

**Yuchao Jiang**

jychstar@gmail.com

[Google Scholar](#), [Personal website](#)

---

**Education**

- **Ph.D. in Electrical and Computer Engineering**, May 2016 @ University of Oklahoma, Norman, OK  
Dissertation: [High-performance InAs-based interband cascade lasers](#)
- **M.S. in Material Physics and Chemistry**, Jan. 2011 @ Chinese Academy of Sciences, Beijing, China  
Thesis: [Surface-emitting quantum cascade lasers](#)
- **B.S. in Applied Physics**, Jul. 2007 @ Beijing University of Posts and Telecomm., Beijing, China

---

**Skills and Knowledge**

- Solid understanding of semiconductor devices: diode lasers, photodetectors
- Demonstrated capability of laser design in active region and waveguide
- Comprehensive characterization skills of diode lasers
- Familiar with the device fabrication techniques
- Strong coding ability in research programming languages: Matlab, Labview
- Good at computer programming languages: Python, Java, C++

---

**Professional Experience**

**Reviewer** for several peer-reviewed journals:

Journal of Applied Physics, Applied Optics, IEEE Photonics Journal

School of Electrical and Computer Engineering, **University of Oklahoma**, Norman, OK USA

**Research Assistant**, 8/16/2010 to 4/30/2016

- First demonstration of InAs-based interband cascade (IC) lasers with cw operation above room temperature at  $\lambda \sim 4.6 \mu\text{m}$
- First demonstration of type-I IC lasers with cw operation above room temperature at  $\lambda \sim 3.2 \mu\text{m}$
- Improved the beam quality of InAs-based IC lasers by suppressing higher-order spatial modes
- Achieved a large electrical tunable range ( $280 \text{ cm}^{-1}$ ) in IC laser by novel active region design
- First demonstration of InAs-based single-mode DFB IC lasers with a thin top cladding layer
- Developed a comprehensive model for the temperature dependence of threshold carrier density

---

Institute of Semiconductors, **Chinese Academy of Sciences**, Beijing, China

**Research Assistant**, 9/1/2007 to 7/30/2010

- First discovered blue-shift photoluminescence from porous InAlAs formed by electrochemistry etching, and explained this phenomenon by the quantum size effect
- Designed and fabricated surface-emitting quantum cascade lasers at  $\lambda \sim 4.6 \mu\text{m}$

## **Awards**

---

- ECE Journal Paper Awards, 2014 & 2015
- ECE Department Scholarship, 2010-2011
- Excellent Student Award (5%), 2010
- University Scholarships (5%), 2004-2007

## **Publications**

---

[Google Scholar](#), citations: 82

1. L. Lei, L. Li, H. Lotfi, **Y. Jiang**, R. Q. Yang, M. B. Johnson, "Mid-wave interband cascade infrared photodetectors based on GaInAsSb absorbers", submitted.
2. H. Lotfi, L. Li, L. Lei, H. Ye, SM S. Rassel, **Y. Jiang**, R. Q. Yang, *et al.*, "High-frequency operation of a mid-infrared interband cascade system at room temperature", Appl. Phys. Lett., 108, 201101 (2016). [doi: 10.1063/1.4950700](#)
3. H. Lotfi, L. Li, L. Lei, **Y. Jiang**, R. Q. Yang, J. F. Klem, and M. B. Johnson, "Short-wavelength interband cascade infrared photodetectors operating above room temperature", J. Appl. Phys., 119, 023105 (2016). [doi: 10.1063/1.4939961](#)
4. **Y. Jiang**, L. Li, H. Ye, R. Q. Yang, T. D. Mishima, M. B. Santos, M. B. Johnson, *et al.*, "InAs-based single-mode distributed feedback interband cascade lasers", IEEE J. Quantum Electron., 51, 2300307 (2015). [doi: 10.1109/JQE.2015.2470534](#)
5. L. Li, **Y. Jiang**, H. Ye, R. Q. Yang, T. D. Mishima, M. B. Santos, and M. B. Johnson, *et al.*, "Low-threshold InAs-based interband cascade lasers operating at high temperatures", Appl. Phys. Lett., 106, 251102 (2015). [doi: 10.1063/1.4922995](#)  
*\*Reported as "research highlights" in Nat Photon, 9, 481 (2015). [doi:10.1038/nphoton.2015.147](#)*
6. **Y. Jiang**, L. Li, R. Q. Yang, J. A. Gupta, G. C. Aers, E. Dupont, J.-M. Baribeau, *et al.*, "Type-I interband cascade lasers near  $3.2 \mu\text{m}$ ", Appl. Phys. Lett., 106, 041117 (2015). [doi:10.1063/1.4907326](#)
7. L. Li, H. Ye, **Y. Jiang**, R. Q. Yang, J. C. Keay, T. D. Mishima, M. B. Santos, and M. B. Johnson, "MBE-grown long-wavelength interband cascade Lasers on InAs Substrates," J. of Crystal Growth, 426, 369 (2015). [doi: 10.1016/j.jcrysgro.2015.02.016](#)
8. R. Q. Yang, L. Li, and **Y. Jiang**, "Interband cascade lasers: from original concept to practical devices", Progress in Physics, 34, 169 (2014). <http://pip.nju.edu.cn/Home/ShowArticle/774>

- 
9. **Y. Jiang**, L. Li, Z. Tian, H. Ye, L. Zhao, R. Q. Yang, T. D. Mishima, *et al.*, "Electrically widely tunable interband cascade lasers," J. of Appl. Phys., 115, 113101 (2014).  
[doi:10.1063/1.4865941](https://doi.org/10.1063/1.4865941)
  10. C. H. Jia, Y. H. Chen, **Y. C. Jiang**, F. Q. Liu, S. C. Qu, W. F. Zhang, and Z. G. Wang, "Photoluminescence properties of porous InP filled with ferroelectric polymers", Applied Physics A, 111, 695 (2013). [doi:10.1007/s00339-013-7717-0](https://doi.org/10.1007/s00339-013-7717-0)
  11. L. Li, L. Zhao, **Y. Jiang**, R. Q. Yang, J. C. Keay, T. D. Mishima, M. B. Santos, and M. B. Johnson, "Single-waveguide dual-wavelength interband cascade lasers", Appl. Phys. Lett., 101, 171118 (2012).  
[doi: 10.1063/1.4764910](https://doi.org/10.1063/1.4764910)
  12. Z. Tian, **Y. Jiang**, L. Li, R. T. Hinkey, Z. Yin, R. Q. Yang, T. D. Mishima, *et al.*, "InAs-based mid-infrared interband cascade lasers near 5.3  $\mu\text{m}$ ", IEEE J. Quantum Electron., 48, 915 (2012).  
[doi: 10.1109/JQE.2012.2195477](https://doi.org/10.1109/JQE.2012.2195477)
  13. Z. Yin, **Y. Jiang**, Z. Tian, R. Q. Yang, T. D. Mishima, M. B. Santos, and M. B. Johnson, "Far-field patterns of plasmon waveguide interband cascade lasers", IEEE J. Quantum Electron., 47, 1411 (2011). [doi: 10.1109/JQE.2011.2168812](https://doi.org/10.1109/JQE.2011.2168812)
  14. **Y. Jiang**, F. Liu, L. Wang, W. Yin, and Z. Wang, "Blue-shift photoluminescence from porous InAlAs". Semicond. Sci. Technol., 25, 115006 (2010). [doi:10.1088/0268-1242/25/11/115006](https://doi.org/10.1088/0268-1242/25/11/115006)

## Conference Presentations

---

1. **Y. Jiang**, L. Li, H. Ye, R. Q. Yang, T. D. Mishima, M. B. Santos, and M. B. Johnson, "Continuous-wave operation of InAs-based interband cascade lasers above room temperature", Conf. on Lasers and Electro-Optics, in San Jose, California (May 10-15 2015).[\[link\]](#)
2. **Y. Jiang**, L. Li, Z. Tian, R. T. Hinkey, R. Q. Yang, T. D. Mishima, M. B. Santos, *et al.*, "Room-temperature InAs-based interband cascade lasers", Conf. on Lasers and Electro-Optics, in San Jose, California (May 6-11, 2012). [\[link\]](#)

## Patents

---

1. R. Q. Yang, Z. Tian, L. Li, M. B. Santos, M. B. Johnson, **Y. Jiang**, "Tunable semiconductor lasers", Attorney Docket Number 4313-00400, filed on Feb.24,2014.
2. **Y. Jiang**, J. Liu, Q. Lu, *et al.*, "Holographic method to fabricate short-wavelength surface-emitting quantum cascade lasers". Patent publishing number: CN101916965A. Approval on Dec. 7, 2011.

## References

---

Rui Q. Yang (chair), Fellow of OSA and IEEE  
Professor in School of Electrical and Computer Engineering, University of Oklahoma  
Phone: 405-325-7365; Email: [rui.q.yang@ou.edu](mailto:rui.q.yang@ou.edu)

---

Michael B. Santos, Fellow of APS

Charles L. Blackburn Professor in Engineering Physics, University of Oklahoma

Phone: 405-325-3961 ext. 36141; Email: [santos@nhn.ou.edu](mailto:santos@nhn.ou.edu)

Matthew B. Johnson

Professor in Department of Physics and Astronomy, University of Oklahoma

Phone: 405-325-3961 ext. 36129; Email: [Matthew.B.Johnson-2@ou.edu](mailto:Matthew.B.Johnson-2@ou.edu)