# Zhi David Chen

Department of Electrical and Computer Engineering
University of Kentucky,
453 Anderson Tower
Lexington, KY 40506

Phone: (859)218-6550
Fax: (859)257-3092
E-mail: zhichen@engr.uky.edu
http://www.engr.uky.edu/~zhichen

## Professional Preparation

| | | | |
|---|---|---|---|
| University of Electronic Science & Technology (China) | Electrical Engineering | B.S. | 1984 |
| University of Electronic Science & Technology (China) | Electrical Engineering | M.S. | 1987 |
| University of Illinois at Urbana-Champaign | Electrical Engineering | Ph.D. | 1999 |

## Appointments

| | |
|---|---|
| 2009 – Present | Professor of Electrical Engineering, University of Kentucky, Lexington, KY |
| 2011 – 2013 | Director of Graduate Studies, Department of Electrical & Computer Engineering, University of Kentucky, Lexington, KY |
| 2004 – 2009 | Associate Professor, Electrical Engineering, University of Kentucky, Lexington, KY |
| 2001 – Present | Associate Director of Center for Nanoscale Science & Engineering, University of Kentucky, Lexington, KY |
| 1999 – 2004 | Assistant Professor, Electrical Engineering, University of Kentucky, Lexington, KY |
| 1998 | Member of Technical Staff, Bell Laboratories, Lucent Technologies, Orlando, FL |
| 1994 – 1999 | Research Assistant, University of Illinois/Urbana-Champaign, Urbana, IL |
| 1993 | Teaching and Research Assistants, Southern Illinois University at Carbondale |
| 1987 – 1992 | Lecturer, University of Electronic Science and Technology (China) |

## Products

### (i) Five most closely related to the proposed project:

1. D. W. Gong, C. A. Grimes, R. S. Singh, O. K. Varghese, **Z. Chen**, W. C. Hu and E. C. Dickey, "Titanium Oxide Nanotube Arrays Prepared By Anodic Oxidation," J. Mater. Res. vol. 16, pp. 3331-3334 (2001).
2. P. Liu, V. P. Singh, S. Rajaputra, S. Phok, and **Z. Chen**, "Characteristics of copper indium diselenide nanowires embedded in porous alumina templates," J. Mater. Res. 25, 207-212 (2010)
3. **Z. Chen** and H. Zhang, "Mechanisms for formation of a one-dimensional array of nanopores by anodic oxidation," J. Electrochem. Soc. vol. 152, no. 12, D227-D231 (2005).
4. W. C. Hu, D. W. Gong, **Z. Chen**, L. M. Yuan, K. Saito, P. Kichambare and C. A. Grimes, "Growth of well-aligned carbon nanotube arrays on silicon substrate using porous alumina film as a nanotemplate," Appl. Phys. Lett. vol. 79, pp. 3083-3085, 2001.
5. L. Han, J. Pan, Q.L. Zhang, S.B. Li, and **Z. Chen**, "Atomic Layer Deposition of High Quality $HfO_2$ Using In-Situ Formed Hydrophilic Oxide as an Interfacial Layer", ECS J. Solid State Sci. & Technol, 3 (12) N1-N6 (2014).

### (ii) Five other significant products:

1. Y. Zhou, G.Z. Xie, T. Xie, H. Yuan, H.L. Tai, Y.D. Jiang, and **Z. Chen**, "A sensitive film structure improvement of reduced graphene oxide based resistive gas sensors", Appl. Phys. Lett. 105, 033502 (2014)
2. **Z. Chen**, P.-L. Ong, Y.C. Wang, and L. Han, "Lateral heating of $SiO_2$/Si: Interfacial Si structure change causing tunneling current reduction," Appl. Phys. Lett. 100, 171602 (2012).
3. P. L. Ong and **Z. Chen**, "Evidence of enhanced phonon-energy coupling in $SiO_2$/Si," Appl. Phys. Lett. 90, 113516 (2007).
4. **Z. Chen** and I. Yucedag, "Moisture Sensors on Conductive Substrates," US Patent 8,739,623, filed on March 9, 2012, issued on June 3, 2014.

5. L. Han and **Z. Chen**, "High-quality thin $SiO_2$ films grown by atomic layer deposition using tris(dimethylamino)silane (TDMAS) and ozone", ECS J. Solid State Sci. & Technol., 2 (11) N228-N236 (2013).

## Synergistic Activities

***Achievements:*** Pioneered growth of $TiO_2$ nanotubes using anodic oxidation of Ti, which has a **high impact** in nanoscale material research (J. Mater. Research 16, 3331-3334, 2001, *Google scholar citation: **1,628** and ISI citation: **1,151*** as Oct 21, 2014); Fabricated metal-insulator-semiconductor (MIS) structures on p-type GaAs with interface trap density of 5 X $10^{10}$ $cm^{-2}$ $eV^{-1}$ (1996); Developed the world's first reliable and drift-free hybrid dielectric moisture sensors for trace moisture measurement (<1 $ppm_v$) (US Patent filed, 2013).

***Honors and Awards:*** NSF CAREER Award (2001); National Award for Invention, Ministry of Science and Technology, P. R. China (1995); The Second Prize Paper Award, Industrial Automation and Control Committee, the 27th Annual Conference, IEEE Industry Application Society, USA (1992); Senior Member of IEEE; Who's Who in America (2001-2007); Kentucky Utilities Professor of Electrical Engineering, University of Kentucky (2007); Wethington Award, University of Kentucky, (2005); 1998 - 1999 Beckman Graduate Fellowship, University of Illinois at Urbana-Champaign.

***Professional Activities:*** Editorial Board Member, *Sensor Letters*, American Scientific Publishers, Stevenson Ranch, CA; Technical Program Committee Member, the 2008 IEEE UGIM (University Government Industry Micro/nano) Symposium, Louisville, KY; Panelist, National Science Foundation, Arlington, VA; Reviewer for proposals for US Civilian Research and Development Foundation, Arlington, VA, and Department of Energy SBIR program; Session Chair, the ECS International Semiconductor Technology Conference, Shanghai, China, the Electrochemical Society, May 27 – 30, 2001; Reviewer for *Journal of Applied Physics, Applied Physics Letters, Journal of Electrochemical Society, IEEE Transactions on Electron Devices, IEEE Transactions on Device and Material Reliability, IEEE Sensor Journal, Journal of Electronic Materials,* and *Journal of Nanoscience and Nanotechnology*; Senior Member, Institute of Electrical and Electronics Engineers (IEEE); Short course: "MOSFET Technology" at Lexmark International, Inc., Lexington, KY, Summer 2001

***Education Outreach:*** Seminars "Computer Chips: A World of Microelectronics," in *Rogers Scholars Program*, Center for Rural Development, Somerset, KY, Summer 2000, 2001, 2002, 2007 and in Laurel High School, London, KY, Summer 2008, 2009. Lab sessions "Assembly of Humidity Sensing Circuits," in *Rogers Scholars Program*, Center for Rural Development, Somerset, KY, Summer 2002, 2003, 2004, 2005, 2006, 2007; Education outreach for 3rd-5th grade students in Deep Spring Elementary School and J. R. Ewan Elementary School at Lexington, KY, April 2001.

## Collaborators & Other Affiliations

**(a) Collaborators**
H. Morkoc, (VA Commonwealth University), K. Saito (University of Kentucky)
**(b) Graduate and Postdoctoral Advisors**
Ph.D Thesis Advisor: Joseph W. Lyding (University of Illinois at Urbana-Champaign)
Postdoctoral Advisor: None
**(c) Graduate Advisees and Postgraduate-Scholars**
Current Visiting Scholar: Dr. Xiaohui Wang
Current PhD students: Lei Han, Xiaowei Zhang, Hojjatollah Sarvari, Riasad Badhan. Current MS students: Bojie Chen, Jingbo Tong.
Past Postdoctoral Associates: Ibrahim Yucedag, Yongsik Song, Shibin Li, Chandan B. Samantaray, Hongguo Zhang, Dongyan Ding, Jun Guo, Dawei Gong.
Past Graduate Students: PhD EE: Chi Lu (2009), Aaron Ong (2008); MSEE: Chenling Yi (2010), Yichun Wang (2009), Rui Zhu (2008), Stan McVay (2004), Aaron Ong (2004), Swee Yeaw Goh (2003), Wenchong Hu (2002), Pradeep Garg (MSEE, 2000).