


## Curriculum Vitae

<b>Name</b>	Yuping Zeng	<b>Degree</b>	PhD	<b>DOB</b>	12/02/1979
<b>Gender</b>	Female	<b>Visa Status</b>	Permanent Resident (U.S.)	<b>E-mail</b>	yzeng@udel.edu
	<b>Current Affiliation</b> Assistant Professor Department of ECE University of Delaware			<b>Mailing Address:</b> 139 The Green, Evans Hall 140 Department of ECE University of Delaware Newark, DE 19716	
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### Projects Involved and Achievements

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- 54 peer-reviewed journal papers and 20 papers at international conferences;
- Postdoctoral Research (2011-2016) in **UC Berkeley**  
*Design and fabrication of InAs/AlSb/GaSb Tunneling Field Effect Transistors; High speed InAs Metal Oxide Semiconductor Field Effect transistors on Silicon (MOSFETs); InAs-on-Si fin field effect transistors (FinFETs)*
- PhD Research (2004-2011) in **Swiss Federal Institute of Technology**  
*Design and fabrication of high-speed InP/GaAsSb Double-Heterojunction Bipolar Transistors (DHBTs) with record  $f_T$  and  $f_{MAX}$  cut-off frequencies*
- PhD Research (2003-2004) in **Simon Fraser University**  
*High-speed photodetector; High Electron Mobility Transistors (HEMTs)*
- Second Master Research (2001-2003) in **National University of Singapore**  
*Raman study of laser annealed silicon and photoluminescence from nano-scaled silicon*
- First Master Research (1998-2001) in **Jilin University**  
*Fabrication of development of Superluminescent Light Emitting Diode (SLED): InGaAsP/InP and GaAlAs/GaAs*
- Bachelor Research (1994-1998) in **Jilin University**  
*Mode Analysis of VCSEL with Fiber Gratings as its Distributed Bragg Reflector (DBR)*

## Education

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- Swiss Federal Institute of Technology in Zurich**, Switzerland    GPA: 3.76/4.0  
**Doctor of Science in Electrical Engineering**    June, 2006---Aug, 2011  
Millimeter Wave Electronics Laboratory  
Supervisor: Colombo Bolognesi
- National University of Singapore**, Singapore    GPA: 4.75/5.0  
**Master of Science in Physics**    July, 2001---July, 2003  
Laser Micro-Processing Group and Raman Laser Group  
Supervisor: Lu Yongfeng and Shen Zexiang
- Jilin University**, Changchun, Jilin, China    GPA: 3.8/4.0  
**Master of Science in Electrical Engineering**    Sep, 1998---July, 2001  
State Key Lab of Integrated Opto-Electronics  
Supervisor: Du Guotong and Liu Yang
- Jilin University**, Changchun, Jilin, China    GPA: 3.7/4.0  
**Bachelor of Engineering in Electrical Engineering**    Sep, 1994---July, 1998  
*Special Class for the Gifted Young*  
Supervisor: Du Guotong and Song Junfeng

## Work Experience

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- University of Delaware**,    Sep, 2016--Present  
**Department of Electrical and Computer Engineering**  
Assistant Professor
- University of California at Berkeley, USA**  
**Postdoctoral Employee in Electrical Engineering**    Dec, 2011— May, 2016  
Supervisors: Chenming Hu and Ali Javey
- University of Notre Dame, USA**  
**Postdoctoral Employee in Electrical Engineering**    Oct, 2011—Nov, 2011  
Supervisor: Grace Xing
- Simon Fraser University**, Burnaby, Canada    Sep, 2003—May, 2006  
**PhD candidate in Electrical Engineering**  
Compound Semiconductor Device Laboratory  
Supervisor: Colombo Bolognesi

## **Interests**

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1. Novel compound semiconductor electron devices through material and process innovations for low power and high speed applications:  
Heterojunction Bipolar Transistors (HBTs);  
High Electron Mobility Transistors (HEMTs);  
Tunneling Field Effect Transistors (TFETs);  
Metal Oxide Semiconductor Field Effect Transistors (MOSFETs);  
3D Transistor -- FinFET
2. Laser technology and applications; photoluminescence from nano-scale silicon and other materials; effects of UV laser irradiation on materials.
3. Design and fabrication of opto-electronic devices:  
Light Emitting Diodes (LEDs);  
Superluminescent Light Emitting Diodes (SLEDs);  
Photodiodes (PDs),  
Uni-travelling Carrier Photodiodes (UTC-PDs).
4. Growth of thin films; Nano-wires, Nano-particle fabrication; Nano-photonics.

## **Awards**

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Overseas Chinese Government Award for Outstanding Self-Financed Students Abroad (2009)

Research Assistantship at Simon Fraser University (2003-2006)

University Bursary at Simon Fraser University (2005)

Faculty of Applied Science Scholarship and Jardine Rolfe of Graduate School Award at Simon Fraser University (Spring 2005)

University Graduate Fellowships at Simon Fraser University (2004)

Graduate Research Scholarship at National University of Singapore (2001-2003)

Second Class University Graduate Scholarship at Jilin University (1999-2000)

Third Class University Scholarship at Jilin University (1997-1998)

Third Class Scholarship and Third Class Prize of "May 4th" at Jilin University (1996-1997)

Excellent Gifted Young Student at Jilin University (1994)

## Skills

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- Highly skilled in III-V compound semiconductor epilayer design and fabrication of electronic devices (InP/GaAsSb double heterojunction transistors, InAs/AlSb/GaSb tunneling field effect transistors, high electron mobility transistors, and InAs-on-Si MOSFETs, InAs-on-Si FinFETs).
- Thorough understanding of III-V compound semiconductor electron device physics.
- Fabrication of heterojunction bipolar transistors (HBTs) and tunneling field effect transistors (TFETs) by electron beam and optical lithography, dry etching and wet etching of III-V compound semiconductors.
- Skilled in using PECVD, RIE, ICP, electrode evaporation equipment, Oxygen Plasma Asher, SEM, Focused Ion Beam, etc. Hand-on experience with front-end to back-end processes of semiconductor devices.
- Electrical testing of electronic devices and material characterization (SIMS, RAMAN Spectroscopy, AFM, TEM, RBS, XRD, XPS, PL Spectroscopy).
- Design and fabrication of opto-electronic devices, photodiode and light emitting diodes, vertical cavity surface emitting lasers; able to fabricate MOSFETs with layered semiconductors.
- Familiarity with Technology Computer-Aided Design (TCAD) tools including Sentaurus, Nextnano, Silvaco and Bandprof; ADS (Advanced design system) and LEDIT mask design tool.
- Familiarity with Matlab and C language.
- Familiarity with laser annealing, laser ablation, laser deposition and laser cleaning and photoluminescence and Raman spectroscopy from nano-scale silicon by pulsed laser deposition.
- Excellent team player.

## Publication Lists

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### Journal Papers

#### Published

1. Guangyang Lin, Haiyang Hong, Jie Zhang, Yuying Zhang, Peng Cui, Jianyuan Wang, Songyan Chen, Yong Zhao, Chaoying Ni, Cheng Li, **Yuping Zeng**, "Fabrication of SiGe/Ge nanostructures by three-dimensional Ge condensation of sputtered SiGe on SiO<sub>2</sub>/Si substrate," Journal of Alloys and Compounds, Vol.858, pp. 157653, 2020.

2. Qi Cheng, Peng Cui, Sourabh Khandelwal, **Yuping Zeng**, "RF simulation of self-aligned T-shape S/D contact InAs MOSFET on silicon," *Solid State Electronics*, Vol. 172, pp. 107885, 2020.
3. Peng Cui, Guangyang Lin, Jie Zhang, **Yuping Zeng**, "Sub-60 mV/decade Switching via Hot Electron Transfer in Nanoscale GaN HEMTs," *IEEE Electron Device Letters*, Vol.40, No.8, pp.1185-1188, 2020.
4. G. Lin, M. Zhao, M. Jia, P. Cui, H. Zhao, J. Zhang, L. Gundlach, X. Liu, A. C. Johnson, and **Y. Zeng**, "Improving the electrical performance of monolayer top-gated MoS<sub>2</sub> transistors by post bis (trifluoromethane) sulfonamide treatment," *Journal of Physics D: Applied Physics*, Vol. 53, pp.415106, 2020.
5. Guangyang Lin, Dongxue Liang, Zhiwei Huang, Chunyu Yu, Peng Cui, Jie Zhang, Jianyuan Wang, Jianfang Xu, Songyan Chen, Cheng Li, **Yuping Zeng**, "Fabrication of polycrystalline SiGe- and Ge-on-insulator by Ge condensation of amorphous SiGe on SiO<sub>2</sub>/Si substrate," *Journal of Semiconductor Science and Technology*, 35, 095016, 2020.
6. Pete Beckman, **Yuping Zeng** et al, "5G Enabled Energy Innovation: Advanced Wireless Networks for Science," Workshop Report, USDOE Office of Science, 2020.
7. Jie Zhang, Guangyang Lin, Peng Cui, Meng Jia, Zhengxin Li, Lars Gundlach, **Yuping Zeng**, "Enhancement-/Depletion-Mode TiO<sub>2</sub> Thin-Film Transistors via O<sub>2</sub>/N<sub>2</sub> Pre-annealing," *IEEE Transactions on Electron Devices*, Volume 67, Issue 6, pp. 2346 -2351, 2020.
8. Kailiang Huang, Miao Zhao, Bing Sun, Xueyuan Liu, Hudong Chang, **Yuping Zeng**, Honggang Liu, Jianhua Liu, "Transition from Hopping to Band-like Transport in Weakly-coupled Multilayer MoS<sub>2</sub> Field Effect Transistors", *ACS Applied Electronic Materials*, Vol.2, No. 4, pp. 971-979, 2020.
9. Peng Cui, Jie Zhang, Meng Jia, Guangyang Lin, Lincheng Wei, Haochen Zhao, Lars Gundlach, and **Yuping Zeng**, "InAlN/GaN metal-insulator-semiconductor high-electron-mobility transistor with plasma enhanced atomic layer-deposited ZrO<sub>2</sub> as gate dielectric," *Japanese Journal of Applied Physics*, Vol. 59, 020910, 2020.
10. Peng Cui, Jie Zhang, Guangyang Lin, Lincheng Wei, Haochen Zhao, and **Yuping Zeng**, "Effects of N<sub>2</sub>O surface treatment on the electrical properties of the InAlN/GaN high electron mobility transistors," *Journal of Physics D: Applied Physics*, 53, 065103, 2020.
11. Kailiang Huang, Miao Zhao, Xueyuan Liu, Chao Feng, Bing Sun, Hudong Chang, **Yuping Zeng** and Honggang Liu, "Monolayer MoS<sub>2</sub>-based nonvolatile transistors with a titanium nitride in the gate," *AIP Advances*, 9, 125117, 2019.
12. Guangyang Lin, Meng-Qiang Zhao, Meng Jia, Jie Zhang, Peng Cui, Lincheng Wei, Haochen Zhao, A. T. Charlie Johnson, Lars Gundlach and **Yuping Zeng**, "Performance enhancement of monolayer MoS<sub>2</sub> transistors by atomic layer

- deposition of high-k dielectric assisted by Al<sub>2</sub>O<sub>3</sub> seed layer”, Journal of Physics D: Applied Physics, Vol.53, 105103, 2019.
13. Guangyang Lin, Dongxue Liang, Chunyu Yu, Haiyang Hong, Yichen Mao, Cheng Li, Songyan Chen, and **Yuping Zeng**, “Fabrication and modeling of SiGe and Ge nanowires on insulator by three-dimensional Ge condensation method”, Semiconductor Science and Technology, pp. 125005, Vol. 34, No.12, October 2019.
  14. Peng Cui, Jie Zhang, Guangyang Lin, Lincheng Wei, Haochen Zhao, and **Yuping Zeng**, “Influence of Negative Substrate Bias on the Electric Properties of InAlN/GaN MIS-HEMTs,” Journal of Physics D: Applied Physics, Vol.52, No.46, 465104, 2019.
  15. Peng Cui, Andrew Mercante, Guangyang Lin, Jie Zhang, Peng Yao, Dennis W Prather, **Yuping Zeng**, “High-performance InAlN/GaN HEMTs on silicon substrate with high  $f_T \times L_g$ ,” Applied Physics Express, pp. 104001-1—104001-4, Vol. 12, No. 10, September, 2019.
  16. Jie Zhang, Peng Cui, Guangyang Lin, Yuying Zhang, Maria Gabriela Sales, Meng Jia, Zhengxin Li, Christopher Goodwin, Thomas Beebe, Lars Gundlach, Chaoying Ni, Stephen McDonnell, **Yuping Zeng**, “High performance anatase-TiO<sub>2</sub> thin film transistors with two-step oxidized TiO<sub>2</sub> channel and plasma enhanced atomic layer-deposited ZrO<sub>2</sub> gate dielectric,” Applied Physics Express, Vol. 12, No.9, 096502, 2019.
  17. Kazy F Shariar, Guangyang Lin, Zijian Wang, Peng Cui, Jie Zhang, Robert Opila, **Yuping Zeng**, “Effect of Bistrifluoromethane sulfonimide treatment on Nickel/InAs contacts,” Applied Physics A, 125, 429, 2019.
  18. Jie Zhang, Maria Gabriela Sales, Guangyang Lin, Peng Cui, Paul Pepin, John M. Vohs, Stephen McDonnell, and **Yuping Zeng**, “Ultrathin-Body TiO<sub>2</sub> Thin Film Transistors with Record On-Current Density, On/Off Current Ratio and Subthreshold Swing via O<sub>2</sub> Annealing,” IEEE Electron Device Letters, Vol. 40, No.9, pp.1463-1466, 2019.
  19. Qi Cheng, Kazy Shariar Sourabh Khandelwal, **Yuping Zeng**, “DC and RF performances of InAs FinFET and GAA MOSFET on Insulator,” Solid State Electronics, 158, pp.11-15, 2019.
  20. **Yuping Zeng**, Sourabh Khandelwal, Kazy Shariar, Zijian Wang, Guangyang Lin, Qi Cheng, Peng Cui, Robert Opila, Ganesh Balakrishnan, Sakhvikas Addamane, Peyman Taheri, Daisuke Kiriya, Mark Hettick, Ali Javey, “InAs FinFETs performance enhancement by superacid surface treatment,” IEEE Transaction on Electron Devices, pp.1856-1861, Vol. 66, No. 4, April, 2019.
  21. J Zhang, K Shariar, G Lin, P Cui, **Y Zeng**, “Hydrogen silsesquioxane (HSQ) etching resistance dependence on substrate during dry etching,” Physica Status Solidi A, 1800530(1)-1800530(5), 2018.
  22. Kazy Shariar, Jie Zhang, Robert Opila, **Yuping Zeng**, “Surface adhesion enhancement by HDMS on Plasma bombarded SiO<sub>2</sub>/Si surface,” Material Research Express, 095903, 2018.

23. Qi Cheng, Zilun Wang, Kazy Shariar, Md Sufian, Sourabh Khandelwal, **Y. Zeng**, “Self-aligned gate-last process for quantum-well InAs transistor on insulator,” *Journal of Microelectronic Engineering*, vol.191, no. 5, pp. 42-47, May 2018.
24. **Yuping Zeng**<sup>+</sup>, Chingyi Hsu<sup>+</sup>, Edward Yi Chang, Chenming Hu, “Impact of Al content on InAs/AlSb/Al<sub>x</sub>Ga<sub>1-x</sub>Sb tunnelling diode,” *Journal of Engineering*, 20170428, 2017.
25. Ching-Yi Hsu, **Yuping Zeng**, Chen-Yen Chang, Chenming Hu, and Edward Yi Chang, “Study of Inherent Gate Coupling Nonuniformity of InAs/GaSb Vertical TFETs,” *IEEE Transaction on Electron Devices*, Vol. 63, No. 11, pp.4267-4272, 2016.

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26. W. Gao, H. Y. Y. Nyein, Z. Shahpar, H. M. Fahad, K. Chen, S. Emaminejad, Y. Gao, L.-C. Tai, H. Ota, E. Wu, J. Bullock, **Y. Zeng**, D.-H. Lien, A. Javey, “Wearable Microsensor Array for Multiplexed Heavy Metal Monitoring of Body Fluids”, *ACS Sensors*, 1, 866–874, 2016.
27. Angada B. Sachid, Mahmut Tosun, Sujay B. Desai, Ching-yi Hsu, Der-Hsien Lien, Surabhi R. Madhvapathy, Yu-Ze Chen, Mark Hettick, Jeong Seuk Kang, **Yuping Zeng**, Jr-Hau He, Edward Yi Chang, Yu-Lun Chueh, Ali Javey, Chenming Hu, “Monolithic 3D CMOS using Layered Semiconductors,” *Advanced Materials*, 28, 2547–2554, 2016.
28. Kevin Chen, Rehan Kapadia, Audrey Harker, Sujay Desai, Jeong Seuk Kang, Steven Chuang, Mahmut Tosun, Carolin Sutter Fella, Michael Tsang, **Yuping Zeng**, Daisuke Kiriya, Jubin Hazra, Surabhi Rao Madhvapathy, Mark Hettick, Yu-Ze Chen, James Mastandrea, Matin Amani, Stefano Cabrini, Yu-Lun Chueh, Joel Ager, Daryl Chrzan, Ali Javey, “Direct growth of single crystalline III-V semiconductors on amorphous substrates,” *Nature Communications*, 7, 10502, 2016.
29. Weitse Hsu, Mark Hettick, Carolin Sutter-Fella, Lungteng Cheng, Shengwen Chan, Yunfeng Chen, **Yuping Zeng**, Maxwell Zheng, Hsin-Ping Wang, Chien-Chih Chiang, and Ali Javey, “Electron-Selective TiO<sub>2</sub> Contact for Cu(In,Ga)Se<sub>2</sub> Solar Cells,” *Scientific Report*, 5, 16028, 2015.
30. **Yuping Zeng**, C.-I Kuo, C. Hsu, M. Nejmzadeh, A. Sachid, R. Kapadia, C. Yeung, E. Y. Chang, C. Hu, A. Javey, “Quantum Well InAs/AlSb/GaSb TFET using HSQ as a mechanical support,” *IEEE Transaction of Nanotechnology*, pp.580-584, 2015.
31. M. Tosun, S. Chuang, H. Fang, A. B. Sachid, M. Hettick, Y. Lin, **Y. Zeng**, A. Javey, "High Gain Inverters Based on WSe<sub>2</sub> Complementary Field-Effect Transistors", *ACS Nano*, 8 (5), 4948–4953, 2014.
32. **Yuping Zeng**, Chein-I Kuo, Rehan Kapadia, Chingyi Hsu, Ali Javey, Chenming Hu, “2-D to 3-D tunneling in InAs/AlSb/GaSb quantum well heterojunctions,” *Journal of Applied Physics*, 114, 024502, 2013.

33. Valeria Teppati, **Y.P. Zeng**, O. Ostinelli, C.R. Bolognesi, "Highly-Efficient InP/GaAsSb DHBTs with 62% Power-Added-Efficiency at 40 GHz," *IEEE Electron Device Letters*, Vol. 32, No.7, pp.886-888, 2011.
34. R. Lövblom, R. Flückiger, **Y.P. Zeng**, O. Ostinelli, A.R. Alt, H. Benedickter, and C.R. Bolognesi, "InP/GaAsSb DHBT with 500 GHz maximum oscillation frequency," *IEEE Electron Device Letters*, Vol. 32, No. 5, pp. 629-631, 2011.
35. **Y.P. Zeng**, O. Ostinelli, R. Lövblom, and A.R. Alt, H. Benedickter, and C.R. Bolognesi, "400 GHz InP/GaAsSb DHBTs with low-noise microwave performance," *IEEE Electron Device Letters*, Vol. 31, No. 10, pp. 1122-1124, 2010.
36. **Y.P. Zeng**, R. Lövblom, O. Ostinelli, and C.R. Bolognesi, "(Ga,In)P emitter composition effect on the performance of (Ga,In)P/GaAsSb/InP DHBTs grown by MOCVD," *Physics Status Solidi C*, pp. 2490-2493, 2010.
37. **Y.P. Zeng**, H. Benedickter, B.R. Wu, C.R. Bolognesi, "Microwave noise characterization of AlInAs/GaAsSb/InP DHBTs," *IEE Electronics Letters*, Vol. 45, Issue 23, pp. 1190-1191, Nov 2009.
38. H.G. Liu, O. Ostinelli, **Y.P. Zeng**, C.R. Bolognesi, "Emitter-size effects and ultimate scalability of InP:GaInP/GaAsSb/InP DHBTs," *IEEE Electron Device Letters*, Vol. 29, Issue 6, pp. 546-548, June 2008.
39. **Y.P. Zeng**, O. Ostinelli, H.G. Liu, C.R. Bolognesi, "Effects of arsenic mole fraction  $x$  on the gain characteristics of type-II InP/GaAsSb DHBTs," *Solid-State Electronics*, Vol. 52, pp. 1202-1206, 2008.
40. H.G. Liu, O. Ostinelli, **Y.P. Zeng**, C.R. Bolognesi, "High-current-gain InP/GaInP/GaAsSb/InP DHBTs with  $f_T = 436$  GHz," *IEEE Electron Device Letters*, Vol. 28, Issue 10, pp. 852-855, October 2007.
41. H. Liu, O. Ostinelli, **Y.P. Zeng**, C.R. Bolognesi, "High-gain arsenic-rich n-p-n InP/GaAsSb DHBTs with  $f_T > 420$  GHz," *IEEE Transaction on Electron Devices*, Vol. 54, Issue 10, pp. 2792-2795, October 2007.
42. W. Zhou, C.W. Tang, J. Zhu, K.M. Lau, **Y.P. Zeng**, H.G. Liu, N.G. Tao, C.R. Bolognesi, "Metamorphic heterostructure InP/GaAsSb/InP HBTs on GaAs substrates by MOCVD," *IEEE Electron Device Letters*, Vol. 28, Issue 7, pp. 539-542, July 2007.
43. L.G. Zheng, X. Zhang, **Y.P. Zeng**, S.P. Watkins, and C.R. Bolognesi, "Demonstration of high-speed staggered lineup GaAsSb/InP uni-traveling carrier photodiodes," *IEEE Photonics Technology Letters*, No. 17, Vol. 3, pp. 651-653, 2005.
44. S.C. Tan, L. Liu, **Y.P. Zeng**, A. See and Z. X. Shen, "The effect of film thickness on the C40 TiSi<sub>2</sub> to C54 TiSi<sub>2</sub> transition temperature," *Journal of the Electrochemical Society*, 152, 10, G754-G756, 2005.
45. **Y.P. Zeng**, Y.F. Lu, Z.X. Shen, J.N. Zeng, W.X. Sun, B.J. Cho, C.H. Poon, "Raman spectroscopy investigation on excimer laser annealing and thickness determination



- of nanoscale amorphous silicon,” *Journal of Nanotechnology*, No. 15, pp. 658-662, 2004.
46. D.C.H. Poon, B.J. Cho, Y.F. Lu, M. Bhat and A. See, “Multiple-pulse laser annealing of preamorphized silicon for ultrashallow boron junction formation,” *Journal of Vacuum Science and Technology B* 21(2), pp. 706-709, Mar/Apr 2003.
  47. Y. Liu, J.F. Song, **Y.P. Zeng**, G.T. Du, “Wide-spectrum high-power 1.55  $\mu\text{m}$  superluminescent light source with non-uniform well-thickness multi-quantum wells,” *Chinese Journal of Lasers*, Vol. A30 Issue: 2 Pages: 109-112, Feb. 2003.
  48. X.Y. Chen, Y.F. Lu, B.J. Cho, **Y.P. Zeng**, J.N. Zeng, Y.H. Wu, “Pattern-induced ripple structures at silicon-oxide/silicon interface by excimer laser irradiation,” *Applied Physics Letters*, Vol. 81, No. 7, pp. 1344-1346, Aug 12, 2002.
  49. Yang Liu, **Yuping Zeng**, Junfeng Song, Bin Wu, Yuantao Zhang, Guotong Du, “1.5 microns tilted Integrated superluminescent light source,” *Proceedings of SPIE*, Vol. 4277, pp.396-402, 2001.
  50. Y. Liu, J.F. Song, **Y.P. Zeng**, B. Wu, Y.T. Zhang, Y. Qian, Y.Z. Sun, G.T. Du, “High power 1.5  $\mu\text{m}$  integrated superluminescent light source with tilted ridge waveguide,” *Journal of Optical and Quantum Electronics*, Vol. 33, No. 12, pp. 1233-1239, Dec 2001.
  51. Y. Liu, J.F. Song, **Y.P. Zeng**, B. Wu, Y.T. Zhang, Y. Qian, Y.Z. Sun, G.T. Du, “High-power 1.5  $\mu\text{m}$  InGaAsP/InP strained quantum wells integrated superluminescent light source with tilted structure,” *Japanese Journal of Applied Physics*, Vol. 40, Issue 6A, pp. 4009-4010, June, 2001.
  52. Y. Liu, J.F. Song, **Y.P. Zeng**, B. Wu, Y.T. Zhang, Y. Qian, Y.Z. Sun, G.T. Du, “High-power 1.5  $\mu\text{m}$  InGaAsP/InP integrated superluminescent light source,” *Chinese Physics Letter*, Vol. 18, No. 8, pp. 1074-1077, Aug, 2001.
  53. Y. Liu, J.F. Song, **Y.P. Zeng**, J.Z. Yin, G.T. Du, “Integrated Superluminescent Light Source with Tilted Structure by Using Ridge Waveguide”, *Chinese J. Lasers (中国激光)*, vol.28, No.9, pp.786-788, 2001.
  54. Liu Yang, **Zeng Yuping**, Song Junfeng, Guotong Du, InGaAsP/InP integrated superluminescent light source with tilted structure. *Chinese J. Lasers (中国激光)*, 2001, 28(5):412~414 (in Chinese)

### Conference Papers After Join Udel

1. Jie Zhang, Peng Cui, Guangyang Lin, and **Yuping Zeng**, “High-performance, sub-2 volts  $\text{TiO}_2$  thin film transistors enabled by ultrathin  $\text{ZrO}_2$  gate dielectrics,” 5<sup>th</sup> IEEE Electron Devices Technology and Manufacturing conference, Mar 2021.
2. Jie Zhang, Meng Jia, Guangyang Lin, Peng Cui and **Yuping Zeng**, “Ionic doping of

TiO<sub>2</sub> thin film transistors using superacid treatment,” 62nd Electronic Materials Conference, June 24-26, 2020.

3. Peng Cui, Meng Jia, Guangyang Lin, Jie Zhang, Lars Gundlach, and **Yuping Zeng**, “Enhanced Electrical Performance of Forming Gas Annealed InAlN/GaN HEMTs on Silicon with  $f_T/f_{max}$  of 165/165 GHz,” 78th Device Research Conference, June 21-24, 2020.
4. Jie Zhang, Peng Cui, Guangyang Lin, **Yuping Zeng**, “High-performance ultrathin body TiO<sub>2</sub> TFTs with record on/off current ratio and subthreshold swing,” Device Research Conference, 2019.
5. Jie Zhang, Kazy Shariar, and **Yuping Zeng**, “HSQ etching dependence on substrate,” Compound Semiconductor Week, May 29-June 3, 2018.
6. Qi Cheng, Sourabh Khandelwal and **Yuping Zeng**, “DC and RF performances of InAs FinFET and GAA MOSFET on Silicon,” Compound Semiconductor Week, May 29-June 3, 2018.
7. Kazy F Shariar, Jie Zhang, **Yuping Zeng**, “Effect of Bis(trifluoromethane) sulfonimide (Super Acid) treatment on electrical properties of InAs nano ribbons”, Compound Semiconductor Week, May 29-June 3, 2018.
8. Qi Cheng, Zilun Wang, Kazy Shariar, Md Sufian, Sourabh Khandelwal, **Y. Zeng**, “Self-aligned gate-last process for quantum-well InAs transistor on insulator,” 43<sup>rd</sup> international conference on Micro and Nanoengineering, Sep 18-22, 2017.

#### **Before Join Udel**

9. Mohammad Najmzadeh, J.P. Duarte, S. Khandelwal, **Y. Zeng**, C. Hu, “2D MOSFET operation of a fully-depleted bulk MoS<sub>2</sub> at quasi-flatband back-gate”, *Device Research Conference*, 2015.
10. **Y Zeng**, C. Hu, “Fabrication of III-V TFETs”, invited poster, *the 4th international conference on Nanotech and Expo*, Dec 1-3, San Francisco, 2014.
11. **Y.P. Zeng**, R. Flückiger, O. Ostinelli, C.R. Bolognesi, “Type-II InP/GaAs<sub>x</sub>Sb<sub>1-x</sub> DHBTs with simultaneous  $f_T$  and  $f_{MAX} > 340$  GHz fabricated by contact lithography,” *International Conference on Indium Phosphide and Related Materials*, pp. 5515950, May 2010.
12. **Y.P. Zeng**, R. Lövblom, O. Ostinelli, C.R. Bolognesi, “(Ga, In)P emitter composition effect on the performance of (Ga In)P/GaAsSb/InP DHBTs grown by MOCVD,” *36th International Symposium on Compound Semiconductors*, pp. 143-144, August 2009.
13. **Y. P. Zeng**, O. Ostinelli, R. Lövblom, C. R. Bolognesi, “Influence of emitter doping on DC gain and cut-off frequency in InP/GaAsSb DHBTs,” *33rd Workshop on Compound Semiconductor Devices and Integrated Circuits*, pp.3-6, Málaga, Spain, May 2009.

14. C.R. Bolognesi, H.G. Liu, O. Ostinelli, **Y.P. Zeng**, "Antimonides chase terahertz target," *Compound Semiconductor*, Vol. 14, Issue 7, pp. 21-23, August 2008.
15. C.R. Bolognesi, H.G. Liu, O. Ostinelli, **Y.P. Zeng**, "Development of ultrahigh-wideband InP/GaAsSb/InP DHBTs," *Solid State Devices and Materials*, pp. 160-161, September 2008.
16. C.R. Bolognesi, H.G. Liu, O. Ostinelli, **Y.P. Zeng**, "Development of Ultrahigh-Speed InP/GaAsSb/InP DHBTs: Are Terahertz Bandwidth Transistors Realistic?" *Microwave Integrated Circuit Conference*, pp.107-110, 2008
17. **Y.P. Zeng**, O. Ostinelli, H.G. Liu, C.R. Bolognesi, "Effects of arsenic mole fraction  $x$  on the gain characteristics of type-II InP/GaAs<sub>x</sub>Sb<sub>1-x</sub> DHBTs," *IEEE Indium Phosphide and Related Materials Conference*, pp. 1-3, May 2008.
18. H.G. Liu, O. Ostinelli, **Y.P. Zeng**, C.R. Bolognesi, "Emitter size effects and the scalability of GaInP/GaAsSb/InP DHBTs," *IEEE Indium Phosphide and Related Materials Conference*, pp.1-3, May 2008.
19. H.G. Liu, O. Ostinelli, **Y.P. Zeng**, C.R. Bolognesi, "600 GHz InP/GaAsSb/InP DHBTs grown by MOCVD with a Ga(As Sb) graded-base and  $f_T \times BV_{CEO} > 2.5$  THz·V at room temperature," *IEEE Int. Electron Device Meeting*, pp.667-670, Piscataway NJ USA, December 2007.
20. H.G. Liu, **Y.P. Zeng**, O. Ostinelli, C.R. Bolognesi, "Kirk effect in Type-II InP/GaAsSb DHBTs with a Collector doping spike," *19<sup>th</sup> International Conference on Indium Phosphide and Related Materials*, pp. 409-412, Matsue, Japan, May 2007.
21. C.R. Bolognesi, H.G. Liu, **Y.P. Zeng**, O. Ostinelli, "Kirk effect in type-II InP/GaAsSb DHBTs with collector delta-doping," *WOCS DICE 2007 / 31<sup>st</sup> Workshop on Compound Semiconductors and ICs*, pp.367-370, May 2007.
22. **Y.P. Zeng**, H. G. Liu, N. G. Tao, C.R. Bolognesi et al, "High performance metamorphic InP/GaAsSb/InP Type-II DHBTs grown on GaAs substrates," *GaAs Mantech*, April 24-28, Vancouver, 2006.
23. Y. Liu, **Y.P. Zeng**, J.F. Song, J.Z. Yin, Q. Gao, G.T. Du, "Tapered integrated superluminescence light source with tilted structure," *the 3<sup>rd</sup> Photonics Conference in China*, March 2000.

## Student Awards

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### Qi Cheng,

2021 Doctoral Dissertation Fellowship

2018 Bendett Fellowship

2018 Summer fellowship

### Jie Zhang,

Graduate Fellowship 2020

Nanoelectronics, electromagnetics and photonics award, UD ECE Research Day May.2019

Bendett Fellowship, University of Delaware, ECE Department May.2019

Professional Development Award, University of Delaware May.2019

Summer Doctoral Fellowship, University of Delaware Jul.2018

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Professional Development Award, University of Delaware  
Kazy Shariar, Nanoelectronic, Electromagnetic and Photonics Graduate Faculty Award, 2017

May.2018

### **Invited Talks**

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-LPS, Feb 5, 2020  
-Nanchang Normal University, June, 2019  
-NASA, July, 2019  
-Peking University, June 1, 2019  
-Jilin University, June 10, 2019  
-University of Virginia, Dec 5, 2018  
-Princeton University, Dec 3, 2018  
-UESTC Aug 6, 2018  
-Institute of Microelectronics, ICAS, July 25, 2018  
-Virginia Tech, May 18, 2018.  
-Huazhong University of Science and Technology, Wuhan, July 8, 2016.  
-Nanchang Normal University, Nanchang, June 30, 2016.  
-Jilin University, May 21, 2016.

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### **Journal Manuscript Reviewer**

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**Reviewers** for IEE Electronic Letters, Applied Physics Letters, Micro and Nano letters, Journal of Materials Science in Semiconductor Processing, Arabian Journal for Science and Engineering, Journal of Applied Physics, Journal of Vacuum Science and Technology B, Journal of Microelectronics and Electronic Packaging, IEEE Electron Device Letters, Transaction on Electron Devices, Microwave and Optical Technology Letters, APL Materials.

**Editorial Board** for Solid State Electronics, Materials Science in Semiconductor Processing, AEUE, Journal of Alloys and Compounds, Physica E: Low-dimensional Systems and Nanostructures, Applied Surface Science.

### **Teaching Activity and Interests**

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#### **Class Developed in Udel:**

1. ELEG450/650 Semiconductor Device Design and Fabrication
  2. ELEG470/670 Transistor Principles, Design and Fabrication
  3. ELEG446/646 Nanoelectronic Device Principle
  4. ELEG340 Solid State Electronics
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### **News Report**

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**Peng Cui's** paper in the newspaper:

#### **Semiconductor-Today:**

[http://www.semiconductor-today.com/news\\_items/2019/oct/uod-091019.shtml](http://www.semiconductor-today.com/news_items/2019/oct/uod-091019.shtml)

[http://www.semiconductor-today.com/news\\_items/2019/dec/delaware-161219.shtml](http://www.semiconductor-today.com/news_items/2019/dec/delaware-161219.shtml)

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**ScienceDaily:**

<https://www.sciencedaily.com/releases/2019/11/191126140420.htm>

**UDaily:**

[https://www.udel.edu/udaily/2019/november/yuping-zeng-record-setting-transistor/?utm\\_source=UDaily+Subscribers&utm\\_campaign=02bb534fe8-UDaily\\_News\\_Email&utm\\_medium=email&utm\\_term=0\\_0b5034716d-02bb534fe8-177586733](https://www.udel.edu/udaily/2019/november/yuping-zeng-record-setting-transistor/?utm_source=UDaily+Subscribers&utm_campaign=02bb534fe8-UDaily_News_Email&utm_medium=email&utm_term=0_0b5034716d-02bb534fe8-177586733)

**Jiezhang's** PSSA paper is named the "Top downloaded paper" in 2018-2019.

**Mentees:**

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**Postdoc:** Peng Cui

**PhD:** Qi Cheng, Jie Zhang, Haochen Zhao

**Undergraduate research students:** Sean Macke

**2021 Winter intern:** Wang Zhuonan, Zhang mengqi, Henry Chan

**Alumni (Master):** Zilun Wang, Krishna Patwardhan, Haochen Zhao, Minchoel Lee  
Lincheng Wei, Kazy Shariar, Md Sufian, Ugur Guneroglu

**Alumni (Undergraduate)**

2020 summer: Jasmine Garvin, Tian Peiyu

2020 winter: Joe McFillin

2019 summer: Shallini Sundar

2019 winter: Nicholas Harty

2017 summer: Kolby Kuratnick, Damuel J. Romano, Ren Zhongjie

**Alumni (K-12)**

2019 Summer: Ainsley Eimer, 2018-Lucy Xu

**Alumni Highlight:** Guangyang Lin (Faculty in Xiamen University)

Ren Zhongjie (PhD candidate at UCSD)

Shallini Sundar (PhD candidate at University of Delaware)

**Services**

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1. Graduate Committee, 2019-present
2. Search Committee for Department Chair, 2019
3. Search Committee for UDNF staff, 2018
4. Search Committee for New Faculty, 2017
5. PhD Examination committee, 2016-present

**Patent**

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P. Cui and Y. Zeng, "A Two-Step Annealing on InAlN/GaN Source/Drain Contacts," Provisional patent, 2020.