

Yu Cao

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Education

- University of Southern California**, Los Angeles August 2012 – May 2017
- Ph.D. in *Electrical Engineering* GPA: 3.97/4.00
 - Advisor: Prof. Chongwu Zhou
- Peking University**, Beijing, China September 2008 – July 2012
- B.S. in *Microelectronics* GPA: 3.80/4.00 (Top 5%)
 - B.S. in *Economics* GPA: 3.84/4.00

Research Interests

- High-performance analog/radio-frequency transistors, circuits and systems
- Flexible large-scale and low-cost electronics based on nano materials

Selected Research Projects

High-Performance Radio-Frequency Electronics Based on Carbon Nanotubes

- Developed a self-aligned T-shape gate structure that provides superior control of carbon nanotube radio-frequency transistors
- Investigated the effects of a variety of factors (carbon nanotube purity, diameter distribution and alignment) on the performance of carbon nanotube radio-frequency transistors systematically for the first time
- Manufactured and demonstrated the world-best carbon nanotube radio-frequency transistors with cut-off frequencies greater than 70 GHz

Flexible Large-Scale Macroelectronics Based on Carbon Nanotubes

- Developed flexible macroelectronics based on carbon nanotubes with record smallest bending radius of 40 μm
- Demonstrated large-scale flexible complementary macroelectronics using the hybrid integration of carbon nanotubes and IGZO for the first time

Publications

- Cao, Y.; Brady, G. J.; Gui, H.; Rutherglen, C.; Arnold, M. S.; Zhou, C. Radio Frequency Transistors Using Aligned Semiconducting Carbon Nanotubes with Current-Gain Cutoff Frequency and Maximum Oscillation Frequency Simultaneously Greater Than 70 GHz. *ACS Nano* 2016, 10, 6782-6790.
- Cao, Y.; Che, Y. C.; Seo, J. W. T.; Gui, H.; Hersam, M. C.; Zhou, C. W. High-Performance Radio Frequency Transistors Based on Diameter-Separated Semiconducting Carbon Nanotubes. *Applied Physics Letters* 2016, 108.
- Cao, Y.; Che, Y. C.; Gui, H.; Cao, X.; Zhou, C. W. Radio Frequency Transistors

Based on Ultra-High Purity Semiconducting Carbon Nanotubes with Superior Extrinsic Maximum Oscillation Frequency. *Nano Research* 2016, 9, 363-371.

- Cao, X.; **Cao, Y.**; Zhou, C. W. Imperceptible and Ultraflexible P-Type Transistors and Macroelectronics Based on Carbon Nanotubes. *ACS Nano* 2016, 10, 199-206.
- Chen, H. T.; **Cao, Y.**; Zhang, J. L.; Zhou, C. W. Large-Scale Complementary Macroelectronics Using Hybrid Integration of Carbon Nanotubes and IGZO Thin-Film Transistors. *Nature Communications* 2014, 5.
- Cao, X.; Chen, H. T.; Gu, X. F.; Liu, B. L.; Wang, W. L.; **Cao, Y.**; Wu, F. Q.; Zhu, C. W. Screen Printing as a Scalable and Low-Cost Approach for Rigid and Flexible Thin-Film Transistors Using Separated Carbon Nanotubes. *ACS Nano* 2014, 8, 12769-12776.
- Esqueda, I. S.; Cress, C. D.; **Cao, Y.**; Che, Y.; Fritze, M.; Zhou, C. The Impact of Defect Scattering on the Quasi-Ballistic Transport of Nanoscale Conductors. *Journal of Applied Physics* 2015, 117.
- Yao, M. Q.; Huang, N. F.; Cong, S.; Chi, C. Y.; Seyedi, M. A.; Lin, Y. T.; **Cao, Y.**; Povinelli, M. L.; Dapkus, P. D.; Zhou, C. W. Gaas Nanowire Array Solar Cells with Axial P-I-N Junctions. *Nano Letters* 2014, 14, 3293-3303.
- Esqueda, I. S.; Cress, C. D.; Che, Y. C.; **Cao, Y.**; Zhou, C. W. Charge Trapping in Aligned Single-Walled Carbon Nanotube Arrays Induced by Ionizing Radiation Exposure. *Journal of Applied Physics* 2014, 115.

Professional Activities

Journal Reviewer

- Applied Physics A
- IEEE Transactions on Nanotechnology

Teaching Experience

Teaching Assistant

- VLSI System Design A 2013 Fall, 2014 Fall
- Essentials of Electrical Engineering 2015 Spring
- Modern Solid-State Devices 2015 Fall
- Solid State Processing and Integrated Circuits Laboratory 2016 Spring

Honors and Awards

- **Wu-Si Scholarship**, Peking University 2010
The only recipient (1 out of 60) in Department of Microelectronics, Peking University
- **Guang-Hua Scholarship**, Peking University 2009
The only recipient (1 out of 60) in Department of Microelectronics, Peking University