlined)**

1. Y. Lu, Y. Guo, Z. Liu, J. Yan, J. Wang, J. Li, and X. Li\* “Monolithic Integration of Deep Ultraviolet and Visible Light-emitting Diodes for Radiative Sterilization Application,” **Appl. Phys. Lett.** in press (2024).
2. S. Yuvaraja, V. Khandelwal, S. Krishna, Y. Lu, Z. Liu, M. Kumar, D. Chettri, X. Tang, G. I. M. García, C.-H. Liao, and X. Li\* “Enhancement-mode Ambipolar Thin-film Transistors and CMOS Logic Circuits using Bilayer Ga<sub>2</sub>O<sub>3</sub>/NiO Semiconductors,” **ACS Appl. Mater. Interfaces** in press (2024).
3. Z. Liu, Y. Lu, H. Cao, R. A. Vazquez, R. Lin, N. Xiao, X. Tang, M. Nong, S. Li, T. Liu, X. Li\*, “Multi-wavelength and broadband AlGaIn-based LED for versatile and artificial UV light source,” **Micro and Nanostructures** **187**, 207755 (2024).

4. R. R. Aguilera-Vazquez, Z. Liu, F. AlQatari, Y. Lu, X. Tang, P. A. Miranda-Cortez, and X. Li\*, “Polarization-matching and carrier confinement in III-Nitride deep-ultraviolet light-emitting diodes,” **J. Appl. Phys.** **134**, 184501 (2023).
5. S. Yuvaraja, V. Khandelwal, X. Tang, and X. Li\*, “Wide bandgap semiconductor-based integrated circuits,” **Chip** **2**, 10072 (2023).
6. D. Chettri, G. Mainali, A. C. V. Khandelwal, S. Yuvaraja, X. Na, X. Tang, D. Baran, and X. Li\*, “Monolithic  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Pseudo-CMOS,” **IEEE Trans. Electron Devices** **70**, 5051 (2023).
7. A. Mukherjee (co-first), J. M. T. Vasquez (co-first), Aasim Ashai, S. Yuvaraja, M. Rajbhar, B. Sarkar, X. Li, “Detailed band alignment of high-B-composition BGaN with GaN and AlN,” **J. Phys. D.** **56**, 485104 (2023).
8. Y. Lu, X. Zou, S. Krishna, X. Tang, Z. Liu, M. Nong, C.-H. Liao, S. Yuvaraja, M. Ben Hassine, H. Fariborzi, and X. Li\*, “Thermal Mismatch Engineering Induced Freestanding and Ultrathin Ga<sub>2</sub>O<sub>3</sub> Membrane for Vertical Electronics,” **Mater. Today Phys.** **36**, 101181 (2023).
9. N. Xiao, S. Yuvaraja, D. Chettri, Z. Liu, Y. Lu, C. Liao, X. Tang, and X. Li\*, “The influence of annealing atmosphere on sputtered indium oxide thin-film transistors,” **J. Phys. D.** **56**, 425102 (2023).
10. F. AlQatari, C.-H. Liao, R.R. Vázquez, X. Tang, S. Lopatin, and X. Li\*, “Detailed band alignment of high-B-composition BGaN with GaN and AlN,” **J. Phys. D.** **56**, 385305 (2023).
11. V. Khandelwal, M. Rajbhar, G. M. García, X. Tang, B. Sarkar, and X. Li\*, “Demonstration of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> nonvolatile flash memory for oxide electronics for oxide electronics,” **Jpn. J. Appl. Phys.** **62**, 060902 (2023).
12. C. Wang, X. Xu, S. Tyagi, P. C. Rout, Udo Schwingenschlögl, B. Sarkar, V. Khandelwal, X. Liu, L. Gao, M. N. Hedhili, H. N. Alshareef, and X. Li\*, “Ti<sub>3</sub>C<sub>2</sub>T<sub>x</sub> MXene van der Waals Gate Contact for GaN High Electron Mobility Transistors,” **Adv. Mater.** **2023**, 2211738 (2023).
13. V. Khandelwal, S. Yuvaraja, G. I. M. García, C. Wang, Y. Lu, F. AlQatari, X. Li\*, “Monolithic  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> NMOS IC based on heteroepitaxial E-mode MOSFETs,” **Appl. Phys. Lett.** **122**, 143502 (2023).
14. C. Wang and X. Li\*, “Interface dipole induced threshold voltage shift in the Al<sub>2</sub>O<sub>3</sub>/GaN heterostructure,” **Appl. Surf. Sci.** **622**, 156954 (2023).
15. X. Tang, Y. Lu, and X. Li\*, “Flexible Gallium Oxide Electronics,” **Semicond. Sci. Technol.** **38**, 063001 (2023).
16. X. Tang, Y. Lu, R. Lin, C.-H. Liao, Y. Zhao, K.-H. Li, N. Xiao, W. H. Babatatin, and X. Li\*, “Flexible Self-powered DUV Photodetectors with High Responsivity Utilizing Ga<sub>2</sub>O<sub>3</sub>/NiO heterostructure on Buffered Hastelloy Substrates,” **Appl. Phys. Lett.** **122**, 121101 (2023).
17. J. M. T. Vasquez, A. Ashai, Y. Lu, V. Khandelwal, M. Rajbhar, M. Kumar, X. Li\*, B. Sarkar\*, “A self-powered and broadband UV PIN photodiode employing a NiOx layer and a  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> heterojunction,” **J. Phys. D.** **56**, 065104 (2023).
18. C. Wang, F. AlQatari, V. Khandelwal, R. Lin, X. Li\*, “Origin of interfacial charges of Al<sub>2</sub>O<sub>3</sub>/Si and Al<sub>2</sub>O<sub>3</sub>/GaN heterogeneous heterostructures,” **Appl. Surf. Sci.** **608**, 155099 (2023).
19. C. Wang and X. Li\*, “Correlative atomic coordination and interfacial charge polarity in Al<sub>2</sub>O<sub>3</sub>/GaN and Al<sub>2</sub>O<sub>3</sub>/Si heterostructures,” **Phys. Status Solidi Rapid Res. Lett.** **2022**, 2200413 (2022).
20. Z. Liu, M. Nong, Y. Lu, H. Cao, S. Yuvaraja, N. Xiao, Z. Alnakhli, R. A. Vazquez, X. Li\*, “Effect of the AlN strain compensation layer on InGaN quantum well red light emitting diodes beyond epitaxy,” **Opt. Lett.** **47**, 6229 (2022).
21. Y. Lu, S. Krishna, C.-H. Liao, Z. Yang, M. Kumar, Z. Liu, X. Tang, N. Xiao, M. Hassine, S. Thoroddsen, and X. Li\* “Transferrable Ga<sub>2</sub>O<sub>3</sub> Membrane for Vertical and Flexible Electronics via One-step Exfoliation,” **ACS Appl. Mater. Interfaces** **14**, 47922 (2022).

22. R. Lin, Z. Liu, H Peng, R. Lin, Y. Lu, H. Cao, C. Wang, V. Khandelwal, X. Zhang, and X. Li\*, “Machine learning study on superlattice electron blocking layer design for AlGa<sub>N</sub> deep ultraviolet light-emitting diodes using the stacked XGBoost/LightGBM algorithm,” **J. Mater. Chem. C** **10**, 17602 (2022).
23. Z. Alnakhli, R. Lin, C.-H. Liao, A. E. Labban, and X. Li\*, “Reflective metalens with enhanced off-axis focusing performance,” **Opt. Express** **30**, 34123 (2022).
24. F. AlQatari, C.-H. Liao, X. Li\*, “Demonstration of MOCVD-grown BGa<sub>N</sub> with over 10% boron composition,” **AIP Adv.** **12**, 085318 (2022).
25. Y. Lu, S. Krishna, X. Tang, W. Babatain, M. Hassine, C.-H. Liao, N. Xiao, Z. Liu, and X. Li\*, “Ultrasensitive Flexible  $\kappa$ -phase Ga<sub>2</sub>O<sub>3</sub> Solar-blind Photodetector,” **ACS Appl. Mater. Interfaces.** **14**, 34844 (2022).
26. M. Shan, C. Guo, Y. Zhao, Q. Chen, L. Deng, Z. Zheng, S. Tan, W. Guo, J. Dai, F. Wu, X. Li\*, C. Chen, “Enhancement of DUV emission from strain modulated quantum wells via the reflection of nanoporous AlGa<sub>N</sub> distributed Bragg reflectors,” **ACS Appl. Nano Mater.** **5**, 10081 (2022).
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28. S. Krishna, Y. Lu, C.-H. Liao, V. Khandelwal, X. Li\*, “Band alignment of orthorhombic Ga<sub>2</sub>O<sub>3</sub> with Ga<sub>N</sub> and Al<sub>N</sub> semiconductors,” **Appl. Surf. Sci.** **599**, 153901 (2022).
29. C. Wang, Y. Lu, C.-H. Liao, S. Krishna, S. Yuvaraja, and X. Li\*, “Highly suppressed interface traps of Al<sub>2</sub>O<sub>3</sub>/Ga<sub>N</sub> through interposing a stoichiometric Ga<sub>2</sub>O<sub>3</sub> layer,” **Jpn. J. Appl. Phys.** **61**, 060906 (2022).
30. Z. Liu, Y. Lu, Y. Wang, R. Lin, C. Xiong, and X. Li\*, “Polarization modulation at last quantum barrier for high efficiency AlGa<sub>N</sub>-based UV LED,” **IEEE Photonics J.** **14**, 8210208 (2022).
31. G. Deng, Y. Yu, L. Zhang, Y. Wang, J. Yu, Y. Niu, X. Li\*, Z. Shi, Y. Zhang\*, “Ga-free AlIn<sub>N</sub> films growth by close-coupled showerhead metalorganic chemical vapor deposition,” **Micro and Nanostructures** **165**, 207191 (2022).
32. W. Gu, Y. Lu, Z. Liu, C.-H. Liao, J. Yan, J. Wang, J. Li, and X. Li\*, “Enhanced hole concentration in strain-compensated BAl<sub>N</sub>/AlGa<sub>N</sub> superlattice for deep ultraviolet light-emitting diodes,” **Micro and Nanostructures** **163**, 107128 (2022).
33. X. Tang, K.-H. Li, Y. Zhao, H. Liang, Z. Liu, U. Buttner, C.-H. Liao, L. Braic, Z. Mei, X. Du, W. Tang, X. Li\*, “Quasi-epitaxial Growth of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Coated Wide Bandgap Semiconductor Tape for Flexible UV Photodetectors,” **ACS Appl. Mater. Interfaces.** **14**, 1304 (2022).
34. X. Tang, K.-H. Li, C.-H. Liao, J. Taboada, C. Wang, N. Xiao, and X. Li\*, “Chemical solution deposition of epitaxial indium and aluminum doped Ga<sub>2</sub>O<sub>3</sub> thin-films on sapphire with tunable bandgaps,” **J. Eur. Ceram. Soc.** **42**, 175 (2022).
35. X. Tang, K.-H. Li, C.-H. Liao, D. Zheng, C. Liu, S. Krishna, J. Taboada, and X. Li\*, “Epitaxial growth of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> (-201) thin film on fourfold symmetry CeO<sub>2</sub> (001) substrate for heterogeneous integrations,” **J. Mater. Chem. C** **2021**, 15868 (2021).
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38. M. Shan, Y. Zhang, M. Tian, R. Lin, J. Jiang, Z. Zheng, Y. Zhao, Y. Lu, Z. Feng, W. Guo, J. Dai, C. Chen, F. Wu, X. Li\*, "Transverse electric lasing at record short wavelength 244.63 nm from GaN quantum wells with weak exciton localization," **ACS Photonics** **8**, 1264 (2021).
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47. R. Lin, Z. Alnakhli, F. Alqatari, and X. Li\*, "Design of dielectric reflective metalens: analysis of tapered nanopillars," **IEEE Photonics J.** **12**, 4600907 (2020).
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142. H. Zhao, G. Liu, **X. Li**, R. A. Arif, G. S. Huang, J. D. Poplawsky, S. Tafon Penn, V. Dierolf, and N. Tansu, "Design and Characteristics of Staggered InGa<sub>N</sub> Quantum Well Light-Emitting Diodes in Green Spectral Regimes" **IET Optoelectron.** **3**, 283 (2009).
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144. "Advancing Neutron Detection: Fabrication, Characterization and Performance Evaluation of Self-Powered PIN B Ga<sub>N</sub>/Ga<sub>N</sub> Superlattice Based Neutron Detectors," under review.

### **Conference Publications since KAUST**

1. **(Invited Talk) X. Li**, "TBD," International Display Workshops (IDW), Niigata, Japan, December 2023.
2. **(Invited Talk) X. Li**, "Towards highly integrated wide bandgap semiconductor systems based on Ga<sub>N</sub>, AlN, Ga<sub>2</sub>O<sub>3</sub>," International Forum on Wide Bandgap Semiconductors (IFWS), Xiamen, China, November 2023.
3. **X. Tang, X. Li**, " ," International Forum on Wide Bandgap Semiconductors (IFWS), Xiamen, China, November 2023.

4. X. Tang, X. Li, “,” International Forum on Wide Bandgap Semiconductors (IFWS), Xiamen, China, November 2023.
5. D. Chettri, G. Mainali, X. Li, “Low power  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> monolithic inverters,” International Forum on Wide Bandgap Semiconductors (IFWS), Xiamen, China, November 2023.
6. V. Khandelwal, X. Li, “Monolithically integrated  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> NMOS IC based on heteroepitaxial E-mode MOSFETs,” International Forum on Wide Bandgap Semiconductors (IFWS), Xiamen, China, November 2023.
7. V. Khandelwal, X. Li, “Demonstration of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Flash Memory for All Oxide Electronics,” International Forum on Wide Bandgap Semiconductors (IFWS), Xiamen, China, November 2023.
8. **(Best Student Award)** Z. Liu, Y. Lu, and X. Li, “Demonstration of etching free pixel definition through selective thermal oxidization in InGa<sub>N</sub> based micro LEDs,” International Conference on Nitride Semiconductors (ICNS), Fukuoka, Japan, November 2023.
9. A. Srivastava, A. Mballo, S. Sundaram, V. Ottapilakkal, P. Vuong, S. Karrakchou, M. Kumar, X. Li, Y. Halfaya, S. Gautier, P. L. Voss, J. P. Salvestrini, and A. Ougazzaden, “Advancing Neutron Detection: Fabrication, Characterization and Performance Evaluation of Self Powered PIN B<sub>GaN</sub>/Ga<sub>N</sub> Superlattices Based Neutron Detectors,” International Conference on Nitride Semiconductors (ICNS), Fukuoka, Japan, November 2023.
10. M. Kumar, S. Yuvaraja, N. Xiao, M. K. Rajbhar, G. Mainali, V. Khandelwal, X. Tang, and X. Li, “Lateral integration of WBG In<sub>2</sub>O<sub>3</sub> NMOS inverter and Ga<sub>N</sub> HEMT for power electronics,” International Conference on Nitride Semiconductors (ICNS), Fukuoka, Japan, November 2023.
11. H. Cao, M. Nong, T. Liu, Z. Liu, X. Tang, M. Kumar, B. Sarkar, Y. Wu, and X. Li, “Performance Enhancement of n-type Al<sub>N</sub> Schottky Barrier Diodes Using Rapid Thermal Annealing Treatment in Oxygen Environment,” International Conference on Nitride Semiconductors (ICNS), Fukuoka, Japan, November 2023.
12. S. Yuvaraja, V. Khandelwal, X. Li, “Large-scale vertically stacked ultrawide bandgap oxides for CMOS IC,” Device Research Conference, Santa Barbara, CA, USA, June 2023
13. S. Yuvaraja, M. Kumar, N. Xiao, X. Tang, T. D. Anthopoulos, X. Li, “Heterogenous integration of 3D vertically stacked metal-oxide transistors,” Device Research Conference, Santa Barbara, CA, USA, June 2023
14. **(Invited Keynote Talk)** X. Li, “Ultrawide Bandgap Semiconductors Devices and Their Heterogenous Integration,” International Conference on Materials for Advanced Technologies (ICMAT), Singapore, June 2023.
15. S. Yuvaraja and X. Li, “Highly Scalable Multichannel In<sub>2</sub>O<sub>3</sub> Synaptic Transistors for Brain-inspired Neuromorphic Applications,” International Conference on Materials for Advanced Technologies (ICMAT), Singapore, June 2023.
16. S. Yuvaraja and X. Li, “300 °C Operation of CMOS UWBG Ambipolar Field-effect Transistors,” International Conference on Materials for Advanced Technologies (ICMAT), Singapore, June 2023.
17. M. Kumar and X. Li, “Fully Integrated WBG Indium Oxide NMOS Inverter and AlGa<sub>N</sub>/Ga<sub>N</sub> HEMT for Power Electronics,” International Conference on Materials for Advanced Technologies (ICMAT), Singapore, June 2023.
18. **(Invited Talk)** X. Li, “Ultrawide Bandgap Ga<sub>2</sub>O<sub>3</sub> based Optoelectronics and Power Electronics,” International Workshop on Ultraviolet Materials and Devices (IWUMD), Metz, France, June 2023.
19. **(Best Student Poster Award)** Z. Liu and X. Li, “Machine learning design for UVC light-emitting diodes by stacked XGBoost/LightGBM,” International Workshop on Ultraviolet Materials and Devices (IWUMD), Metz, France, June 2023.

20. Y. Lu, and X. Li, “Investigation of novel multi-wavelength and broadband AlGaIn-based UV light emitting diodes employing grading transition layers,” International Workshop on Ultraviolet Materials and Devices (IWUMD), Metz, France, June 2023.
21. **(Invited Talk)** X. Li, “Enhanced Performance of III-Nitride-Based Light-Emitting Diodes Through Novel Band Engineering and Fabrication Technology,” SID Display Week, Los Angeles, CA, USA, May 2023.
22. S. Yuvaraja and X. Li, “300 °C operation of CMOS UWBG ambipolar field-effect transistors,” Compound Semiconductor Week (CSW), Jeju, Korea, May 2022.
23. S. Yuvaraja and X. Li, “Wafer-scale multichannel In<sub>2</sub>O<sub>3</sub> Synaptic transistors for Brain-Inspired Neuromorphic Applications,” Compound Semiconductor Week (CSW), Jeju, Korea, May 2022.
24. M. Kumar and X. Li, “Lateral Integration of WBG Indium Oxide NMOS Inverter and AlGaIn/GaN HEMT for Power Electronics,” Compound Semiconductor Week (CSW), Jeju, Korea, May 2022.
25. F. Alqatari, and X. Li, “P-type Conductive BGaN Through Memory Effect Alloying,” Compound Semiconductor Week (CSW), Jeju, Korea, May 2022.
26. Y. Lu and X. Li, “Thermal Mismatch Engineering Induced Ultrathin Freestanding Ga<sub>2</sub>O<sub>3</sub> Membrane for Vertical Electronics,” Compound Semiconductor Week (CSW), Jeju, Korea, May 2022.
27. Y. Lu, and X. Li, “Epitaxy and Exfoliation of Ultrathin Ga<sub>2</sub>O<sub>3</sub> Membrane from Muscovite Mica Platform for Vertical Electronics,” Compound Semiconductor Week (CSW), Jeju, Korea, May 2022.
28. V. Khandelwal and X. Li, “Demonstration of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Flash Memory for All Oxide Electronics,” Compound Semiconductor Week (CSW), Jeju, Korea, May 2022.
29. V. Khandelwal and X. Li, “Monolithically integrated  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> NMOS IC based on heteroepitaxial E-mode MOSFETs,” Compound Semiconductor Week (CSW), Jeju, Korea, May 2022.
30. Z. Liu and X. Li, “Demonstration of etching-free pixel definition through selective thermal oxidization in InGaIn-based green micro-LEDs,” Compound Semiconductor Week (CSW), Jeju, Korea, May 2022.
31. . and X. Li, “Temperature Analysis of Low Power Unipolar  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Inverter Circuit,” Compound Semiconductor Week (CSW), Jeju, Korea, May 2022.
32. H. Cao and X. Li, “Lateral AlN Schottky Barrier Diodes on Sapphire with a Breakdown Voltage of Over 1kV,” Compound Semiconductor Week (CSW), Jeju, Korea, May 2022.
33. D. Chettri and X. Li, “Multichannel Bottom Gate In<sub>2</sub>O<sub>3</sub> Transistor using High-k Dielectrics on Sapphire Substrate,” Compound Semiconductor Week (CSW), Jeju, Korea, May 2022.
34. **(Invited Talk)** X. Li, “Development of all UWBG electronics,” IEEE Electron Devices Technology and Manufacturing (EDTM), Seoul, Korea, March 2023.
35. Y. Zhai, T. Sasaki, M. Moridi, R. Lin, Z. Alnakhli, A. Shamim, X. Li, M. Younis, K. Hane, and L. Wu, “High accuracy inverse design in nanophotonics by convolutional neural network,” SPIE Photonics West, San Francisco, CA, United States, Feb 2023.
36. **(Invited Talk)** X. Li, “UWBG semiconductor materials and devices,” International Conference on Emerging Electronics (ICEE), Bangalore, India, December 2022.
37. V. Khandelwal, X. Li, “Gate Stack Engineering in n-Type (-201)  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Transistors,” International Conference on Emerging Electronics (ICEE), Bangalore, India, December 2022.
38. S. Yuvaraja, X. Li, “Demonstration of Ga<sub>2</sub>O<sub>3</sub> Trigate Transistors on (100) Silicon Substrates,” International Conference on Emerging Electronics (ICEE), Bangalore, India, December 2022.
39. A. H. Lone, X. Zhou, G. I. M. Garcia, X. Li, H. Fariborzi, “Spin Orbit Torque Tunable Skyrmion Neuromorphic Devices,” International Conference on Emerging Electronics (ICEE), Bangalore, India, December 2022.

40. **(Late breaking news)** V. Khandelwal and **X. Li**, “First demonstration of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> non-volatile flash memory,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.
41. D. Chettri, and **X. Li**, “Multi-channel bottom gate In<sub>2</sub>O<sub>3</sub> transistor using high k dielectrics,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.
42. Y. Lu, and **X. Li**, “Centimeter-scale Freestanding Ga<sub>2</sub>O<sub>3</sub> Membrane by Thermal Exfoliation,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.
43. Y. Lu, and **X. Li**, “vdW-bond-assisted Exfoliation of Ga<sub>2</sub>O<sub>3</sub> Membrane for Vertical Configuration Electronics,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.
44. X. Tang, and **X. Li**, “In-situ Growth of {-201} Fiber-textured  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Semiconductor Tape for Flexible Thin-Film Transistor,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.
45. X. Tang, and **X. Li**, “Elucidation of the epitaxial relation between  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> thin film and CeO<sub>2</sub> (001) substrate for heterogeneous integrations,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.
46. X. Tang, and **X. Li**, “Chemical solution deposition of epitaxial (InGa)<sub>2</sub>O<sub>3</sub> and (AlGa)<sub>2</sub>O<sub>3</sub> thin films with tunable bandgaps,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.
47. X. Tang, and **X. Li**, “In-situ Epitaxial Growth of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Coated Semiconductor Tape for Flexible UV Photodetectors,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.
48. C.-H. Liao, and **X. Li**, “Bandgap-tunable high-crystal-quality  $\beta$ -(AlGa)<sub>2</sub>O<sub>3</sub> template for power devices preparing by Thermal Interdiffusion Alloying,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.
49. N. Xiao, and **X. Li**, “Enhanced performance of amorphous In<sub>2</sub>O<sub>3</sub> thin film transistors using hydrogen rapid thermal annealing,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.
50. G. I. M. Garcia, and **X. Li**, “Taper angle dependence of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> submicron structures using inductively coupled plasma reactive ion etching,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.
51. S. Krishna, and **X. Li**, “Band Alignment of Orthorhombic Ga<sub>2</sub>O<sub>3</sub> with GaN and AlN,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.
52. C. Wang, and **X. Li**, “Highly suppressed interface traps of Al<sub>2</sub>O<sub>3</sub>/GaN by interposing a stoichiometric Ga<sub>2</sub>O<sub>3</sub> layer,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.
53. V. Khandelwal, and **X. Li**, “Ga<sub>2</sub>O<sub>3</sub> NMOS Inverter Integrated Circuit based on Monolithic Integration of Depletion and Enhancement Mode Ga<sub>2</sub>O<sub>3</sub> Thin Film Transistor,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.
54. V. Khandelwal, and **X. Li**, “Enhancement-mode  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> thin-film transistor epitaxially grown on heterogeneous sapphire substrate,” International Workshop on Gallium Oxide and Related Materials (IWGO), Nagano, Japan, October 2022.

55. **(Late breaking news)** Z. Liu and X. Li, “Effect of AlN strain compensation layer on InGaN quantum well red light emitting diodes beyond epitaxy,” International Workshop on Nitride Semiconductors (IWN), Berlin, Germany, October 2022.
56. C.-H. Liao, and X. Li, “Aluminum self-catalyst growth of AlN nanorods by high-temperature MOCVD,” International Workshop on Nitride Semiconductors (IWN), Berlin, Germany, October 2022.
57. C.-H. Liao, and X. Li, “Monolithic growth of 11.5  $\mu\text{m}$  thick crack-free wurtzite and zinc-blende phase AlN on Si (111) by MOCVD,” International Workshop on Nitride Semiconductors (IWN), Berlin, Germany, October 2022.
58. Y. Lu, and X. Li, “Monolithic Integration of Deep Ultraviolet and Visible LEDs for Radiative Sterilization Applications,” International Workshop on Nitride Semiconductors (IWN), Berlin, Germany, October 2022.
59. F. AlQatari, and X. Li, “Band Alignment of B<sub>GaN</sub> Films with AlN and GaN Using a Novel Statistical Method,” International Workshop on Nitride Semiconductors (IWN), Berlin, Germany, October 2022.
60. V. Khandelwal, and X. Li, “Elastic constants of emerging BAlN and B<sub>GaN</sub> ultrawide bandgap semiconductors,” International Workshop on Nitride Semiconductors (IWN), Berlin, Germany, October 2022.
61. C. Wang, and X. Li, “Role of surface oxide of III-Nitride on the performance of GaN HEMTs,” International Workshop on Nitride Semiconductors (IWN), Berlin, Germany, October 2022.
62. F. AlQatari, and X. Li, “MOCVD Growth of High Boron Composition B<sub>GaN</sub>,” International Workshop on Nitride Semiconductors (IWN), Berlin, Germany, October 2022.
63. R. Liu, Z. Liu, and X. Li, “Machine learning design for UVC light-emitting diodes by stacked XGBoost/LightGBM,” International Workshop on Nitride Semiconductors (IWN), Berlin, Germany, October 2022.
64. **(Late breaking news)** F. Alqatari, Che-Hao Liao, and X. Li, “MOCVD Growth of High Boron Composition B<sub>GaN</sub> and its Band Alignment with AlN and GaN Using XPS,” International Conference of Metalorganic Vapor Phase Epitaxy (ICMOVPE), Fellbach, Germany, July 2022.
65. C.-H. Liao and X. Li, “AlN nanorods growth with aluminum self-catalyst by high-temperature metalorganic vapor-phase epitaxy,” International Conference of Metalorganic Vapor Phase Epitaxy (ICMOVPE), Fellbach, Germany, July 2022.
66. F. Alqatari and X. Li, “MOCVD Growth of High Boron Composition B<sub>GaN</sub> and its Band Alignment with AlN and GaN Using XPS,” Compound Semiconductor Week (CSW), Ann Arbor, MI, United States, June 2022.
67. V. Khandelwal and X. Li, “Elastic constants of emerging BAlN and B<sub>GaN</sub> ultrawide bandgap semiconductors,” Compound Semiconductor Week (CSW), Ann Arbor, MI, United States, June 2022.
68. Y. Lu and X. Li, “Flexible Ga<sub>2</sub>O<sub>3</sub> electronics: from Vdw epitaxial film to photodetector and thin film transistor,” Compound Semiconductor Week (CSW), Ann Arbor, MI, United States, June 2022.
69. C.-H. Liao and X. Li, “Bandgap tunable  $\beta$ -(AlGa)<sub>2</sub>O<sub>3</sub> thin films and elucidation of the Thermal Interdiffusion Alloying (TIA) mechanism,” Compound Semiconductor Week (CSW), Ann Arbor, MI, United States, June 2022.
70. S. Krishna and X. Li, “Band alignment and electronic properties of orthorhombic Ga<sub>2</sub>O<sub>3</sub> with GaN and AlN semiconductors,” Compound Semiconductor Week (CSW), Ann Arbor, MI, United States, June 2022.
71. N. Xiao and X. Li, “Grain size variation of ultrawide bandgap indium oxide thin films on silicon substrates by chemical solution deposition,” Compound Semiconductor Week (CSW), Ann Arbor, MI, United States, June 2022.

72. C. Wang and X. Li, “Interfacial charges of Al<sub>2</sub>O<sub>3</sub>/Si and Al<sub>2</sub>O<sub>3</sub>/GaN heterojunctions,” Compound Semiconductor Week (CSW), Ann Arbor, MI, United States, June 2022.
73. **(Keynote Talk)** X. Li, “UWBG semiconductor materials and devices,” Symposium on Advances in Device Concepts & Applications, King Fahd University of Petroleum and Minerals (KFUPM), Saudi Arabia, March 2022.
74. **(Invited Talk)** X. Li, “UWBG semiconductor materials and devices,” International Conference on Mobile and Embedded Technology (MECON), Amity University, India, March 2022.
75. **(Invited Talk)** X. Li, “Wide bandgap semiconductor research,” International Workshop on the Physics of Semiconductor Devices (IWPSD), Kolkata, India, December 2021.
76. **(Invited Talk)** X. Li, “Flexible Ga<sub>2</sub>O<sub>3</sub> electronics,” National Wide Bandgap Material Conference, Xiamen, China, October 2021.
77. **(Invited Talk)** X. Li, “Ultrawide bandgap semiconductor research,” Huawei Sakura Summit, Japan, July 2021.
78. **(Invited Talk)** X. Li, “Wide bandgap semiconductor optoelectronics,” The 5th International Conference on Optoelectronic and Microelectronic Technology and Application, Shenzhen, China, May 2021.
79. **(Invited Talk)** X. Li, “Wide and ultrawide bandgap semiconductor research,” KAUST-Huawei Online Workshop, December 2020.
80. **(Invited Talk)** X. Li, “UV LED, laser, and photodetector research and applications,” International Conference on Emerging Electronics (ICEE), Bangalore, India, November 2020.
81. Z. Liu, Y. Lu, Y. Wang, R. Lin, C. Xiong, X. Li, “Engineering of heterointerface polarization for high-efficiency AlGaIn-based UV LED,” IEEE Photonics Conference (Online), Sept 2020.
82. Y. Lu, C. Wang, V. P. de Oliveira, Z. Liu, X. Li, “Ultraviolet Light-emitting Diodes with Buried Tunneling Junction,” IEEE Photonics Conference (Online), Sept 2020.
83. R. Lin, Z. Alnakhli, F. AlQatari, X. Li, “Inverse design of plasmonic metasurfaces by convolutional neural network,” IEEE Photonics Conference (Online), Sept 2020.
84. **(Invited Talk)** X. Li, “The 3<sup>rd</sup> generation semiconductor: from epitaxy, materials, devices, to artificial intelligence,” Zolix Optoelectronics Workshop, Beijing, China, Jun 2020.
85. **(Invited Talk)** X. Li, “BAlN and BGaN: emerging III-nitride semiconductors,” The 12th International Symposium on Semiconductor Light Emitting Devices (ISSLED), Magdeburg, Germany, Summer 2020.
86. R. Lin and X. Li, “High accuracy inverse design in nanophotonics by convolutional neural network,” SPIE Photonics West, San Francisco, CA, United States, Feb 2020.
87. W. Gu, Y. Lu, R. Lin, W. Guo, J. Yan, J. Wang, J. Li, and X. Li, “High-performance UV LED with an undoped BAlN EBL,” SPIE Photonics West, San Francisco, CA, United States, Feb 2020.
88. R. Lin, P. Han, Y. Wang, C. Xiong, and X. Li, “Low resistance UV-LED tunnel junction design based on machine learning,” SPIE Photonics West, San Francisco, CA, United States, Feb 2020.
89. T. B. Tran, F. AlQatari, and X. Li, “Characterizations of BAlN films with various boron contents,” SPIE Photonics West, San Francisco, CA, United States, Feb 2020.
90. R. Lin, X. Liu, K. Liu, Y. Lu, X. Liu, and X. Li, “AlGaIn/GaN heterostructure field-effect transistor with BAlN interlayer,” SPIE Photonics West, San Francisco, CA, United States, Feb 2020.
91. Y. Lu, H.-H. Yao, and X. Li, “AlN/ $\beta$ -Ga<sub>2</sub>O<sub>3</sub>-based HEMT for high-power devices,” SPIE Photonics West, San Francisco, CA, United States, Feb 2020.
92. C.-H. Liao, Y. Banda, Gaia Da Prato, K.-H. Li, and X. Li, “ $\beta$ -(AlGa)<sub>2</sub>O<sub>3</sub> solar-blind photodetector fabricated by high temperature driven interdiffusion method,” SPIE Photonics West, San Francisco, CA, United States, Feb 2020.

93. C. Xiong, Y. Lu, D. Qu, X. Zhang, R. Lin, and X. Li, “Quantum-well design of deep-UV LEDs and lasers using machine learning for optical sensing and metrology,” SPIE Photonics West, San Francisco, CA, United States, Feb 2020.
94. Y. Lu, Z. Ren, H.-H. Yao, C.-H. Liao, and X. Li, “Electron-blocking-layer-free deep ultraviolet light-emitting diode,” SPIE Photonics West, San Francisco, CA, United States, Feb 2020.
95. **(Invited Tutorial)** X. Li, “Polarization Theory and Applications of III-nitride semiconductor,” International Workshop on the Physics of Semiconductor Devices (IWPSD), Kolkata, India, December 2019.
96. **(Invited Talk)** X. Li, “What happens when III-polar and N-polar III-nitride structures are side by side,” International Workshop on the Physics of Semiconductor Devices (IWPSD), Kolkata, India, December 2019.
97. F. AlQatari, M. Sajjad, R. Lin, K.-H. Li, U. Schwingenschlög, X. Li, “BAlN and B GaN for Lattice-Matched UV Optical Structures,” International Workshop on Ultraviolet Materials and Devices (IWUMD), St. Petersburg, Russia, September 2019.
98. T. B. Tran, H.-L. Che, F. AlQatari, X. Li, “Exceed 20% Boron of Single-Phase Wurtzite in BAlN Film Grown Using MOCVD,” International Workshop on Ultraviolet Materials and Devices (IWUMD), St. Petersburg, Russia, September 2019.
99. **(Invited Talk)** X. Li, “Semiconductor deep UV laser, LED, and design software,” Workshop on the Third-generation Semiconductor Technologies and Applications, Ezhou, Hubei, China, June 2019.
100. **(Plenary Talk)** X. Li, “Semiconductor deep UV laser, LED, and design software,” China (Changzhi) International UV LED Conference (CULCON), Changzhi, Shan’xi, China, May 2019.
101. **(Invited Talk)** C. G. Torres-Castanedo, K.-H. Li, L. Braic, M. N. Hedhili, H. Sun, and X. Li, “Determination of band offsets of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub>/FTO heterojunction,” SPIE Photonics West, San Francisco, CA, United States, Feb 2019.
102. N. Alfaraj, K.-H. Li, C. H. Kang, D. Priante, L. Braic, Z. Guo, T. K. Ng, X. Li, and B. Ooi. “Electrical Characterization of Solar-Blind Deep-Ultraviolet (Al<sub>0.28</sub>Ga<sub>0.72</sub>)<sub>2</sub>O<sub>3</sub> Schottky Photodetectors Grown on Silicon by Pulsed Laser Deposition,” in Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2019, San Jose, CA, United States, May 2019.
103. **(Invited Talk)** C. G. Torres-Castanedo, K.-H. Li, L. Braic, M. N. Hedhili, H. Sun, and X. Li, “Determination of band offsets of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub>/FTO heterojunction,” SPIE Photonics West, San Francisco, CA, United States, Feb 2019.
104. C.-H. Liao, K.-H. Li, C. G. Torres-Castanedo, G. Zhang, and X. Li, “Ultra-high temperature annealing of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> thin film,” SPIE Photonics West, San Francisco, CA, United States, Feb 2019.
105. C.-H. Liao, F. AlQatari, and X. Li, “Energy bandgap versus lattice constant and direct-to-indirect bandgap transitions in born III-nitride alloys,” SPIE Photonics West, San Francisco, CA, United States, Feb 2019.
106. H. Sun, D. Priante, J.-W. Min, R. Lin, K.-H. Li, T. K. Ng, B. S. Ooi, and X. Li, “Graded-index separate confinement heterostructure AlGa<sub>N</sub> nanowires: towards ultraviolet laser-diode implementation,” SPIE Photonics West, San Francisco, CA, United States, Feb 2019.
107. H. Sun, B. Janjua, R. Lin, K.-H. Li, M. K. Shakfa, T. K. Ng, B. S. Ooi, and X. Li, “Surface-passivated AlGa<sub>N</sub> nanowires for enhanced luminescence of ultraviolet light-emitting diodes on metals,” SPIE Photonics West, San Francisco, CA, United States, Feb 2019.
108. H. Sun, C. H. Liao, R. Lin, K. H. Li, Y. J. Park, T. Detchprohm, R. D. Dupuis, and X. Li, “Emerging BAlN/Al<sub>x</sub>Ga<sub>1-x</sub>N heterostructures for ultraviolet emitters and power electronic devices,” SPIE Photonics West, San Francisco, CA, United States, Feb 2019.

109. Y. Lu, H.-H. Yao, Z. Ren, H. Sun, C.-H. Liao, and X. Li, "Electron-blocking-layer-free DUV-LED with linearly graded AlGa<sub>N</sub> quantum barriers," SPIE Photonics West, San Francisco, CA, United States, Feb 2019.
110. H.-H. Yao, Y. Lu, K.-H. Li, F. AlQatari, C.-H. Liao, and X. Li, "Polarization matched c-plane III-nitride quantum wells structure," SPIE Photonics West, San Francisco, CA, United States, Feb 2019.
111. **(Invited Talk)** X. Li, "Emerging ultrawide bandgap materials and devices for optoelectronics and power electronics," International Conference on Emerging Electronics (ICEE), Bangalore, India, December 2018.
112. **(Invited Talk)** X. Li, "Research of emerging ultrawide bandgap semiconductor materials and UV devices," International Workshop on Ultraviolet Materials and Devices (IWUMD), Kunming, China, December 2018.
113. **(Late News)** K. Liu and X. Li, "III-nitride polarization toolbox," International Workshop on Nitride Semiconductors (IWN), Kanazawa, Japan, November 2018.
114. N. Susilo, M. Schilling, M. Narodovitch, X. Li, B. Witzigmann, J. Enslin, M. Guttmann, M. Rychetsky, I. Koslow, T. Wernicke, T. Niermann., M. Lehmann, and M. Kneissl, "Polarization fields in c-plane GaN/Al<sub>x</sub>Ga<sub>1-x</sub>N/GaN quantum wells determined by capacitance-voltage-measurements," International Workshop on Nitride Semiconductors (IWN), Kanazawa, Japan, November 2018.
115. H. Sun, B. Ooi, and X. Li, "Efficient AlGa<sub>N</sub> nanowires UVLEDs on metal grown by molecular beam epitaxy," International Conference on Molecular Beam Epitaxy, Shanghai, September 2018.
116. **(Invited Talk)** X. Li, "Research of emerging wide-bandgap semiconductor materials and devices," National MOCVD Conference of China, Jinggangshan, China, August 2018.
117. H. Sun, Y. J. Park, T. Detchprohm, R. D. Dupuis, and X. Li, "Tuning the growth of AlN epilayers on Al<sub>2</sub>O<sub>3</sub> via TMAI preflow by MOCVD," International Symposium on Growth of III-nitrides (ISGN-7), Warsaw, Poland, August 2018.
118. H. Sun, Y. J. Park, T. Detchprohm, R. D. Dupuis, and X. Li, "Novel BAlN/Al<sub>x</sub>Ga<sub>1-x</sub>N heterostructures for optical and power devices," International Symposium on Growth of III-nitrides (ISGN-7), Warsaw, Poland, August 2018.
119. **(Invited Talk)** X. Li, "Significantly enhanced performance for AlGa<sub>N</sub> UV LED by employing a thin BAlN electron blocking layer," International Symposium on Growth of III-nitrides (ISGN-7), Warsaw, Poland, August 2018.
120. F. S. Alqatari, K.-H. Li, K. Liu, and X. Li, "Refractive Indices of BAlN and BGa<sub>N</sub> Alloys from First-Principle Calculations," 60th Electronic Material Conference (EMC), Santa Barbara, CA, United States, June 2018.
121. H. Sun, K. Liu, M. Zhang, F. S. Alqatari, and X. Li, "Wurtzite B<sub>x</sub>Al<sub>1-x</sub>N and B<sub>x</sub>Ga<sub>1-x</sub>N Heterointerface for Optical and Power Electronics," 60th Electronic Material Conference (EMC), Santa Barbara, CA, United States, June 2018.
122. H. Sun, B. Janjua, M. M. Muhammed, M. K. Shakfa, K.-H. Li, R. Lin, T. K. Ng, I. Roqan, B. S. Ooi, and X. Li, "Droop-Free AlGa<sub>N</sub> Nanowires Ultraviolet Light Emitting Diodes on Metal," 60th Electronic Material Conference (EMC), Santa Barbara, CA, United States, June 2018.
123. R. Lin and X. Li, "Structure Optimization and Light Extraction Efficiency Enhancement of Deep Ultraviolet Nanowire Light Emitting Diode," 60th Electronic Material Conference (EMC), Santa Barbara, CA, United States, June 2018.
124. R. Lin, H. Sun, Y. Hu, and X. Li, "Structure Optimization and Light Extraction Efficiency Enhancement of Deep Ultraviolet Nanowire Light Emitting Diode," 60th Electronic Material Conference (EMC), Santa Barbara, CA, United States, June 2018.

125. H. Sun, K.-H. Li, C. G. Torres Castanedo, S. Okur, G. Tompa, T. Salagaj, and **X. Li**, " Tuning the Phases of MOCVD-Grown Ga<sub>2</sub>O<sub>3</sub> Films," 60th Electronic Material Conference (EMC), Santa Barbara, CA, United States, June 2018.
126. H. Sun, K.-H. Li, Y. J. Park, T. Detchprohm, R. D. Dupuis, and **X. Li**, "Tuning the growth mode and polarity of AlN films via TMAI preflow of Al<sub>2</sub>O<sub>3</sub>," International Conference on Metalorganic Vapor Phase Deposition (ICMOVPE), Nara, Japan, June 2018.
127. H. Sun, K.-H. Li, Y. J. Park, T. Detchprohm, R. D. Dupuis, and **X. Li**, "Revealing Microstructure and Band Offsets of BAlN/AlGa<sub>N</sub> Heterostructures," International Conference on Metalorganic Vapor Phase Deposition (ICMOVPE), Nara, Japan, June 2018.
128. K.-H. Li, H. Sun, C. T. Castanedo, C.-H. Liao, S. Okur, T. Salagaj, A. Feldman, G. Provost, G. Tompa, and **X. Li**, "Temperature-dependent Ga<sub>2</sub>O<sub>3</sub> Growth on Sapphire by MOCVD," International Conference on Metalorganic Vapor Phase Deposition (ICMOVPE), Nara, Japan, June 2018.
129. K.-H. Li, H. Sun, C.-H. Liao, H.-H. Yao, W. Holder, A. Feldman, T. Salagaj, G. Provost, G. Tompa, and **X. Li**, "Extreme-high-temperature MOVPE Design and Practice for Nitrides," International Conference on Metalorganic Vapor Phase Deposition (ICMOVPE), Nara, Japan, June 2018.
130. **(Plenary Talk) X. Li**, "Material, physics, device, and equipment research for emerging semiconductor technologies," International Conference on Metalorganic Vapor Phase Deposition (ICMOVPE), Nara, Japan, June 2018.
131. H. Sun, K.-H. Li, Y. J. Park, T. Detchprohm, R. D. Dupuis, and **X. Li**, "MOCVD-grown BAlN-contained Heterojunctions," Compound Semiconductor Week (CSW), Boston, United States, June 2018.
132. H. Sun, K.-H. Li, C. T. Castanedo, S. Okur, T. Salagaj, G. Tompa, and **X. Li**, "Phase Change of Ga<sub>2</sub>O<sub>3</sub> Films Grown by HCl-Enhanced MOCVD," Compound Semiconductor Week (CSW), Boston, United States, June 2018.
133. K.-H. Li, H. Sun, C. T. Castanedo, C.-H. Liao, S. Okur, T. Salagaj, A. Feldman, G. Provost, G. Tompa, and **X. Li**, "Temperature-dependent Ga<sub>2</sub>O<sub>3</sub> Growth on Sapphire by MOCVD," Compound Semiconductor Week (CSW), Boston, United States, June 2018.
134. K.-H. Li, H. Sun, C.-H. Liao, H.-H. Yao, W. Holder, A. Feldman, T. Salagaj, G. Provost, G. Tompa, and **X. Li**, "Extreme-high-temperature MOVPE Design and Practice for Nitrides," Compound Semiconductor Week (CSW), Boston, United States, June 2018.
135. **(Invited Talk) X. Li**, "Beyond conventional III-nitride semiconductor," the 233<sup>rd</sup> Electrochemical Society (ECS) Meeting, Seattle, United States, May 2018.
136. **(Invited Talk) X. Li**, "AlN growth and AlGa<sub>N</sub> deep UV lasers on sapphire," XIX International Workshop on the Physics of Semiconductor Devices (IWPSD), Delhi, India, December 2017.
137. R. Lin, H. Sun, and **X. Li**, "Stealthy Hyperuniform Disordered Structure for III-N Random Laser Applications," MRS Fall Meeting, Boston, United States, December 2017.
138. R. Lin, H. Sun, S. V. Galan, Y. Hu, and **X. Li**, "Structure Optimization for Enhanced Light Extraction Efficiency of Deep Ultraviolet Nanowire Light Emitting Diode," MRS Fall Meeting, Boston, United States, December 2017.
139. H. Sun, Y. J. Park, T. Detchprohm, R. D. Dupuis, and **X. Li**, "Band Alignment of BAlN/AlGa<sub>N</sub> Heterojunction for Ultraviolet Emitter Applications," MRS Fall Meeting, Boston, United States, December 2017.
140. H. Sun, M. Zhang, and **X. Li**, "Structural and Electronic Properties of Wurtzite B<sub>x</sub>Al<sub>1-x</sub>N from First-Principles Calculations," MRS Fall Meeting, Boston, United States, December 2017.
141. **(Invited Talk) X. Li**, "Latest progress on B-III-N alloy & impact of TMA preflow on AlN MOVPE," International Workshop on UV Materials and Devices (IWUMD-2017), Fukuoka, Japan, November 2017.

142. **(Invited Talk) X. Li**, "AlGa<sub>N</sub> deep UV lasers on sapphire and novel III-N materials," International Forum on Wide Bandgap Semiconductors (IFWS), Beijing, China, November 2017.
143. **(Invited Talk) X. Li**, "AlGa<sub>N</sub> and B-III-N materials for deep UV lasers," the 8th Asia-Pacific Workshop on Widegap Semiconductors (APWS), Qingdao, China, September 2017.
144. **(Invited Talk) X. Li**, "AlGa<sub>N</sub> deep UV lasers and BAlN alloys," National Wide Bandgap Material Conference, Xining, China, August 2017.
145. **(Invited Talk) X. Li**, "Research on AlGa<sub>N</sub> deep UV lasers and B-III-N alloys," SPIE Optics + Photonics, San Diego, CA, United States, August 2017.
146. K.-H. Li, H. Alotaibi, and **X. Li**, "High temperature OMVPE reactor with reduced premature reaction and improved heating efficiency," 21st American Conference on Crystal Growth and Epitaxy (ACCGE-21) and 18th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-18), Santa Fe, New Mexico, USA, July 2017.
147. K.-H. Li, H. Alotaibi, and **X. Li**, "Temperature uniformity of induction-heated OMVPE susceptors at high temperature," 21st American Conference on Crystal Growth and Epitaxy (ACCGE-21) and 18th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-18), Santa Fe, New Mexico, USA, July 2017.
148. H. Sun, F. Wu, T. M. Al tahtamouni, N. Alfaraj, T. Detchprohm, R. D. Dupuis, and **X. Li**, "Study of TMAI-induced carbon impurity on AlN film polarity and growth mode on sapphire," 12th International Conference on Nitride Semiconductors (ICNS-12), Strasbourg, France, July 2017.
149. S. Wang, **X. Li**, A. M. Fischer, T. Detchprohm, R. D. Dupuis, and F. A. Ponce, "Crystal structure of BAlN thin films: effect of boron concentration in the gas flow," 12th International Conference on Nitride Semiconductors (ICNS-12), Strasbourg, France, July 2017.
150. N. Alfaraj, S. Mitra, F. Wu, I. A. Ajia, B. Janjua, A. Prabaswara, R. A. Aljefri, H. Sun, T. K. Ng, B. S. Ooi, I. S. Roqan, and **X. Li**, "Modeling and investigation of photoinduced entropy of InGa<sub>N</sub>/Ga<sub>N</sub> p-i-n double-heterostructure nanowires," 12th International Conference on Nitride Semiconductors (ICNS-12), Strasbourg, France, July 2017.
151. H. Sun, F. Wu, T. M. Al tahtamouni, N. Alfaraj, T. Detchprohm, R. D. Dupuis, and **X. Li**, "Structural Properties and Growth Modes of MOCVD-Grown AlN with TMAI Pretreatment of Sapphire Substrate," 59th Electronic Material Conference (EMC), South Bend, IN, United States, June 2017.
152. H. Sun, F. Wu, T. M. Al tahtamouni, D. H. Anjum, N. Alfaraj, T. Detchprohm, R. D. Dupuis, and **X. Li**, "Investigation of Microstructure, Strain and Defect of BAlN/Al(Ga)N Heterostructures," 59th Electronic Material Conference (EMC), South Bend, IN, United States, June 2017.
153. N. Alfaraj, S. Mitra, F. Wu, I. A. Ajia, B. Janjua, A. Prabaswara, R. A. Aljefri, H. Sun, T. K. Ng, B. S. Ooi, I. S. Roqan, and **X. Li**, "Photoinduced thermodynamic behavior in InGa<sub>N</sub>/Ga<sub>N</sub> double-heterostructure nanowires," 59th Electronic Material Conference (EMC), South Bend, IN, United States, June 2017.
154. **(Invited Talk) X. Li**, "AlGa<sub>N</sub> Deep UV Lasers and B-III-N Alloys," 9th International Conference on Materials for Advanced Technologies (ICMAT 2017), Singapore, June 2017.
155. H. Sun, F. Wu, Y. J. Park, T. M. Al tahtamouni, N. Alfaraj, T. Detchprohm, R. D. Dupuis, and **X. Li**, "Control of polarity, crystal quality and growth mode of AlN films by MOCVD," 17th European Workshop on Metal-Organic Vapour Phase Epitaxy (EW-MOVPE 17), Grenoble, France, June 2017.
156. H. Sun, F. Wu, T. M. Al tahtamouni, N. Alfaraj, T. Detchprohm, R. D. Dupuis, and **X. Li**, "Structural characterizations of high B-content BAlN/Al(Ga)N heterostructures grown by MOCVD," 17th European Workshop on Metal-Organic Vapour Phase Epitaxy (EW-MOVPE 17), Grenoble, France, June 2017.

157. K.-H. Li, H. S. Alotaibi, and **X. Li**, "A study of thermal uniformity on induction-heated susceptor for MOCVD," 17th European Workshop on Metal-Organic Vapour Phase Epitaxy (EW-MOVPE 17), Grenoble, France, June 2017.
158. K.-H. Li, H. S. Alotaibi, and **X. Li**, " High-temperature MOCVD reactor design," 17th European Workshop on Metal-Organic Vapour Phase Epitaxy (EW-MOVPE 17), Grenoble, France, June 2017.
159. **(Invited Talk) X. Li**, "III-nitride deep UV materials and devices," KAUST-NSF Conference on Electronic Materials, Devices and Systems, Thuwal, KAUST, Saudi Arabia, January 2017.
160. **(Invited Talk) X. Li**, "Collaboration opportunities in III-nitride materials and devices," KACST-CNRS Workshop, Riyadh, Saudi Arabia, November 2016.
161. F. Wu, J. Dai, Z. C. Feng, C. Chen, and **X. Li**, "Significant internal quantum efficiency enhancement of GaN/AlGaIn multiple quantum wells emitting at ~350 nm," International Workshop on Nitride Semiconductors (IWN 2016), Orlando, FL, United States, October 2016.
162. **X. Li**, S. Wang, H. Liu, F. A. Ponce, T. Detchprohm, and R. D. Dupuis, "100-nm Thick Single-Phase Wurtzite BAlN with B Contents up to 14.4% Grown by MOCVD," International Workshop on Nitride Semiconductors (IWN 2016), Orlando, FL, United States, October 2016.
163. N. Alfaraj, R. Aljefri, M. Baier, D. Priante, B. Janjua, A. Prabaswara, T. K. Ng, B. S. Ooi, F. Laquai, and **X. Li**, "Effective surface passivation of InGaIn/GaIn nanowires studied by photoluminescence and photothermal deflection spectroscopy," International Workshop on Nitride Semiconductors (IWN 2016), Orlando, FL, United States, October 2016.
164. **(Invited Talk) X. Li**, "AlGaIn Deep UV Lasers on Sapphire Substrates Grown by MOCVD," International Workshop on UV Materials and Devices (IWUMD), Beijing, China, July 2016.
165. **(Late News) K. H. Li\***, N. Alfaraj\*, M. S. Alias\*, T. K. Ng, B. S. Ooi, T. Detchprohm, R. D. Dupuis, and **X. Li**, "Refractive index measurement of single-crystalline wurtzite BAlN with Boron contents up to 11.6%," 2016 International Conference on Metalorganic Vapor Phase Deposition (ICMOVPE), San Diego, CA, United States, July 2016.
166. **X. Li**, S. Wang, H. Liu, F. A. Ponce, T. Detchprohm, and R. D. Dupuis, "100-nm Single-Phase Wurtzite BAlN with B Contents up to 7.2% Grown by MOVPE," International Conference on Metalorganic Vapor Phase Deposition (ICMOVPE), San Diego, USA, July 2016.
167. **(Late News) F. Wu**, J. Dai, Z. C. Feng, C. Chen, and **X. Li**, "Strong enhancement in internal quantum efficiency of GaN/AlGaIn multiple quantum wells emitting at ~350 nm," Electronic Material Conference (EMC), Newark, DE, United States, June 2016.
168. **X. Li**, S. Wang, H. Liu, F. A. Ponce, T. Detchprohm, and R. D. Dupuis, "Single-Phase Wurtzite BAlN with 7.2%-B Contents Grown by MOCVD," Electronic Material Conference (EMC), Newark, DE, United States, June 2016.
169. **X. Li**, S. Wang, H. Liu, F. A. Ponce, T. Detchprohm, and R. D. Dupuis, "Growth of single-phase wurtzite BAlN with relatively large thicknesses and high B contents by metalorganic chemical vapor deposition," in Proc. of the SPIE Photonics West 2016, Gallium Nitride Materials and Devices XI, San Francisco, CA, United States, Feb 2016.
170. **(Invited Talk) X. Li**, "III-nitride deep UV laser," KAUST-NSF Conference on Electronic Materials, Devices and Systems for a Sustainable Future, Thuwal, KAUST, Saudi Arabia, Mar 2016.

#### **Conference Publications before KAUST**

171. **(Invited Talk) X. Li**, T. Detchprohm, T. T. Kao, M. Satter, S. C. Shen, P. D. Yoder, R. D. Dupuis, S. Wang, Y. Wei, H. Xie, A. Fischer, F. A. Ponce, T. Wernicke, C. Reich, M. Martens, and M. Kneissl, "III-nitride deep UV laser on sapphire substrate," IEEE Photonics Conference, Reston, VA, United States, Oct 2015.

172. **(Invited Talk) X. Li**, T. Detchprohm, Y. S. Liu, R. D. Dupuis, T. T. Kao, Saniul Haq, S. C. Shen, K. Mehta, P. D. Yoder, S. Wang, Y. O. Wei, H. Xie, A. M. Fischer, F. A. Ponce, T. Wernicke, C. Reich, M. Martens, M. Kneissl, "Optically pumped low-threshold UV lasers," IEEE Summer Topicals Meeting Series (SUM), Nassau, Bahamas, July 2015.
173. **(Late News) X. Li**, S. Wang, H. Liu, F. A. Ponce, T. Detchprohm, and R. D. Dupuis, "High quality wurtzite BAlN with high B content by metalorganic chemical vapor deposition," Electronic Material Conference (EMC), Columbus, OH, United States, June 2015.
174. **(Invited Talk) X. Li**, T. Detchprohm, Y. S. Liu, T. T. Kao, S. C. Shen, M. Satter, P. D. Yoder, S. Wang, Y. Wei, H. Xie, A. Fischer, F. A. Ponce, T. Wernicke, C. Reich, M. Martens, M. Kneissl, and R. D. Dupuis, "Optically-pumped low-threshold Deep UV Lasers Grown on Sapphire Substrates," SPIE Photonics West, San Francisco, CA, United States, Feb 2015.
175. **X. Li**, T. Detchprohm, Y. S. Liu, T. T. Kao, M. Satter, S. C. Shen, P. D. Yoder, S. Wang, Y. Wei, H. Xie, A. Fischer, F. A. Ponce, and R. D. Dupuis, "Low-threshold stimulated emission from AlGa<sub>N</sub>-based lasers grown on sapphire substrates," Materials Research Society (MRS) Fall Meeting, Boston, MA, United States, Nov-Dec 2014.
176. **(Invited Talk) X. Li**, Y. S. Liu, T. Detchprohm, T. T. Kao, S. C. Shen, M. Satter, P. D. Yoder, S. Wang, Y. Wei, H. Xie, A. Fischer, F. A. Ponce, T. Wernicke, C. Reich, M. Martens, M. Kneissl, and R. D. Dupuis, "Low-threshold Deep UV Lasers Grown on Sapphire Substrates," International Workshop on Nitride Semiconductors (IWN), Warsaw, Poland, August 2014.
177. J. D. Justice, **X. Li**, T. Detchprohm, R. D. Dupuis, H. Kim, J. M. Zuo, Z. Lin, and Y. H. Zhang, "Properties of InAs/InAsSb Type-II superlattices Grown on GaSb by MOCVD," International Conference on Metalorganic Vapor Phase Deposition (ICMOVPE), Lausanne, Switzerland, July 2014.
178. **(Late News) X. Li**, T. Detchprohm, Y. S. Liu, R. D. Dupuis, T. T. Kao, S. C. Shen, M. Satter, P. D. Yoder, S. Wang, Y. Wei, H. Xie, A. Fischer, F. A. Ponce, T. Wernicke, C. Reich, M. Martens, and M. Kneissl, "Low-threshold Deep UV Lasers Grown on Sapphire Substrates," International Workshop on Nitride Semiconductors (IWN), Wroclaw, Poland, Aug 2014.
179. **X. Li**, T. Detchprohm, Y. S. Liu, T. T. Kao, M. Satter, S. C. Shen, P. D. Yoder, S. Wang, Y. Wei, H. Xie, A. Fischer, and F. A. Ponce, and R. D. Dupuis, "High Quality AlN/Sapphire Template Grown by Relatively Low-Temperature Metalorganic-Chemical-Vapor Deposition," International Workshop on Nitride Semiconductors (IWN), Wroclaw, Poland, Aug 2014.
180. **(Late News) X. Li**, T. Detchprohm, Y. S. Liu, T. T. Kao, M. Satter, S. C. Shen, P. D. Yoder, S. Wang, Y. Wei, H. Xie, A. Fischer, F. A. Ponce, and R. D. Dupuis, "Room-temperature low-threshold deep-ultraviolet stimulated emission from AlGa<sub>N</sub> heterostructures grown on sapphire substrates," OptoElectronics and Communications Conference and Australian Conference on Optical Fibre Technology (OECC/ACOFT), Melbourne, Australia, July 2014.
181. **(Late News) X. Li**, T. Detchprohm, Y. S. Liu, T. T. Kao, M. Satter, S. C. Shen, P. D. Yoder, S. Wang, Y. Wei, H. Xie, A. Fischer, F. A. Ponce, and R. D. Dupuis, "Low-threshold stimulated emission at 239nm-270nm from AlGa<sub>N</sub>-based multiple-quantum-well lasers grown on sapphire substrates at room temperature," International Conference on Metalorganic Vapor Phase Deposition (ICMOVPE), Lausanne, Switzerland, July 2014.
182. **X. Li**, T. Detchprohm, Y. S. Liu, T. T. Kao, M. Satter, S. C. Shen, P. D. Yoder, S. Wang, Y. Wei, H. Xie, A. Fischer, F. A. Ponce, and R. D. Dupuis, "Growth of High Quality AlN/Sapphire Template Low-Temperature Metalorganic-Chemical-Vapor Deposition," International Conference on Metalorganic Vapor Phase Deposition (ICMOVPE), Lausanne, Switzerland, July 2014.

183. **X. Li**, T. Detchprohm, Y. S. Liu, and R. D. Dupuis, "High Quality AlN/Sapphire Template Grown by Low-Temperature Metalorganic-Chemical-Vapor Deposition," The 5th International Symposium on Growth of III-Nitrides (ISGN-5), Atlanta, GA, United States, May 2014.
184. Y. S. Liu, T. T. Kao, M. Satter, **X. Li**, S.-C. Shen, P. D. Yoder, T. Detchprohm, Y. Wei, H. Xie, A. Fischer, F. A. Ponce, and R. D. Dupuis, "Optically Pumped AlGa<sub>N</sub>-Based Ultraviolet Laser Grown by Metalorganic Chemical Vapor Deposition with Distributed Bragg Reflector Facet Coating," International Conference on Metalorganic Vapor Phase Deposition (ICMOVPE), Lausanne, Switzerland, July 2014.
185. Y. S. Liu, T. T. Kao, Z. Lochner, **X. Li**, M. Satter, S.-C. Shen, P. D. Yoder, T. Detchprohm and R. D. Dupuis, "Optically pumped deep-ultraviolet AlGa<sub>N</sub> multi-quantum-well lasers grown by metalorganic chemical vapor deposition," presented in SPIE Photonics West, San Francisco, CA, United States, February 2014.
186. Y. S. Liu, T. T. Kao, Z. Lochner, **X. Li**, M. Satter, J.-H. Ryou, S.-C. Shen, P.D. Yoder, T. Detchprohm, R. D. Dupuis, Y. Wei, H. Xie, A. Fischer, and F. Ponce, "Low-threshold optically pumped AlGa<sub>N</sub> based Deep-ultraviolet multi-quantum-well laser grown by MOCVD on AlN substrates," presented in the 10th International Conference on Nitride Semiconductors, Washington, D.C., August 2013.
187. Z. Lochner, T. T. Kao, Y. S. Liu, **X. Li**, M. M. Satter, S. C. Shen, P. D. Yoder, J. H. Ryou, R. D. Dupuis, Y. Wei, H. Xie, A. Fische, and F A. Ponce, "Optically pumped AlGa<sub>N</sub> quantum-well lasers at ~243.5 nm grown by MOCVD on AlN substrates," E-MRS 2013 Spring Meeting, Strasbourg, France, May 2013.
188. **X. Li**, Z. Lochner, Y. S. Liu, T. T. Kao, M. Satter, J. H. Ryou, S. C. Shen, D. Yoder, R. D Dupuis, Y. Wei, H. Xie, A. Fischer, and F. Ponce, "Stimulated Emission at 256.1 nm with a Low Threshold Optical Pumping Power density from AlGa<sub>N</sub> Multiple Quantum Well grown at High Temperature on Sapphire," 10th International Conference on Nitride Semiconductors (ICNS), Washington, D.C., United States, August 2013.
189. Z. Lochner, **X. Li**, Y.-S. Liu, T.-T. Kao, M. Satter, J.-H. Ryou, S.-C. Shen, P.D. Yoder, T. Detchprohm, R. D. Dupuis, Y. Wei, H. Xie, A. Fischer, and F. Ponce, "Stimulated emission at 256.1 nm with a low threshold optical pumping power density from AlGa<sub>N</sub> multiple quantum well grown at high-temperature on sapphire," 10th International Conference on Nitride Semiconductors (ICNS), Washington, D.C., United States, August 2013.
190. **X. Li**, Z. Lochner, Y. S. Liu, T. T. Kao, M. Satter, J. H. Ryou, S. C. Shen, D. Yoder, R. D Dupuis, Y. Wei, H. Xie, A. Fischer, and F. Ponce, "Growth and Characterization of Al<sub>x</sub>Ga<sub>1-x</sub>N ( $x \geq 0.6$ ) on Sapphire Substrates using High Growth Temperature by Metalorganic Chemical Vapor Deposition," The 16th U.S. Biennial Workshop on Organometallic Vapor Phase Epitaxy, Keystone, CO, United States, July 2013.
191. **X. Li**, Z. Lochner, Y. S. Liu, T. T. Kao, M. Satter, J. H. Ryou, S. C. Shen, D. Yoder, R. D Dupuis, Y. Wei, H. Xie, A. Fischer, and F. Ponce, "Growth of High Al-Content AlGa<sub>N</sub> on AlN/ Sapphire Templates by High-Temperature Metalorganic-Chemical-Vapor Deposition," Electronic Material Conference, South Bend, IN, United States, June 2013.
192. R. D. Dupuis, Z. Lochner, **X. Li**, J.-H. Ryou, T. Kao, S.-C. Shen, P. D. Yoder, M. Satter, A. Fisher and F. Ponce, "Room-temperature optically pumped AlGa<sub>N</sub>/AlN multiple quantum well lasers operating at < 260 nm grown by metalorganic chemical vapor deposition," presented in the 2013 SPIE Photonics West Conference, San Francisco, CA, United States, February 2013.
193. Z. Lochner, **X. Li**, T. T. Kao, Y. S. Liu, M. M. Satter, S. C. Shen, P. D. Yoder, J. H. Ryou, R. D. Dupuis, Y. Wei, H. Xie, A. Fischer, and F A. Ponce, "Room-temperature optically pumped AlGa<sub>N</sub>-

- AlN multiple-quantum-well lasers operating at <260nm grown by metalorganic chemical vapor deposition,” in Proc. of the SPIE Photonics West 2010, Gallium Nitride Materials and Devices V, San Francisco, CA, United States, February 2013.
194. C. K. Tan, J. Zhang, **X. Li**, G. Y. Liu, and N. Tansu, “Dilute-As GaNAs Semiconductor for Visible Emitters,” Proc. of the IEEE Photonics Conference 2012, Burlingame, CA, United States, September 2012.
  195. Z. Lochner, **X. Li**, H. J. Kim, Y. Zhang, S. Choi, S. C. Shen, J. H. Ryou, and Russell D. Dupuis, “High Power and RF Characterizations of III-Nitride Heterojunction Bipolar Transistors on Free-Standing GaN Substrates,” Electronic Material Conference, State College, PA, United States, June 2012.
  196. W. Koo, W. Youn, **X. Li**, R. B. Song, N. Tansu, and F. So, “Light extraction from organic light emitting diodes by silica microsphere array pattern,” Proc. of the SPIE Optics + Photonics 2011, The 11th International Conference on Solid State Lighting, vol. 8115, paper 8115-57, San Diego, CA, United States, August 2011.
  197. W. Youn, W. Koo, **X. Li**, N. Tansu, and F. So, “Organic light emitting diodes with Silica/polystyrene diffraction grating for improved out-coupling efficiency,” Florida Energy Systems Consortium 2011, Gainesville, FL, United States, Sep 2011.
  198. **X. Li**, Y. K. Ee, R. Song, and N. Tansu, “Fabrication of Self-Assembled Silica / Polystyrene Microlens Arrays for Light Extraction Enhancement in Nitride Light-Emitting Diodes” in Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO), Baltimore, MD, United States, May 2011.
  199. **X. Li**, Y. K. Ee, R. Song, and N. Tansu, “Enhancement of light extraction efficiency of InGaN quantum wells light-emitting diodes using TiO<sub>2</sub> microsphere arrays” in Proc. of the SPIE Photonics West 2011, Light-Emitting Diodes: Materials, Devices, and Applications for Solid State Lighting XV, San Francisco, CA, United States, January 2011.
  200. **X. Li**, S. Dutta, T. Krentz, T. B. Kim, R. P. Vinci, N. Tansu and H. M. Chan, “MOCVD GaN Growth on Vermicular, Sol-Gel Derived Sapphire Coatings,” Molmat 2010, Montpellier, France, July 2010.
  201. **X. Li**, Y. K. Ee, G. Y. Liu, P. Kumnorkaew, J. F. Gilchrist, and N. Tansu, “MOCVD Epitaxy of GaN by Employing SiO<sub>2</sub> Colloidal Microsphere Templates,” in Proc. of the American Physical Society (APS) Annual March Meeting 2010, Portland, Oregon, United States, March 2010.
  202. Y. K. Ee, **X. Li**, J. Biser, W. Cao, H. M. Chan, R. P. Vinci, and N. Tansu, “Growth Evolution and Time-Resolved Measurements of III-Nitride Light-Emitting Diodes Grown by Abbreviated Growth Mode on Patterned AGOG Substrate,” in Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2010, San Jose, CA, United States, May 2010.
  203. **(Invited Talk)** H. P. Zhao, G. Y. Liu, **X. Li**, Y. K. Ee, H. Tong, J. Zhang, G. S. Huang, and N. Tansu, “Novel Growth and Device Concepts for High-Efficiency InGaN Quantum Wells Light-Emitting Diodes,” in Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2010, San Jose, CA, United States, May 2010.
  204. S. Dutta, T. Krentz, **X. Li**, T. B. Kim, R. P. Vinci, H. M. Chan, and N. Tansu, “Microstructural evolution of alumina sol-gel coatings on sapphire,” ACerS Sosman Award Symposium: Sol-Gel Fundamentals and Applications, Materials Science & Technology 2010, Houston, TX, United States, October 2010.
  205. **(Invited Talk)** N. Tansu, H. P. Zhao, G. Y. Liu, **X. Li**, J. Zhang, H. Tong, G. S. Huang, and Y. K. Ee, “Novel Device Concepts and Growths for High-Efficiency III-Nitride Light-Emitting Diodes,” in Proc. of the International Union of Materials Research Societies - International Conference on Electronic Materials (IUMRS-ICEM) 2010, Seoul, Korea, August 2010.

206. **(Invited Talk)** H. P. Zhao, J. Zhang, G. Y. Liu, **X. Li**, Y. K. Ee, H. Tong, T. Toma, G. S. Huang, and N. Tansu, “Approaches for High-Efficiency InGaN Quantum Wells Light-Emitting Diodes” in Proc. of the American Vacuum Society Meeting, Ann-Arbor, MI, United States, May 2010.
207. **(Invited Talk)** N. Tansu, H. Zhao, Y. K. Ee, G. Liu, **X. Li**, and G. S. Huang, “Novel Device Concept for High-Efficiency InGaN Quantum Wells Light-Emitting Diodes,” in Proc. of the SPIE Photonics West 2010, Gallium Nitride Materials and Devices V, San Francisco, CA, United States, January 2010.
208. **(Invited Talk)** N. Tansu, H. Zhao, Y. K. Ee, G. Liu, **X. Li**, J. Zhang, S. F. Zhang, and G. S. Huang, “Novel Growth and Device Concepts for High-Efficiency InGaN Quantum Wells Light-Emitting Diodes,” in Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2010, San Jose, CA, United States, May 2010.
209. **X. Li**, H. Tong, H. Zhao, and N. Tansu, “Band Structure Calculation of Dilute-As GaNAs by First Principle,” Proc. of the SPIE Photonics West (2010).
210. Y. K. Ee, **X. Li**, J. E. Biser, W. Cao, H. M. Chan, R. P. Vinci, and N. Tansu, “Reduced Dislocation Engineering and Improved Efficiency of III-Nitride Light Emitting Diodes Grown on Nano-Patterned Sapphire using Abbreviated GaN Metalorganic Vapor Phase Epitaxy Growth Mode,” in Proc. of the 14th Biennial Workshop on Organometallic Vapor Phase Epitaxy (OMVPE) 2009, Lake Geneva, WI, United States, August 2009.
211. H. Zhao, G. Liu, **X. Li**, G. S. Huang, S. Tafon Penn, V. Dierolf, and N. Tansu, “Staggered InGaN Quantum Wells Light-Emitting Diodes at 520-nm Employing Graded Temperature Growths,” in Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2009, Baltimore, MD, United States, May 2009.
212. H. Zhao, G. S. Huang, G. Liu, **X. Li**, J. D. Poplawsky, S. Tafon Penn, V. Dierolf, and N. Tansu, “Characteristics of Staggered InGaN Quantum Wells Light-Emitting Diodes Emitting at 480-525 nm,” in Proc. of the 67th IEEE Device Research Conference (DRC) 2009, University Park, PA, United States, June 2009.
213. **(Invited Talk)** N. Tansu, H. P. Zhao, R. A. Arif, Y. K. Ee, G. Y. Liu, **X. Li**, and G. S. Huang, “Polarization Engineering of InGaN-Based Nanostructures for Low-Threshold Diode Lasers and High-Efficiency Light Emitting Diodes,” Proc. of the IEEE Photonics Global 2008, Nanophotonics Symposium, Singapore, Republic of Singapore, December 2008.

### **Invited Seminars**

1. **X. Li**, Technical Seminar, Peking University, Beijing, China, July 2023.
2. **X. Li**, Technical Seminar, Hunan University, Changsha, China, July 2023.
3. **X. Li**, Technical Seminar, Central South University, Changsha, China, July 2023.
4. **X. Li**, Technical Seminar, Guangxi Univeristy, Nanning, China, July 2023.
5. **X. Li**, Technical Seminar, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia, November 2022.
6. **X. Li**, Technical Seminar, Indian Institute Technology Indore, Indore, India, January 2022.
7. **X. Li**, Technical Seminar, University of Illinois at Urbana-Champaign, IL, USA, November 2021.
8. **X. Li**, Technical Seminar, Georgia Institute of Technology, Georgia, GA, USA, September 2021.
9. **X. Li**, Technical Seminar, Hong Kong Research Center, Huawei, Hong Kong, China, April 2021.
10. **X. Li**, Technical Seminar, North Carolina State University, Raleigh, NC, USA, February 2021.
11. **X. Li**, Technical Seminar, University of Wisconsin Madison, Madison, WI, USA, February 2021.
12. **X. Li**, Technical Seminar, Georgia Institute of Technology, Georgia, GA, USA, November 2020.
13. **X. Li**, Technical Seminar, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia, November 2020.
14. **X. Li**, Technical Seminar, University of Houston, Houston, TX, USA, September 2020.

15. X. Li, Technical Seminar, Central South University, Changsha, China, December 2019.
16. X. Li, Technical Seminar, University of Pennsylvania, Philadelphia, PA, USA, October 2019.
17. X. Li, Technical Seminar, New Jersey Institute of Technology, Newark, NJ, USA, September 2019.
18. X. Li, Technical Seminar, State University of New York at Buffalo, Buffalo, NY, USA, September 2019.
19. X. Li, Technical Seminar, Yale University, New Haven, CT, USA, September 2019.
20. X. Li, Technical Seminar, Rochester Institute of Technology, Rochester, NY, USA, September 2019.
21. X. Li, Technical Seminar, Rensselaer Polytechnic Institute, Troy, NY, USA, September 2019.
22. X. Li, Technical Seminar, Georgia Institute of Technology, Atlanta, GA, USA, September 2019.
23. X. Li, Technical Seminar, Nanchang University, Nanchang, China, June 2019.
24. X. Li, Technical Seminar, Wuhan University, Wuhan, China, June 2019.
25. X. Li, Technical Seminar, Huazhong University of Science and Technology, Wuhan, China, June 2019.
26. X. Li, Technical Seminar, Guangdong Institute of Semiconductor Industrial Technology, Guangzhou, China, Feb 2019.
27. X. Li, Technical Seminar, Bolb Inc, Livermore, CA, USA, Feb 2018.
28. X. Li, Technical Seminar, University of College Cork, Tyndall Institute, Cork, Ireland, January 2019.
29. X. Li, Technical Seminar, University of Cambridge, Cambridge, United Kingdom, January 2019.
30. X. Li, Technical Seminar, Westlake University, Hangzhou, China, November 2018.
31. X. Li, Technical Seminar, Zhejiang University, Hangzhou, China, November 2018.
32. X. Li, Technical Seminar, DUV TEK, Ezhou, China, Jun 2018.
33. X. Li, Technical Seminar, Guangxi University, Nanning, China, May 2018.
34. X. Li, Technical Seminar, Ningbo Material Technology and Engineering Institute, Chinese Academy of Science, Ningbo, China, May 2018.
35. X. Li, Technical Seminar, CAS SINANO, Suzhou, China, May 2018.
36. X. Li, Technical Seminar, Soochow University, Suzhou, China, May 2018.
37. X. Li, Technical Seminar, Nanjing University, Nanjing, China, May 2018.
38. X. Li, Technical Seminar, Nanjing University of Posts and Telecommunications, Nanjing, China, May 2018.
39. X. Li, Technical Seminar, Technical University of Berlin, Berlin, Germany, April 2018.
40. X. Li, Technical Seminar, Central South University (CSU), Changsha, China, March 2018.
41. X. Li, Technical Seminar, Texas Tech University, Lubbock, TX, USA, January 2018.
42. X. Li, Technical Seminar, Tecnológico de Monterrey, Monterrey, Mexico, January 2018.
43. X. Li, Technical Seminar, Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV), Queretaro, Mexico, January 2018.
44. X. Li, Technical Seminar, Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV), Mexico City, Mexico, Jan 2018.
45. X. Li, Technical Seminar, Arizona State University, Tempe, AZ, USA, January 2018.
46. X. Li, Technical Seminar, University of Houston, Houston, TX, USA, January 2018.
47. X. Li, Technical Seminar, Guangdong Institute of Semiconductor Industrial Technology, Guangzhou, China, January 2018.
48. X. Li, Technical Seminar, Sun Yat-sen University, Guangzhou, China, January 2018.
49. X. Li, Technical Seminar, Southern University of Science and Technology, Shenzhen, China, January 2018.
50. X. Li, Technical Seminar, Saga University, Saga, Japan, November 2017.
51. X. Li, Technical Seminar, Institute of Semiconductors, Chinese Academy of Sciences (CAS), Changchun, China, November 2017.

52. X. Li, Technical Seminar, Hebei University of Technology, Tianjin, China, November 2017.
53. X. Li, Technical Seminar, Peking University, Beijing, China, November 2017.
54. X. Li, Technical Seminar, Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences (CAS), Changchun, China, November 2017.
55. X. Li, Technical Seminar, Jilin University, Changchun, China, November 2017.
56. X. Li, Technical Seminar, University of Electronic Science and Technology of China (UESTC), Chengdu, China, January 2016.
57. X. Li, Technical Seminar, Central South University (CSU), Changsha, China, January 2016.
58. X. Li, Technical Seminar, Shanghai Institute of Technical Physics of the Chinese Academy of Sciences (CAS), Shanghai, China, January 2016.
59. X. Li, Career Development Seminar, Longcheng Middle School, Liuzhou, Guangxi, China, January 2016.
60. X. Li, Technical Seminar, Huazhong University of Science and Technology (HUST), Wuhan, China, December 2015.
61. X. Li, Technical Seminar, Wuhan National Laboratory for Optoelectronics (WNLO), Wuhan, China, December 2015.
62. X. Li, Technical Seminar, Wuhan University, Wuhan, China, December 2015.
63. X. Li, Technical Seminar, Oregon State University, Corvallis, OR, USA, October 2015.
64. X. Li, Technical Seminar, Portland State University, Portland, OR, USA, October 2015.
65. X. Li, Technical Seminar, King Abdullah University of Science and Technology (KAUST) Thuwal, Saudi Arabia, April 2015.
66. X. Li, Technical Seminar, University of South Alabama, Mobile, AL, USA, April 2015.
67. X. Li, Technical Seminar, University of St. Thomas, St Paul, MN, USA, April 2015.
68. X. Li, Technical Seminar, Intel Corporation, Hillsboro, OR, USA, April 2015.
69. X. Li, Technical Seminar, Keysight Technologies, Santa Rosa, CA, USA, March 2015.
70. X. Li, Technical Seminar, Portland State University, Portland, OR, USA, March 2015.
71. X. Li, Technical Seminar, University of Alabama in Huntsville, USA, March 2015.

### **Internal Scientific Lectures & Seminars**

1. X. Li, Seminar for Lucid Motors, KAUST, Saudi Arabia, November 2022.
2. X. Li, Seminar for CEER, KAUST, Saudi Arabia, October 2022.
3. S. Yuvaraja, X. Li, “Demonstration of “WBG and Beyond” Electronics: Towards Large-scale 3D-vertical heterogenous integration,” KAUST ECE Seminar, September 2022.
4. X. Li, Seminar for Lucid Motors, KAUST, Saudi Arabia, May 2022.
5. X. Li, K-12 Education Seminar, KAUST School, KAUST, Saudi Arabia, March 2022.
6. X. Li, Sustainability Seminar, KAUST, Saudi Arabia, March 2022.
7. X. Tang, X. Li, “Advanced Ga<sub>2</sub>O<sub>3</sub> flexible and electronic devices,” KAUST ECE Seminar, September 2021.
8. X. Li, “UV semiconductor technologies for COVID-19 and beyond,” KAUST ECE Seminar, November 2020.
9. X. Li, “Introduction to the Applied Physics Program,” KAUST Undergraduate Poster Competition, January 2020.
10. X. Li, “New knowledge and commercial opportunities of the third-generation semiconductor,” KAUST Microelectronics Winter School, January 2020.
11. X. Li, “New knowledge and commercial opportunities of the third-generation semiconductor,” KAUST Photonics Summer School, July 2019.

12. **X. Li**, “Enormous opportunities of the third-generation semiconductor research and commercialization,” CEMSE Saudi Summer Internship - Group Seminar, May 2019.
13. **X. Li**, “UV LED and laser based on wide bandgap semiconductor materials,” KAUST Materials Science and Engineering Seminar, April 2019.
14. **X. Li**, “Bright future of the third-generation semiconductor,” KAUST Seminar for UESTC Visitors, March 2019.
15. **X. Li**, “Enormous opportunities of the third-generation semiconductor research and commercialization,” KAUST Microelectronics Winter Camp, February 2019.
16. **X. Li**, “Enormous opportunities of the third-generation semiconductor research and commercialization,” KAUST Electrical Engineering Graduate Seminar, September 2018.
17. **X. Li**, “New knowledge and commercial opportunities of the third-generation semiconductor,” KAUST Photonics Summer School, July 2019.
18. **X. Li**, “Enormous opportunities of the third-generation semiconductor research and commercialization,” CEMSE Mini Sci-Café for KAUST Gifted Students Program (KGSP) Pre-Departure Orientation, July 2018.
19. H.-H. Yao, **X. Li**, “Semiconductor Manufacturing,” KAUST Electrical Engineering Graduate Seminar, February 2018.
20. **X. Li**, “Enormous opportunities of the third-generation semiconductor research and commercialization,” KAUST Electrical Engineering Graduate Seminar, February 2018.
21. **X. Li**, “Opportunities of the third-generation semiconductor, KAUST, and choice of going abroad,” KAUST Seminar for UESTC Visitors, February 2018.
22. H. Sun, N. Alfaraj, K. H. Li, R. Lin, **X. Li**, “Large bandgap material research at Advanced Semiconductor Lab,” KAUST Electrical Engineering Graduate Seminar, April 2017.
23. **X. Li**, “Cutting-edge Research on III-nitride Semiconductor Devices and Tips for Surviving and Thriving in Graduate Study,” KAUST Electrical Engineering Graduate Seminar, September 2016.
24. **X. Li**, “What is management consulting and let’s solve a case,” KAUST Electrical Engineering Special Seminar, September 2016.
25. R. D. Dupuis, **X. Li**, Y. S. Liu, T. Detchprohm, T. T. Kao, S. C. Shen, M. Satter, P. D. Yoder, S. Wang, Y. Wei, H. Xie, A. Fischer, and F. A. Ponce, “III-Nitride Wide-Bandgap Light Emitters: The Ultimate Lamp for the Visible and Ultraviolet,” Alexander von Humboldt-Lecture, Technische Universität Berlin, Berlin, Germany, April 2014.
26. R. D. Dupuis, **X. Li**, Y. S. Liu, T. Detchprohm, T. T. Kao, S. C. Shen, M. Satter, P. D. Yoder, S. Wang, Y. Wei, H. Xie, A. Fischer, F. A. Ponce, “Low-threshold Deep UV Lasers,” Institute of Solid State Physics, Technische Universität Berlin, Berlin, Germany, April 2014.
27. **X. Li**, Z. Lochner, Y. S. Liu, T. T. Kao, M. Satter, J. H. Ryou, S. C. Shen, D. Yoder, R. D Dupuis, Y. Wei, H. Xie, A. Fischer, and F. Ponce, “High Quality AlGaN Material Growth for Deep Ultraviolet Emitter by High-Temperature Metalorganic-Chemical-Vapor Deposition,” User Day, Institute for Electronics and Nanotechnology, Georgia Institute of Technology, Atlanta, GA, USA, May 2013.
28. **X. Li**, Y. K. Ee, J. Biser, W. Cao, R. P. Vinci, H. M. Chan, and N. Tansu, “Abbreviated MOVPE nucleation of III-nitride light-emitting diodes on nano-patterned sapphire,” Nano-Energy Workshop, Lehigh University, Bethlehem, Pennsylvania, USA, September 2010.
29. **X. Li**, R. B. Song, Y. K. Ee, P. Kumnorkaew, J. F. Gilchrist, and N. Tansu, “Light Extraction Efficiency and Radiation Patterns of III-Nitride Light-Emitting Diodes with Colloidal Microlens Arrays,” Nano-Energy Workshop, Lehigh University, Bethlehem, Pennsylvania, USA, September 2010.
30. **X. Li**, and N. Tansu, “Density-Functional-Theory First-Principle Studies on Polarization Fields of III-Nitride Semiconductors,” Poster Presentation in Lehigh Center for Optical Technologies (COT) Open

- House 2009, COT Workshop on NanoPhotonics, Lehigh University, Bethlehem, Pennsylvania, USA, October 2009.
31. Y. K. Ee, **X. Li**, J. Biser, W. Cao, R. P. Vinci, H. M. Chan, and N. Tansu, "III-Nitride Light-Emitting Diodes on Nano-Patterned Sapphire," Poster Presentation in Lehigh Center for Optical Technologies (COT) Open House 2011, Lehigh University, Bethlehem, Pennsylvania, USA, November 2011
  32. Y. K. Ee, **X. Li**, J. Biser, W. Cao, R. P. Vinci, H. M. Chan, and N. Tansu, "Abbreviated MOVPE Growth Mode of III-Nitride Light-Emitting Diodes on Nano-Patterned AGOG Substrate," Poster Presentation in Lehigh Center for Optical Technologies (COT) Open House 2010, Lehigh University, Bethlehem, Pennsylvania, USA, October 2010.
  33. Y. K. Ee, **X. Li**, J. Biser, W. Cao, R. P. Vinci, H. M. Chan, and N. Tansu, "Abbreviated MOVPE Growth Mode of III Nitride Light-Emitting Diodes on Nano-Patterned AGOG Substrate," Poster Presentation in Lehigh Nano-Energy Workshop 2010, Lehigh University, Bethlehem, Pennsylvania, USA, September 2010.
  34. Y. K. Ee, **X. Li**, J. Biser, W. Cao, R. P. Vinci, H. M. Chan, and N. Tansu, "Enhancement of III-Nitride LEDs Grown on Nano-Patterned AGOG Sapphire Substrate by Metalorganic Vapor Phase Epitaxy," Poster Presentation in Lehigh Center for Optical Technologies (COT) Open House 2009, COT Workshop on NanoPhotonics, Lehigh University, Bethlehem, Pennsylvania, USA, October 2009.
  35. H. P. Zhao, G. Y. Liu, **X. Li**, J. Zhang, G. S. Huang, J. D. Poplawsky, V. Dierolf, and N. Tansu, "Enhancement of Radiative Efficiency via Staggered InGaN Quantum Well Light Emitting Diodes," Invited Poster Presentation in Transformation in Lighting 2010, DOE R&D Workshop on Solid State Lighting 2010, Raleigh, NC, USA, February 2010.
  36. H. P. Zhao, G. Y. Liu, **X. Li**, R. A. Arif, G. S. Huang, S. Tafon Penn, V. Dierolf, and N. Tansu, "Enhancement of Radiative Efficiency via Staggered InGaN Quantum Well Light Emitting Diodes," Invited Poster Presentation in Transformation in Lighting 2009, DOE R&D Workshop on Solid State Lighting 2009, San Francisco, CA, USA, February 2009.
  37. Y. K. Ee, P. Kumnorkaew, **X. Li**, R. A. Arif, H. Tong, H. P. Zhao, J. F. Gilchrist, and N. Tansu, "Light Extraction Efficiency Enhancement of III-Nitride LEDs with Colloidal-Microstructures," Oral Presentation in Lehigh Center for Optical Technologies (COT) Open House 2009, COT Workshop on NanoPhotonics, Lehigh University, Bethlehem, Pennsylvania, USA, October 2009.
  38. H. P. Zhao, G. Y. Liu, **X. Li**, G. S. Huang, J. Poplawsky, V. Dierolf, and N. Tansu, "Staggered InGaN Quantum-Well Light-Emitting Diodes," Oral Presentation in Lehigh Center for Optical Technologies (COT) Open House 2009, COT Workshop on NanoPhotonics, Lehigh University, Bethlehem, Pennsylvania, USA, October 2009.
  39. H. P. Zhao, G. Y. Liu, **X. Li**, G. S. Huang, J. Poplawsky, S. Tafon Penn, V. Dierolf, and N. Tansu, "Growths of Staggered InGaN Quantum Wells Light-Emitting Diodes Emitting at 520-525 nm Employing Graded Growth- Temperature Profile," Poster Presentation in Lehigh Center for Optical Technologies (COT) Open House 2009, COT Workshop on NanoPhotonics, Lehigh University, Bethlehem, Pennsylvania, USA, October 2009.

### **Journal Reviewing**

1. ACS Applied Electronic Materials, American Chemical Society (ACS)
2. ACS Applied Materials & Interfaces, American Chemical Society (ACS)
3. ACS Crystal Growth & Design, American Chemical Society (ACS)
4. ACS Materials Letters, American Chemical Society (ACS)
5. ACS Nano, American Chemical Society (ACS)
6. Applied Physics Letter, American Institute of Physics (AIP)
7. Applied Physics Express, Japan Society of Applied Physics

8. Applied Nanoscience, Springer
9. Applied Surface Science, Elsevier
10. IEEE Electron Device Letters, IEEE
11. IEEE Journal of Quantum Electronics, IEEE
12. IEEE Journal of Selected Topics in Quantum Electronics, IEEE
13. IEEE Photonics Journal, IEEE
14. IEEE Photonics Technology Letters, IEEE
15. IEEE Transactions on Electron Devices, IEEE
16. Journal of Applied Physics, American Institute of Physics (AIP)
17. Journal of Crystal Growth, Elsevier
18. Journal of Materials Chemistry C, Royal Society of Chemistry
19. Journal of Nanophotonics, SPIE
20. Materials Science in Semiconductor Processing, Elsevier
21. Nature Materials, Nature Publication Group (NPG)
22. Nature Photonics, Nature Publication Group (NPG)
23. Nature Reviews Materials, Nature Publication Group (NPG)
24. Nanoscale, Royal Society of Chemistry
25. Nanotechnology, Institute of Physics
26. Nano-Micro Letters, Springer
27. Optics Express, OSA Publishing
28. Optical Materials, Elsevier
29. Optical and Quantum Electronics, Springer
30. Photonics Research, OSA Publishing
31. Physica Status Solidi B, Wiley
32. Physica Status Solidi C, Wiley
33. Scientific Reports, Nature Publication Group (NPG)
34. Superlattices and Microstructures, Elsevier
35. Thin Solid Films, Elsevier

### **K-12 Outreach Lectures and Seminars**

*Geared towards prospective middle and high school students*

1. Lab Tour and Presentation for Optics Students, Georgia Institute of Technology, Atlanta, GA, March 2013.
2. Lab Tour and Presentation for Optics Students, Georgia Institute of Technology, Atlanta, GA, July 2012.
3. “Semiconductor Nanotechnology for High Energy Efficient Applications,” Outreach Program, OptoCamp 2008 – Center for Optical Technologies, Lehigh University, Bethlehem, PA, August 2009.