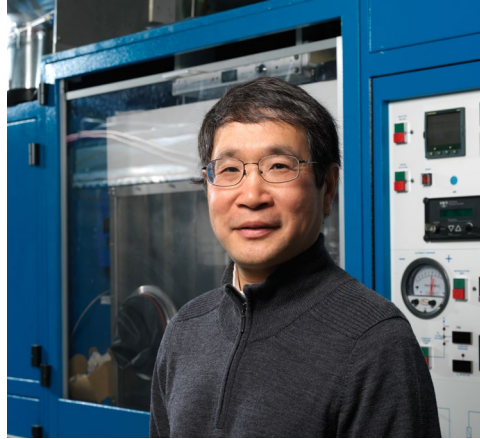


HONGXING JIANG
Edward E. Whitacre, Jr. Endowed Chair and Horn Distinguished Professor
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Professional Appointments

- **Edward E. Whitacre, Jr. Endowed Chair and Paul Whitfield Horn Distinguished Professor**, Electrical and Computer Engineering, Texas Tech University (TTU), 2013 – present (Horn Distinguished Professorships, the highest honor TTU may bestow on members of its faculty)
- **Edward E. Whitacre, Jr. Endowed Chair and Professor**, Electrical and Computer Engineering, Texas Tech University, 2008 - 2013
- **Co-Director**, Center for Nanophotonics, Texas Tech University
- **University Distinguished Professor**, Kansas State University (KSU), 2004-2008 (The title of University Distinguished Professor represents the highest honor KSU can bestow on its faculty; resigned as of Aug. 2008)
- **Professor of Physics**, Kansas State University, 1998-2004
- **Director**, Kansas Advanced Semiconductor Coordinated Laboratory, 1998-2008
- **Visiting Scientist**, Sandia National Lab (Albuquerque, NM), 1/99-6/99
- **Associate Professor of Physics**, Kansas State University, 1993-1998
- **Assistant Professor of Physics**, Kansas State University, 1988-1993
- **Postdoctoral Research Associate**, Michigan State University, 1986-1988

Education

B. S., Fudan University, Shanghai, China, 1977-1981
M. S. in Physics, Syracuse University, Syracuse, New York, 1981-1983
Ph. D. in Physics, Syracuse University, Syracuse, New York, 1983-1986

Honors/Awards

- Recipient of “Global SSL Award of Outstanding Achievements” 2021 for the invention of microLED - awarded by the International SSL Alliance (ISA)
- Elected Fellow of the National Academy of Inventors, 2018
- Elected Fellow of the American Association for the Advancement of Science, 2016
- Elected Fellow of SPIE - the international society for optics and photonics, 2015

- Elected Fellow of the Optical Society of America, 2014
- Elected Fellow of the American Physical Society, 2010
- Horn Distinguished Professor, Texas Tech University (TTU), 2013-present
- Barnie E. Rushing, Jr. Faculty Distinguished Research Award, TTU, 2011
- Kan Tong Po Honorary Visiting Professor by the Royal Society of London, 2011
- University Distinguished Professor, Kansas State University, 2004-2008
- Edward E. Whitacre, Jr. Endowed Chair, Texas Tech University, 2008-present
- CUSPEA Fellow, 1981
- Graduate Student Fellow, Syracuse University (1984-1986)

Key Accomplishments

- Invented MicroLED in 2000 (see e.g., [US patent 6,410,940](#) and [US patent 9,047,818](#); Nature Electronics **6**, 257 (2023); Appl. Phys. Lett. **116**, 100502 (2020); SPIE Newsroom Dec 2011; Appl. Phys. Lett. **78**, 1303 (2001); Appl. Phys. Lett. **76**, 631 (2000)). The MicroLED invention created the microLED display industry as well as the research field of microLED. MicroLED is considered the ultimate display technology and the most suitable candidate for VR/AR/3D displays.
- Invented in 2002 high-voltage AC/DC-LEDs via on-chip integration of micro- and mini-LED arrays. This invention extended LED's operating voltage from 2 or 3 V DC up to 100's V AC (e.g., US patent [US6957899](#), [US7221044](#), etc.). Technology has been commercialized worldwide for general illumination and automobile headlights.
- Pioneered the development the first deep UV picosecond time-resolved optical spectroscopy system (down to 195 nm). The system is capable to probe the static and dynamic recombination processes in semiconductors with ultrawide bandgaps with a ps time resolution. The design has been adopted by the photonic industries to benefit the communities at large and helped the field to characterize and advance ultrawide bandgap semiconductors (see e.g., [Appl. Phys. Lett. 81, 3365 \(2002\)](#)).
- One of the first to experimentally determine the Mg acceptor energy level in AlN – by PL: [Appl. Phys. Lett. 83, 878 \(2003\)](#); by Hall-effect: [Appl. Phys. Lett. 89, 152120 \(2006\)](#).
- Realized the 1st GaN photonic crystal LED - [Appl. Phys. Lett. 83, 1231 \(2003\)](#); [Appl. Phys. Lett. 84, 466 \(2004\)](#).
- First to predict/demonstrate AlN is an edge-emitter (light emission in TM mode, E_{emi}/c) – [Appl. Phys. Lett. 84, 5264 \(2004\)](#); [Appl. Phys. Lett. 83, 5163 \(2003\)](#).
- Among the first to achieve conductivity control in Al-rich AlGaIn and AlN - [Appl. Phys. Lett. 85, 3769 \(2004\)](#); [Appl. Phys. Lett. 85, 4669 \(2004\)](#); [Appl. Phys. Lett. 86, 092108 \(2005\)](#).
- Among the first to exploit III-nitrides for solid-state energy devices (solar cells, thermoelectric devices, and PEC for hydrogen generation) - [Appl. Phys. Lett. 92, 042112 \(2008\)](#); [Appl. Phys. Lett. 94, 063505 \(2009\)](#); [Appl. Phys. Lett. 96, 052110 \(2010\)](#).
- Pioneered the development of h-BN neutron detectors. Our research group has achieved h-BN thermal neutron detectors with a record high detection efficiency (at 60% to date) - [Appl. Phys. Lett. 109, 072101 \(2016\)](#); [Appl. Phys. Lett. 111, 033507 \(2017\)](#); [J. Appl. Phys. 123, 044501 \(2018\)](#); [Appl. Phys. Lett. 116, 142102 \(2020\)](#); [J. Appl. Phys. 135, 175704 \(2024\)](#).
- The only group in the world possessing the capability for synthesizing h-BN quasi-bulk crystals (see e.g., [Appl. Phys. Lett. 122, 012105 \(2023\)](#); [J. Appl. Phys. 135, 175704 \(2024\)](#)).
- Co-founder of III-N Technology, Inc. (3N) and AC-LED Lighting, LLC (AC-LED). 3N and AC-LED hold patent portfolios and facilitate the commercialization of microLED display and single-chip high voltage AC/DC LED technologies.

Professional and Scholarly Activities/Services

- Panelist: *NSF and DOE interdisciplinary research programs*
- Individual proposal reviewed for: *DOE, NSF, DOD, NSERC, NRC, Research Corp., NSFC*
- Meeting organized: Served as chair, co-chair, or committee member for 19 international conferences

- Book edited: Edited 12 books
- Invited presentations: Delivered over 150 plenary, keynote, and invited presentations and short courses in international conferences, universities, and industries
- Papers reviewed for: *Applied Physics Letters, Journal of Applied Physics, Physical Review Letters, Physical Review B, Nature, Nature Photonics; Nature Materials, ACS Nano, etc*
- Guest professorships: Zhejiang University, China, 2000-2004
Xi'an Jiaotong University, China, 2001-2005
Kan Tong Po Honorary Visiting Professor, Hong Kong PolyU., Summer 2011.
External advisory committee member, Dongguan Institute of Optoelectronics Peking University, 2013 – 2018.

Issued patents (23)

1. “Micro-size LED and detector arrays for mini-displays, hyperbright light emitting diodes, lighting, and UV detector and imaging sensor applications”
US patent 6,410,940 (filed: 06/15/2000; issued date: 06/25/2002)
2. “Micro-size LED and detector arrays for mini-displays, hyperbright light emitting diodes, lighting, and UV detector and imaging sensor applications,”
Korean patent 100802764 (filed: 06/13/2001; priority date: 06/15/2000; issued date: 02/12/2008)
3. “Light emitting diodes for high AC voltage operation and general lighting”
US patent 6,957,899 (filed: 10/24/2002; issued date: 10/25/2005)
4. “Light emitting diodes for high AC voltage operation and general lighting”
US patent 7,210,819 (filed: 04/19/2005; issued date: 05/01/2007)
5. “Light emitting diodes for high AC voltage operation and general lighting”
US patent 7,213,942 (filed: 05/03/2005; issued date: 05/08/2007)
6. “Nitride microlens” U.S. patent 7,193,784B2 (filed: 05/20/2004; priority date: 05/20/2003; issued date: 03/20/2007)
7. “Heterogeneous integrated high voltage DC/AC light emitter”
US patent 7,221,044 (filed: 01/21/2005; issued date: 05/22/2007)
8. “Micro-LED based high voltage AC/DC indicator lamp”
US patent 7,535,028 (filed: 04/08/2005; issued date: 05/19/2009)
9. “Micro-LED based high voltage AC/DC indicator lamp
(基于微型发光二极管的高压交直流 指示灯)”
Chinese patent 1819255 (application date: 09/05/2005; priority date: 02/03/2005; issued date: 06/02/2010)
10. “Extreme ultraviolet (EUV) detectors based upon aluminum nitride (AlN) wide bandgap semiconductors,” US patent 7,498,645 (filed: 10/04/2007; priority date: 10/04/2006; issued date: 03/03/2009)
11. “Light emitting diode lamp capable of high AC/DC voltage operation” US patent 8,272,757 (filed: 06/03/2005; issued date: 09/25/2012)
12. “AC/DC light emitting diodes with integrated protection mechanism,” US patent 7,714,348 (filed: 03/07/2007; priority date: 10/06/2006; issued date: 05/11/2010)
13. “Micro-emitter array based full-color microdisplay,” US patent 8,058,663 (filed: 09/26/2008; priority date: 09/26/2007; issued date: 11/15/2011)
14. “Er doped III-nitride materials and devices synthesized by MOCVD,” US patent 8,227,328 (filed: 08/24/2006; issued: 07/24/2012)
15. “CMOS IC for micro-emitter based microdisplay,” US patent 9,047,818 (filed: 03/12/2011; priority date: 03/23/2009; issued date: 06/02/2015)
16. “Structures and devices based on boron nitride and boron nitride-III-nitride heterostructures,”
US patent 9,093,581 (filed: 05/29/2012; issued date: 07/28/2015)
17. "Charge storage imaging devices using persistent photoconductivity crystals" U.S. Patent 5,072,122.

18. "Persistent photoconductivity quenching effect crystals and electrical apparatus using same" U.S. Patent 5,101,109.
19. "Method and apparatus for use of III-Nitride wide bandgap semiconductors in optical communications" US patent 7,345,812.
20. "Solid-state neutron detectors," US patent 10,714,651 (filed: 10/25/2018; issued: 07/14/2020)
21. "Solid-state neutron detectors," US patent 11,195,968 B2 (filed: 01/10/2020; issued: 12/07/2021).
22. "Semiconductor optical phased arrays and methods related thereto," US patent 11,460,723 (filed: 12/4/2018; issued 10/04/2022).
23. "Semiconductor optical phased arrays and methods related thereto," US patent 11,747,658 (filed: 08/26/2022; issued 09/05/2023).

Pending patents (5)

24. "Novel optical gain materials for high energy lasers and laser illuminators," US patent pending; Application 62,818,365.
25. "Semiconductor neutron detectors with ability for detecting thermal to fast neutrons," US patent pending; Application 63,319,988.
26. "Wide bandgap optical phased arrays (OPA's) and methods related thereto," US patent pending.
27. "Engineering C-band telecom-wavelength quantum defects in hexagonal boron nitride for quantum information technology," US patent, pending. Application 63,585,111
28. "Photoconductive switches based on AlN and BN ultrawide bandgap semiconductors," US provisional patent, filed 03/19/2024. Application 63/567,043

Patent disclosures filed:

1. "Optical Hearing Device Based on Micro-LED Arrays".

Press Coverage on Our Research Work

The innovations of our research have been reported in German, Japanese, Russian, French, Italian, Indian, British, Portuguese, and Chinese technical magazines, in addition to press releases by media outlets including *The New York Times*, *CNN.com*, *ABCnews.com* and *USA Today*. For more detailed information link to <http://www2.ece.ttu.edu/nanophotonics/news.html>.

List of Publications:

Citations: > 27,600; H-index = 89 (according to [Google Scholar](#), as of 06/2024)
 (*indicate conference proceedings)

457. Z. Alemoush, A. Tingsuwatit, A. Maity, J. Li, J. Y. Lin, and H. X. Jiang, "Status of h-BN quasi-bulk crystals and high efficiency neutron detectors," *J. Appl. Phys.* **135**, 175704 (2024).
456. A. Tingsuwatit, N. K. Hossain, Z. Alemoush, M. Almohammad, J. Li, J. Y. Lin, and H. X. Jiang, "Properties of photocurrent and metal contacts of highly resistive ultrawide bandgap semiconductors," *Appl. Phys. Lett.* **124**, 162105 (2024).
455. M. Almohammad, Z. Alemoush, J. Li, J. Y. Lin, and H. X. Jiang, "Carbon-related donor-acceptor pair transition in the infrared in h-BN," *Appl. Phys. Lett.* **124**, 102106 (2024).
454. M. Almohammad, A. Tingsuwatit, Z. Alemoush, J. Li, J. Y. Lin, and H. X. Jiang, "Probing and controlling oxygen impurity diffusion in h-BN semi-bulk crystals," *Appl. Phys. Lett.* **123**, 252106 (2023).
453. Z. Alemoush, A. Tingsuwatit, J. Li, J. Y. Lin, and H. X. Jiang, "Probing boron vacancy complexes in h-BN semi-bulk crystals synthesized by hydride vapor phase epitaxy," *Crystal* **13**, 1319 (2023).
452. H. X. Jiang and J. Y. Lin, "How we made the microLED," *Nature Electronics* **6**, 257 (2023).

451. Z. Alemoush, N. K. Hossain, A. Tingsuwatit, M. Almohammad, J. Li, J. Y. Lin, and H. X. Jiang, "Toward achieving cost-effective hexagonal BN semi-bulk crystals and BN neutron detectors via halide vapor phase epitaxy," *Appl. Phys. Lett.* 122, 012105 (2023).
450. Yuji Zhao, Mingfei Xu, Xuanqi Huang, Justin Lebeau, Tao Li, Dawei Wang, Houqiang Fu, Kai Fu, Xinqiang Wang, Jingyu Lin, and Hongxing Jiang, "Toward High Efficiency at High Temperatures: Recent Progress and Prospects on InGaN-Based Solar Cells," *Materials Today Energy*, 31, 101229, (2023).
449. A. Tingsuwatit, J. Li, J. Y. Lin, and H. X. Jiang, "Probing the bandgap and effects of t-BN domains in h-BN neutron detectors," *Applied Physics Express*. 15, 101003 (2022).
448. A. Tingsuwatit, A. Maity, S. J. Grenadier, J. Li, J. Y. Lin, and H. X. Jiang, "Boron nitride neutron detector with the ability for detecting both thermal and fast neutron," *Appl. Phys. Lett.* 120, 232103 (2022).
447. S. J. Grenadier, A. Maity, J. Li, J. Y. Lin, and H. X. Jiang, "Effects of unique band structure of h-BN probed by photocurrent excitation spectroscopy," *Applied Physics Express*. 15, 051005 (2022).
446. N. Khan, M. R. Uddin, J. Li, J. Y. Lin, and H. X. Jiang, "A conductive AFM study of carbon-rich hexagonal (BN)C semiconductor alloys," *MRS Communications* 12, 223 (2022).
445. Y. Q. Yan, J. Li, J. Y. Lin, and H. X. Jiang, "Effect of polarization field on optical transitions and selection rules in Er doped GaN," *Optical Materials Express* 12, 1122 (2022).
444. Y. Q. Yan, J. Li, J. Y. Lin, and H. X. Jiang, "Formation energy and optical excitation mechanisms of Er in GaN semi-bulk crystals," *Appl. Phys. Lett.* 120, 052103 (2022).
443. M. Almohammad, J. Li, J. Y. Lin, and H. X. Jiang, "Charge collection and trapping mechanisms in hexagonal boron nitride epilayers," *Appl. Phys. Lett.* 119, 221111 (2021).
442. Samuel Grenadier, Avisek Maity, Jing Li, Jingyu Lin, and Hongxing Jiang, "Electrical Transport Properties of Hexagonal Boron Nitride Epilayers," Chapter 12 in the book "Ultrawide Bandgap Semiconductors" Volume 107 in *Semiconductors and Semimetals 2021*. ISBN 0080-8784;
441. Samuel Grenadier, Avisek Maity, Jing Li, Jingyu Lin, and Hongxing Jiang, "Electrical Transport Properties of Hexagonal Boron Nitride Epilayers," Chapter 12 in the book "Ultrawide Bandgap Semiconductors," ed. Y. Zhao, (Elsevier, Amsterdam, 2021), Vol. 107, Chap. 12. ISBN 0080-8784; *invited review*.
440. Hongxing Jiang and Jingyu Lin, "Development of nitride microLEDs and displays," Chapter 1 in "Micro LEDs," Volume 106 in *SEMICONDUCTORS AND SEMIMETALS*, edited by H. X. Jiang and J. Y. Lin, Academic Press (an imprint of Elsevier), 1st Edition (2021). ISBN: 9780128230411.
439. Hongxing Jiang and Jingyu Lin, "Micro LEDs," Volume 106 in *SEMICONDUCTORS AND SEMIMETALS*, edited by H. X. Jiang and J. Y. Lin, Academic Press, Hardcover ISBN: 9780128230411, 1st Edition, June (2021). ISBN: 9780128230411.
438. M. A. McKay, H. A. Al-Atabi, J. Li, J. H. Edgar, J. Y. Lin, and H. X. Jiang, "Band structure and ultraviolet optical transitions in ErN," *Appl. Phys. Lett.* 118, 131108 (2021).
437. J. Li, A. Maity, S. J. Grenadier, J. Y. Lin, and H. X. Jiang, "Charge collection in h-BN neutron detectors at elevated temperatures," *Appl. Phys. Lett.* 118, 092102 (2021).
436. A. Maity, S. J. Grenadier, J. Li, J. Y. Lin, and H. X. Jiang, "Hexagonal boron nitride: Epitaxial growth and device applications," *Prog. Quantum. Electron.* 76 100302 (2021).
435. Y. Q. Yan, T. B. Smith, J. Li, J. Y. Lin, and H. X. Jiang, "Erbium energy levels in GaN grown by hydride vapor phase epitaxy," *AIP Advances* 10, 125006 (2020).
434. Q. W. Wang, J. Li, J. Y. Lin and H. X. Jiang, "Growth and properties of hexagonal boron nitride (h-BN) based alloys and quantum wells," chapter 20 in "Wide Bandgap Semiconductor-Based Electronics," edited by F. Ren and S. J. Pearton, IOP Publishing, Bristol, UK.
433. Z. Y. Sun, H. L. Gong, Y. Q. Yan, T. B. Smith, J. Li, J. Y. Lin, and H. X. Jiang, "Polarization-resolved Er emission in Er doped GaN bulk crystals," *J. Appl. Phys.* 127, 243107 (2020).

432. M. A. McKay, Q. W. Wang, H. A. Al-Atabi, Y. Q. Yan, J. Li, J. H. Edgar, J. Y. Lin, and H. X. Jiang, "Band structure and infrared optical transitions in ErN," *Appl. Phys. Lett.* **116**, 171104 (2020).
431. A. Maity, S. J. Grenadier, J. Li, J. Y. Lin, and H. X. Jiang, "High efficiency hexagonal boron nitride neutron detectors with 1 cm² detection areas," *Appl. Phys. Lett.* **116**, 142102 (2020).
430. J. Y. Lin and H. X. Jiang, "Development of microLED," *Appl. Phys. Lett.* **116**, 100502 (2020).
429. Q. W. Wang, J. Li, J. Y. Lin, and H. X. Jiang, "Probing the surface oxidation process in hexagonal boron nitride epilayers," *AIP Advances* **10**, 025213 (2020).
428. V. X. Ho, Y. Wang, B. Ryan, L. Patrick, H. X. Jiang, J. Y. Lin, and N. Q. Vinh, "Observation of optical gain in Er-Doped GaN epilayers," *J. Lumin.* **221**, 117090 (2020).
427. M. A. McKay, J. Li, J. Y. Lin, and H. X. Jiang, "Anisotropic index of refraction and structural properties of hexagonal boron nitride epilayers probed by spectroscopic ellipsometry," *J. Appl. Phys.* **127**, 0531032 (2020).
426. B. Mitchell, D. Timmerman, W. Zhu, J. Y. Lin, H. X. Jiang, J. Poplawsky, R. Ishii, Y. Kawakami, V. Dierolf, J. Tatebayashi, S. Ichikawa, and Y. Fujiwara, "Direct detection of rare earth ion distributions in gallium nitride and its influence on growth morphology," *J. Appl. Phys.* **127**, 013102 (2020).
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424. Y. Q. Yan, Z. Y. Sun, W. P. Zhao, J. Li, J. Y. Lin, and H. X. Jiang, "Optical properties of GaN/Er:GaN/GaN core-cladding planar waveguides," *Appl. Phys. Expr.* **12**, 075505 (2019).
423. Z. Y. Sun, Y. Q. Yan, T. B. Smith, W. P. Zhao, J. Li, J. Y. Lin, and H. X. Jiang, "Growth and fabrication of GaN/Er:GaN/GaN core-cladding planar waveguides," *Appl. Phys. Lett.* **114**, 222105 (2019).
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420. A. Maity, S. J. Grenadier, J. Li, J. Y. Lin, H. X. Jiang, "Effects of surface recombination on the charge collection in h-BN neutron detectors," *J. Appl. Phys.* **125**, 104501 (2019).
419. Q. W. Wang, M. R. Uddin, X. Z. Du, J. Li, J. Y. Lin, and H. X. Jiang, "Synthesis and photoluminescence properties of hexagonal BGaN alloys and quantum wells," *Appl. Phys. Expr.* **12**, 011002 (2019).
418. Z. Y. Sun, Y. Q. Yan, W. P. Zhao, J. Li, J. Y. Lin, and H. X. Jiang, "Resonant excitation cross-sections of erbium in freestanding GaN bulk crystals," *Appl. Phys. Lett.* **112**, 202103 (2018).
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- 416 * Z. Y. Sun, Q. W. Wang, J. Li, J. Y. Lin, and H. X. Jiang, "Erbium-doped GaN bulk crystals as a gain medium for eye-safe high energy lasers," *Proc. SPIE* **10528**, Optical Components and Materials XV, 105280E (2018); invited.
415. V. X. Ho, T. M. Al tahtamouni, H. X. Jiang, J. Y. Lin, J. M. Zavada, and N. Q. Vinh, "Room-temperature lasing action in GaN quantum wells in the infrared 1.5 μm region," *ACS Photonics* **5**, 1303 (2018).
414. A. Maity, S. J. Grenadier, J. Li, J. Y. Lin, and H. X. Jiang, "Hexagonal boron nitride neutron detectors with high detection efficiencies," *J. Appl. Phys.* **123**, 044501 (2018).
413. X. Z. Du, J. Li, J. Y. Lin, and H. X. Jiang, "Temperature dependence of the energy bandgap of multi-layer hexagonal boron nitride," *Appl. Phys. Lett.* **111**, 132106 (2017).
412. S. Liu, R. He, Z. Ye, X. Z. Du, J. Y. Lin, H. X. Jiang, B. Liu, J. H. Edgar, "Large Scale Growth of High Quality Hexagonal Boron Nitride Crystals at Atmospheric Pressure from a Fe-Cr Flux," *Cryst. Growth Des.* **17**, 4932 (2017).
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- mechanisms of Er:GaN gain medium in 1.5 μm region,” *Appl. Phys. Lett.* **111**, 072109 (2017).
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402. H. X. Jiang and J. Y. Lin, “Review—Hexagonal Boron Nitride Epilayers: Growth, Optical Properties and Device Applications,” *ECS J. Solid State Sci. Technol.* **6**, Q3012 (2017).
401. Q. W. Wang, J. Li, J. Y. Lin, and H. X. Jiang, “Enhancement of 1.5 μm emission under 980nm resonant excitation in Er and Yb co-doped GaN epilayers,” *Appl. Phys. Lett.* **109**, 152103 (2016).
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397. Z. Y. Sun, J. Li, W. P. Zhao, J. Y. Lin, and H. X. Jiang, “Toward the realization of erbium-doped GaN bulk crystals as a gain medium for high energy lasers,” *Appl. Phys. Lett.* **109**, 052101 (2016).
396. T. C. Doan, J. Li, J. Y. Lin, and H. X. Jiang, “Growth and device processing of hexagonal boron nitride epilayers for thermal neutron and deep ultraviolet detectors,” *AIP Advances* **6**, 075213 (2016).
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Invited reviews in scientific journals

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2. H. X. Jiang and J. Y. Lin, "AlGaN and InAlGaN Alloys – Epitaxial Growth, Optical and Electrical Properties, and Applications," in a special issue of *Opto-Electronics Review*, **10**, 271 (2002), invited.
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14. J. Day, J. Li, D. Y. C. Lie, C. Bradford, J. Y. Lin and H. X. Jiang, "Full-Scale Self-Emissive Blue and Green Microdisplays Based on GaN Micro-LED Arrays," Proc. SPIE 8268, 82681X (2012); invited.
15. X. K. Cao, S. Majety, J. Li, J. Y. Lin and H. X. Jiang, "Optoelectronic properties of hexagonal boron nitride epilayers," Proc. SPIE 8631, 863128 (2013); invited.
16. H. X. Jiang and J. Y. Lin, "Nitride micro-LEDs and beyond - a decade progress review," Optics Express, Optics Express 21, A475 (2013); invited.
17. H. X. Jiang, and J. Y. Lin, "Hexagonal boron nitride for deep ultraviolet photonic devices," (in special section "Deep UV LEDs", Guest editors: Jung Han, Hiroshi Amano and Leo Scholwalter), Semicon. Sci. Technol. 29, 084003 (2014); invited.
18. H. X. Jiang and J. Y. Lin, "InGaIn/GaN multiple quantum well solar cells for energy and hydrogen generation," ECS Transactions 66, 129 (2015). invited.
19. H. X. Jiang and J. Y. Lin, "Review—Hexagonal Boron Nitride Epilayers: Growth, Optical Properties and Device Applications," ECS J. Solid State Sci. Technol. 6, Q3012 (2017). invited.
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21. J. Y. Lin and H. X. Jiang, "Development of microLED," Appl. Phys. Lett. 116, 100502 (2020). Invited perspective.
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Invited feature articles written for popular magazines

1. H. X. Jiang and J. Y. Lin, "Microdisplays Based on III-Nitride Wide Band Gap Semiconductors," **oe** magazine (The Monthly Publication of SPIE-The internal Society for Optical Engineering), July 2001 issue, page 28, *invited*.
2. H. X. Jiang and J. Y. Lin, "Advances in III-Nitride Micro-Size Light Emitters," III-Vs Review, 14, 35 (2001) [June/July 2001 issue], *invited*.
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Invited book chapters

1. H. X. Jiang and J. Y. Lin, "Time-Resolved Photoluminescence Studies of GaN," A3.5 in *Gallium Nitride and Related Compounds, EMIS Datareview Series, Edited by J. Edgar, S. Strite, I. Akasaki, H. Amano, and C. Wetzel*, (The Institute of Electrical Engineers, London, 1999).
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3. H. X. Jiang and J. Y. Lin, "Persistent photoconductivity in III-nitrides," *Chapter 5 in "III-Nitride Semiconductors: Electrical, Structural and Defects Properties" edited by M. O. Manasreh*, (Elsevier Science, 2000).
4. H. X. Jiang, J. Y. Lin, and W. W. Chow "Time-Resolved Photoluminescence Studies of III-Nitrides," Chapter 1 in *"Optical Properties of III-Nitrides I" edited by M.O. Manasreh and H. X. Jiang*, (Taylor & Francis Books, New York & London 2002).
5. H. X. Jiang and J. Y. Lin, "III-Nitride Micro-Cavity Light-Emitters," – in *"Wide Bandgap Light-Emitting Materials and Devices,"* edited by G.F. Neumark, I. Kuskovsky, and H. X. Jiang, published by Wiley –VCH Verlag GmbH, 2007.
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7. H. X. Jiang & J. Y. Lin, "AlN Epitaxial Layers for UV Photonics" – Chapter 7 in *Optoelectronic Devices: III-Nitride*, edited by M. Razeghi and M. Heini, published by Elsevier Ltd. (Amsterdam, 2004).
8. R. Dahal, J. Y. Lin, H. X. Jiang, and J. Zavada "Er doped In_xGa_{1-x}N for optical communications," Chapter 5 in *Rare-earth doped III-Nitrides for Optoelectronic and Spintronic Applications*, edited by K O'Donnell & V Dierolf, Canopus Academic Publishing Ltd and Springer SBM (2010).
9. J. Li, J. Y. Lin, H. X. Jiang, and N. Sawaki, "III-nitrides on Si substrate," Chapter 3 in *III-V Compound Semiconductors: Integration with Silicon Based Microelectronics*, edited by T. Li, et al, published by CRC Press (Boca Raton 2010).
10. A. Sedhain, J. Y. Lin, and H. X. Jiang "AlN: Properties and Applications," Chapter 2 in *"Handbook of Luminescent Semiconductor Materials,"* edited by L. Bergman and L. McHale, published in September 2011 by CRC Press, Taylor & Francis Group (ISBN: 1439834679).
11. B. N. Pantha, J. Y. Lin, and H. X. Jiang, "High quality Al-rich AlGa_N alloys," Chapter 2 in *"Ga_N and ZnO-based Materials and Devices,"* edited by S.J. Pearton, published in February 2012 by Springer, Springer Series in Materials Science (ISBN: 978-3-642-23520-7).
12. T. N. Oder, J. Y. Lin, and H. X. Jiang, "III-nitride photonics crystals for lighting applications," Chapter 6 in *"Handbook of Microcavities" (edited by A. H. W. Choi, Pan Stanford Publishing, 2015),* ISBN 978-981-4463-24-9 (Hardcover), 978-981-4463-25-6 (ebook).
13. N. Napal, H. X. Jiang, J. Y. Lin, B. Mitchell, V. Dierolf, and J. M. Zavada, "MOCVD growth of Er-doped III-N and optical-magnetic characterization," *Chapter 7 in "Rare Earth and Transition Metal Doping of Semiconductor Materials: Synthesis, Magnetic Properties and Room Temperature Spintronics,"* edited by V. Dierolf, I. T. Ferguson, and J. M. Zavada, Woodhead Publishing, Elsevier, 2016, pp. 225-255.
14. Q. W. Wang, J. Li, J. Y. Lin, and H. X. Jiang, "Growth and properties of hexagonal boron nitride (h-BN) based alloys and quantum wells," Chapter 20 in *"Wide Bandgap Semiconductor-Based Electronics,"* edited by Fan Ren and Stephen J Pearton, IOP Publishing, Bristol, UK (2020).
15. Hongxing Jiang and Jingyu Lin, "Development of nitride microLEDs and displays," Chapter 1 in *"Micro LEDs,"* Volume 106 in SEMICONDUCTORS AND SEMIMETALS, edited by H. X. Jiang and J. Y. Lin, Academic Press (an imprint of Elsevier), 1st Edition (2021). ISBN: 9780128230411.
16. Samuel Grenadier, Avisek Maity, Jing Li, Jingyu Lin, and Hongxing Jiang, "Electrical Transport Properties of Hexagonal Boron Nitride Epilayers," Volume 107 in SEMICONDUCTORS AND

SEMIMETALS, edited by Yuji Zhao, Academic Press (an imprint of Elsevier), 1st Edition (2021). ISBN: 9780128228708.

Books Edited

1. *"III-Nitride Semiconductors Optical Properties I,"* edited by M.O. Manasreh and H. X. Jiang, Taylor & Francis Books, (New York, London 2002).
2. *"III-Nitride Semiconductors Optical Properties II"* edited by M.O. Manasreh and H. X. Jiang, Taylor & Francis Books, (New York, London 2002).
3. *"Ultrafast Phenomena in Semiconductors V," Volume 4280 (2001),* edited by H. X. Jiang, K. T. Tseng, and J. J. Song. Published by The International Society for Optical Engineering.
4. *"Ultrafast Phenomena in Semiconductors VI," Volume 4643 (2002),* edited by K. T. Tseng, H. X. Jiang, and J. J. Song. Published by The International Society for Optical Engineering.
5. *Ultrafast Phenomena in Semiconductors VII," Volume 4992 (2003),* edited by K. T. Tseng, H. X. Jiang, and J. J. Song. Published by The International Society for Optical Engineering.
6. *Ultrafast Phenomena in Semiconductors VIII," Volume 5352 (2004),* edited by K. T. Tseng, J. J. Song, and H. X. Jiang. Published by The International Society for Optical Engineering.
7. *Ultrafast Phenomena in Semiconductors IX," Volume 5725 (2005),* edited by K. T. Tseng, J. J. Song, and H. X. Jiang. Published by The International Society for Optical Engineering.
8. *Ultrafast Phenomena in Semiconductors IX," Volume 6118 (2006),* edited by K. T. Tseng, J. J. Song, and H. X. Jiang. Published by The International Society for Optical Engineering.
9. *"Optical Materials," Vol. 23, Issues 1-2 - Proceedings of the 8th International Conference on Electronic Materials, 2002, Xi'an, China,* edited by R. Zhang, T.F. Kuech, H. Jiang, J. Xu, D. Kip, Q. Sun, and J. Wang, published by Elsevier.
10. "Advances in III-V Nitride Semiconductor Materials and Devices," MRS Fall 2006 Meeting Proceedings Vol. 955E, Edited by C.R. Abernathy, H. Jiang, J.M. Zavada.
11. *"Wide Bandgap Light-Emitting Materials and Devices,"* edited by G.F. Neumark, I. Kuskovsky, and H. X. Jiang, published by Wiley –VCH Verlag GmbH, 2007.
12. *"Compound Semiconductors for Generating, Emitting, and Manipulating Energy,"* 2011 MRS Fall meeting Proceedings, Vol 1396, edited by T. Li, M. Mastro, R. Dagar, H. X. Jiang, and J. Kim.
13. Hongxing Jiang and Jingyu Lin, "Micro LEDs," Volume 106 in SEMICONDUCTORS AND SEMIMETALS, edited by H. X. Jiang and J. Y. Lin, Academic Press, Hardcover ISBN: 9780128230411, 1st Edition, June (2021). ISBN: 9780128230411.

Meeting organized (recorded up to Year 2015)

1. 1998 Int'l Topical Meeting on GaN, Co-Chair, Beijing China.
2. 2000 American Physical Society March Meeting, Chair, Division of Materials Physics Focused Session: Wide Bandgap Semiconductor.
3. SPIE Int'l Symposium on Ultrafast Phenomena in Semiconductors; Co-Chair/committee member for 8 years, 2001-2007.
4. ONR Workshop on Narrow Gap Nitrides, Co-Chair, Singapore, October 2001.
5. The 8th Int'l Conference on Electronic Materials Symposium on Wide Bandgap Materials for Electronic and Optoelectronic Devices, Co-Chair, Xi'an, China, June 2002.
6. Workshop on Physics and Technology of Dilute Nitrides for Optical Communications, Committee Member, Istanbul, Sept. 2002.
7. The 5th Int'l Conference on Nitride Semiconductors," Committee Member, Japan, May 2003.
8. 2006 Fall Meeting, Material Research Society, Organizer/Chair, Symposium I: Advances in III-V Nitride Semiconductor Materials and Devices.
9. National Organizing Committee – 14th Semiconducting and Insulating Materials Conference, Committee Member, University of Arkansas, May 2007.
10. SPIE Symposium on Quantum Sensing and Nanophotonic Devices IV; Committee member, 2007.

11. Summer School 2008 on Wide-bandgap Semiconductor Physics and Devices, Co-Chair, July 28 - August 3, 2008 – Dalian, China.
12. Second Int'l Symposium on Growth of III-Nitrides, Committee Member, Laforet Shuzenji, Izu, Japan, July 6-9, 2008.
13. 8th Int'l Symposium on Semiconductor Light Emitting Devices, Co-Chair, May 16-21, 2010, Beijing, China
14. Int'l Conference of Nitride Semiconductors, Committee Member, ICNS-2011 Glasgow, UK.
15. Asia-Pacific Workshop on Wide Gap Semiconductors, Committee Member, Toba, Japan, May 2011.
16. Materials Research Society, 2011 Fall Meeting, Organizer/Chair, Symposium O: Compound Semiconductors for Generating, Emitting, and Manipulating Energy, Boston, MA, 2011.
17. 10th Int'l Conference on Nitride Semiconductors, Regional Committee Member, DC, August 2013.
18. Int'l Conference on White LEDs and Solid-State Lighting, Committee Member, June 2014, Jeju Island, Korea
19. The 11th International Conference on Nitride Semiconductors (ICNS-11), program committee member, Sept. 2015, Beijing, China.

Research Grants and Projects

Funded projects conducted at TTU totaling ~ \$23 Million (2008 -):

1. **Ultra-wideband gap semiconductors for extrinsic photoconductive switching devices**, J. Y. Lin (P. I.) and H. X. Jiang (in partnership with Opcondys, Kyma, and Tektronix), DOE ARPA-E ([ULTRAFast](#) program), \$3,070,735, 06/2024 -05/2027.
2. **Development of Cubic Boron Nitride (c-BN) Ultrawide Bandgap Semiconductors**, J. Y. Lin (P. I.) and H. X. Jiang, DOE ARPA-E ([CREATE](#) program), \$500,000, 10/2023 – 10/2025.
3. **Semiconductor Fast Neutron Detectors**, H. X. Jiang (P. I.) and J. Y. Lin, DOE ARPA-E ([2021 OPEN](#) program), \$1,789,998, 04/2022 – 05/2025.
4. **Large size wafers of erbium doped GaN crystals as high energy laser gain medium**, H. X. Jiang (P. I.) and J. Y. Lin, DOD DE-JTO/ONR ([MRI program](#)), \$3,000,370, 09/2017-01/2023.
5. **Erbium doped GaN crystals as high energy laser gain medium**, H. X. Jiang (P. I.) and J. Y. Lin, DOD DE-JTO/ONR ([MRI program](#)), \$2,000,000, 08/12 -08/2017.
6. **Wide bandgap semiconductor optical phased arrays (OPAs)**, J. Y. Lin, (P. I.) H. X. Jiang, C. Z. Li, and J. Li, DOD-JTO/AFRL ([Beam Control Research and Development](#)), \$2,521,963, 05/01/2019 - 11/2023.
7. **Boron nitride solid-state neutron detectors**, J. Y. Lin (P. I.) and H. X. Jiang, DOE ARPA-E ([IDEAS](#) program) \$500,000, 06/20-11/2022.
8. **Novel solid-state neutron detectors for geothermal and well logging**, J. Y. Lin (P. I.) and H. X. Jiang, DOE ARPA-E ([IDEAS](#) program), \$499,807, 06/18/2018-12/15/2019.
9. **Ultra-Compact Trace Organic Chemical & Water Ice Imager**, H. X. Jiang (P. I.) and J. Y. Lin, Photon Systems/NASA, \$285,000, 08/15/2017-08/14/2020.
10. **Fast neutron spectrometry, dosimetry, and directionality monitoring using semiconductor thin film detector arrays**, H. X. Jiang (P. I.) and J. Y. Lin, DOE/NNSA, \$450,000, 04/16-04/2020.
11. **Deep UV emitters and polariton lasers**, H. X. Jiang and J. Y. Lin, ARO, \$450,000, 03/16-10/2019.
12. **ARI-MA: Hexagonal Boron Nitride Based Neutron Detectors**, H. X. Jiang (P. I.) and J. Y. Lin, DHS/NSF (ARI), \$1,753,691, 09/15/2010 – 09/14/2015.
13. **Optical and electrical properties of III-nitrides and related materials**, H. X. Jiang (P. I.) and J. Y. Lin, DOE, \$569,000, 12/01/11 -11/30/2015.
14. **Layer-structured semiconductor alloys: growth, characterization, and applications**, J. Y. Lin (P. I.) and H. X. Jiang, NSF, \$450,000, 05/01/12 -04/30/2015.

15. **Erbium doped III-nitrides for optical communications and silicon photonics**, H. X. Jiang (P. I.) and J. Y. Lin, NSF, \$456,000, 07/12 -07/2015.
16. **Exploiting novel device structures for deep ultraviolet emitters**, J. Y. Lin (P. I.) and H. X. Jiang, NSF, \$324,919, 08/01/14 -07/31/2019.
17. **III-nitride research**, H. X. Jiang (P. I.) and J. Y. Lin, Saphlux, Inc., \$55,000, 06/15 -06/2017.
18. **Erbium doped GaN lasers by optical pumping**, J. Y. Lin (P. I.) and H. X. Jiang, ARO, \$64,619, 10/27/14 -10/26/2015.
19. **Nitride deep UV emitters with novel p-type layer approach**, H. X. Jiang (P. I.) and J. Y. Lin, DARPA-MTO ([CMUVT](#) program), \$1,239,169, 09/14/2010 – 09/15/2013.
20. **Bridging the miscibility gap in InGaN alloys**, J. Y. Lin (P. I.) and H. X. Jiang, NSF, \$475,183, 07/1/09 - 06/30/13.
21. **1.54 micron optical amplifiers and emitters based upon erbium doped III-nitrides grown on silicon**, H. X. Jiang (P. I.) and J. Y. Lin, NSF, \$328,011, 09/15/2008 – 09/14/2012.
22. **III-nitride 1.5 micron photonic devices on Si substrates**, H. X. Jiang (P. I.) and J. Y. Lin, ARO/STTR Phase I, \$31,000, 09/24/2010 –12/31/2011.
23. **Optical and electrical properties of III-nitrides and related materials**, H. X. Jiang (P. I.) and J. Y. Lin, DOE, \$474,000, 12/01/08 -11/30/2011.
24. **High Al-content AlGaIn alloys for deep UV laser applications**, H. X. Jiang (P. I.) and J. Y. Lin, DARPA/ARO ([DUVAP](#) program), \$712,750, 09/15/08 - 01/14/11.
25. **AllInGaIn band gap and doping engineering for visible laser diodes**, J. Y. Lin (P. I.) and H. X. Jiang, DARPA-MTO ([VIGIL](#) program), \$650,000, 09/01/2008 –11/30/2010.
26. **New types of photonic devices and structures**, H. X. Jiang (P. I.) and J. Y. Lin, US Army (Asian Office), \$30,000, 10/15/09 -10/14/10.
27. **DURIP-Erbium doped III-nitride nano-photonic structures grown on Si by MOCVD**, H. X. Jiang (P. I.) and J. Y. Lin, ARO, \$150,000, 05/15/09 -05/14/10.

Funded Projects Conducted at Kansas State University (KSU) totaling ~ \$16.3 million (1988-2008)

1. "AllInGaIn bandgap and doping engineering for visible laser diodes," J. Y. Lin (P. I.) and H. X. Jiang, DARPA-MTO ([VIGIL](#) program), \$132,773, 09/01/2007 – 08/31/2008.
2. "High Al-content AlGaIn alloys for deep UV laser applications," H. X. Jiang (P.I.) and J. Y. Lin, DARPA-MTO ([DUVAP](#) program), \$270,379, 09/07-09/08.
3. "Workshop/Summer School 2008 on Wide-Bandgap Semiconductor Physics and Devices," H. X. Jiang (P.I.) & J. Y. Lin, US Army International Technology Center, \$15,000, 2008.
4. "III-Nitride Deep Ultraviolet Photonic Materials and Structures" J.Y. Lin (P.I.) & H. X. Jiang NSF, \$300,000, 05/01/05-04/30/08.
5. "III-Nitrides for Hydrogen Fuel Cell and Thermopower Technologies," H. X. Jiang (P.I.) & J. Y. Lin, DOD, \$300,000, 06/15/06-06/14/09
6. "Rare Earth Doped III-Nitrides for Optical Communications," Z. Y. Fan (P.I.), J. Y. Lin, and H. X. Jiang, \$661,250, DOD, 06/01/06-05/31/09.
7. "Optical and Electrical Properties of III-V Nitrides and Related Materials," H. X. Jiang (P.I.) & J. Y. Lin, DOE, \$450,000, 10/15/2005-10/14/2008.
8. "Wide Bandgap III-Nitride Micro- and Nano-Photonics," H. X. Jiang (P.I.) & J. Y. Lin, DOD, \$625,743, 09/2003-09/2007.
9. "AlN Based Extreme Ultraviolet (EUV) Detectors," H. X. Jiang, NASA STTR through III-N Technology, Inc., \$33,333, 01/06 – 01/07.
10. "Erbium Doped III-Nitride Materials and Photonic Structures for Optical Communications," J. Y. Lin (P. I.) and H. X. Jiang, NSF STTR through III-N Technology, Inc, \$30,000, 01/07 – 12/07.
11. "Instrumentation for III-Nitride Micro-photonics and Electronics Materials and Devices Research," J. Y. Lin & H. X. Jiang, DOD, \$750,000, 8/03-8/06.

12. "III-Nitride UV Optoelectronic Devices for Bio-Agents Detection," H.X. Jiang (P.I.) and J. Y. Lin, DARPA-MTO ([SUVOS](#) program), \$1,400,000, 05/01/02 – 04/30/06.
13. "III-Nitride Wide Bandgap Semiconductors for Optical Communications," R. Hui (P.I. – University of Kansas), H. X. Jiang and J. Y. Lin, NSF, \$487,000, 11/01 – 08/06.
14. "Instrumentation for Growth of Rare Earth Doped III-Nitrides for Optical Communications," H.X. Jiang (P.I.) and J. Y. Lin, DOD, \$145,000, 05/05-05/06.
15. "MOCVD Growth of InGaN/GaN Blue/Green LEDs" H. X. Jiang (P.I.) and J. Y. Lin, Saint-Gobain Company, \$50,000, 6/1/05-5/31/06
16. "MOCVD Growth of AlGaN UV Materials," H.X. Jiang (P.I.) and J. Y. Lin, NASA, \$25,000, 08/05 – 04/06.
17. "Optical and Electrical Properties of III-V Nitrides and Related Materials - Applications for solid-state lighting and chemical/biological agent detections," H. X. Jiang (P.I.) & J. Y. Lin, DOE, \$450,000, 10/15/2002-10/14/2005.
18. "Nitride Quantum Wells and Photonic Structures – Growth, Optical Studies, and Applications," J.Y. Lin (P.I.) & H. X. Jiang," NSF, \$491,884, 05/01/02-04/30/05.
19. "III-Nitrides Growth, Characterization, and Devices - for high power electronic device and deep UV sensor applications," J. Y. Lin (P.I.) & H. X. Jiang, DOD MDA ([GaNPA](#) program), \$1,000,000, 07/27/2000-07/26/2005.
20. "Kansas Advanced Semiconductor Project," DOE (T. Bolton, Kansas DOE-EPSCoR Coordinator), \$900,000 over 3-years for advanced semiconductor cluster (H. X. Jiang, J. Y. Lin, & G. Wysin), ended 5/03.
21. "III-Nitride Micro- and Nano-Structures and Devices – Growth, Fabrication, and characterization," DOD, H.X Jiang (P.I.) & J. Y. Lin, \$250,010, ended 04/03.
22. "Instrumentation for III-Nitride Wide Bandgap Semiconductor Research," H. X. Jiang (P.I.) & J. Y. Lin, DOD, \$399,532, ended 5/03.
23. "Instrumentation for AlGaN/GaN Heterostructure Nano-Scale Electronic and Optoelectronic Device Fabrication," H. X. Jiang (P. I.) & J. Y. Lin, DOD, \$176,497, ended 04/30/03.
24. "Nitride Growth by MOCVD," H. X. Jiang (P.I.) & J. Y. Lin, Thomas Swan Scientific Equipment Ltd, \$164,800, 05/01 – 08/03.
25. "Fabrication and Optical Recombination in III-Nitride Microstructures and Devices," H. X. Jiang (P.I.) & J. Y. Lin, DOD, \$357,98, 06/19/2000-06/18/2003.
26. "Optical and Electrical Properties of III-V Nitrides and Related Materials," H. X. Jiang (P.I.) & J. Y. Lin, DOE, \$326,000, 09/15/1999-09/14/2002.
27. "III-Nitride UV Optoelectronic Devices - for Chem-Bio Agent Detection," H.X. Jiang (P.I.) & J. Y. Lin, DOD, \$150,000, 07/2001-06/2002.
28. "Material and Device Characterization of Photoconductors," J. Y. Lin (P. I.) & H. X. Jiang, DOD, \$100,000, 09/01/1999-08/31/2002.
29. "Picosecond Time-Resolved Spectroscopy System for Studying Deep UV Optical Transitions in AlGaN with High AlN Mole Fractions," J. Y. Lin (P.I.) & H. X. Jiang, DOD, \$283,800, ended 03/02.
30. "Fabrication and Optical and Electrical Characterization of HFET Structures for High Power Transistor Applications," J. Y. Lin (P.I.) & H. X. Jiang, DOD, \$200,000, 09/1999-08/2002.
31. "Mechanisms of Optical Transitions in AlGaN Alloys and GaN/AlGaN Quantum Wells," J. Y. Lin (P.I.) & H. X. Jiang, NSF, \$421,979, 06/01/1999-05/01/2002.
32. "Picosecond Time-Resolved Studies of III-Nitride Materials and Structures," H. X. Jiang (P.I.) & J. Y. Lin, DOD, \$150,000, 04/01/1999-03/31/2002.
33. "Fabrication and Characterization of AlGaN/GaN HFET Structures with High Al-Contents for High-Power Amplifier Applications," H. X. Jiang (P.I.) & J. Y. Lin, DOD, \$250,000, 02/2000-01/09/2002.
34. "US-China Cooperative Research - Fabrication and Optical Studies of GaN Microcavities", H. X. Jiang (P. I.) & J. Y. Lin, NSF, \$73,010, 03/15/1998-03/14/2001.
35. "Fabrication and Characterization of III-Nitride Microdisk Arrays," H. X. Jiang (P.I.) & J. Y. Lin, DOD, \$187,250, ended 05/01.

36. "Advanced Semiconductor Research Group in the State of Kansas," H. X. Jiang (P.I.), J. Edgar, J. Y. Lin, A. Rys, G. Wysin, K. Nordheden, R. Q. Hui, and J. Chaudhuri, NSF, 500,000, 8/99-8/02.
37. "Advanced Semiconductor Research Group in the State of Kansas," H. X. Jiang (P.I.), J. Edgar, J. Y. Lin, A. Rys, G. Wysin, K. Nordheden, R. Q. Hui, and J. Chaudhuri, Kansas Technology Enterprise Corporation, \$100,000, 8/99-8/02.
38. "Switching Characteristics of AlGaN/GaN Heterojunction FETs," J. Y. Lin (P.I.) & H. X. Jiang, DOD, \$131,666, 4/98-3/01.
39. "Properties and Applications of $\text{In}_x\text{Ga}_{1-x}\text{N}/\text{Al}_y\text{Ga}_{1-y}\text{N}$ Quantum Wells," H. X. Jiang (P.I.) & J. Y. Lin, DOD, \$112,170, 6/1/97 - 5/31/00.
40. "Characterization of GaN Materials and High-Power Electronic Devices by Time-Resolved Photoluminescence and Hall Measurements," J. Y. Lin (P. I.) & H. X. Jiang, DOD, \$302,780, 8/1/97-7/31/00.
41. "Instrumentation for Studying Ultrafast Optical Processes in GaN Quantum Wells and Devices - Application for High Power UV/Blue Lasers," H. X. Jiang (P.I) & J. Y. Lin, DOD, \$210,250 ended 03/01.
42. "Picosecond Time-Resolved Spectroscopy System for Studying Deep UV Optical Transitions in AlGaN with High AlN Mole Fractions," J. Y. Lin (P.I.) & H. X. Jiang, DOD, \$247,500, ended 3/00.
43. "Optical and Electrical Properties of III-V Nitride Wide Band Gap Semiconductors," H. X. Jiang (P.I.) & J. Y. Lin, DOE, \$150,000, 9/15/96-9/14/99.
44. "Optical Properties and Optically Pumped UV-Blue Laser Actions in GaN," H. X. Jiang (P.I) & J. Y. Lin, DOD, \$372,135, 6/15/96 - 6/14/99.
45. "Dynamics of Optical Recombination in GaN and $\text{Al}_x\text{Ga}_{1-x}\text{N}$ - Applications for High Power Blue Lasers, H. X. Jiang (P.I.) & J. Y. Lin, DOD, \$280,000, 8/1/96 - 7/31/99.
46. "Instrumentation for Fabrication of GaN and AlGaN Microcavities –Applications for UV Microcavity lasers and Detectors," J. Y. Lin (P.I.) & H. X. Jiang, DOD, \$185,000, ended 6/99.
47. "Dynamics of Fundamental Optical Transitions in GaN and $\text{Al}_x\text{Ga}_{1-x}\text{N}$," J. Y. Lin (P.I.) & H. X. Jiang, NSF, \$286,000, 7/96 - 6/99.
48. "Picosecond Optical Transitions and Carrier Dynamics in GaN," H. X. Jiang (P. I.) & J. Y. Lin, DOD, \$147,142, ended 2/98.
49. "Optical Properties of GaN Semiconductors," H. X. Jiang (P.I.) & J. Y. Lin, APA Optics, Inc., \$15,000, 1995.
50. "Charge Storage and Persistent Photoconductivity in II-VI Semiconductor Alloys," NSF, H. X. Jiang, \$165,419, 5/1/92-10/31/95.
51. "SQUID Magnetometer to Augment Magnetic Research," C.M. Sorensen (P.I), K.J. Klabunde, M. J. O'Shea, & H. X. Jiang, NSF, \$151,720
52. "Advanced Materials Processing," NSF EPSCoR, \$1,017,024, (P. Sherwood, C. Sorensen, and K. Klabunde, P.I.s) & H. X. Jiang one of the 18 core members (my share is \$56,500), 10/1/92 - 9/30/95.
53. "Persistent Photoconductivity in II-VI Mixed Semiconductors: Related Critical Phenomena and Applications," H. X. Jiang, AFOSR, \$6,680, summer 1990.