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Education

The City College of NY	Ph.D., Electrical Engineering	1987
The City College of NY	M.S., Electrical Engineering	1984
Suzhou University, China	B.S., Physics	1982

Professional Experience

Associate Professor, Physics	Brooklyn College	2005 - Present
Guest Professor	Institute of Semiconductor, Chinese Academy of Sciences, Beijing	1993 - Present
Senior Design/Validation Engineer	TriQuint Semiconductor, PA	2003 - 2005
Distinguished member Technical Staff	Agere Systems, PA	2002 - 2003
Distinguished member Technical Staff	Bell Labs/Lucent Technologies, PA	2000 - 2002
Professor, Electrical Engineering	The City College of NY	1998 - 2001
Visiting Scientist	Thomas J. Watson Research Center of IBM	1996 - 2000
Visiting Scientist	AT&T Bell Laboratories, NJ	1995 - 1996
Associate Professor, Electrical Engineering	The City College of NY	1993 - 1997
Assistant Professor, Electrical Engineering	The City College of NY	1987 - 1992

Research Interests

- Quantum bit implementation for quantum computers using semiconductor nanostructures
- Infrared photodetectors
- Low cost and high efficient solar cells

Selected Publications (Total of 51 papers and 3 provisional patent applications)

- *Demonstration of III-V Semiconductor-based nonvolatile memory devices*, Zhongwei Pan and Kai Shum, Appl. Phys. Lett. 76, 505 (2000).
- *Quantum indistinguishability effects of confined polyexcitons*, Kai Shum, P. M. Mooney, and J. O. Chu, Phys. Rev. B 60, 5786 (1999).
- *Dynamics of recombination-enhanced defect reaction in a ZnCdSe single quantum well*, Minxue Tang, Kai Shum, L. Zeng, and M. C. Tamargo, Appl. Phys. Lett, 73, 1541 (1998).
- *A concept for nonvolatile memories*, Kai Shum, Jianqin Zhou, Wei Zhang, L. Zeng, and M. C. Tamargo, Appl. Phys. Lett. 71, 2487 (1997).
- *Room temperature differential negative resistance in an Al/Zn0.61Cd0.39Se/n+-InP device*, Kai Shum, J. Zhou, W. Zhang, L. Zeng, and M. C. Tamargo, Appl. Phys. Lett. 71, 815 (1997).
- *Quantum confined biexcitons in SiGe grown on Si(001)*, Kai Shum, P. M. Mooney, L. P. Tilly, and J. O. Chu, Phys. Rev. B 55, 13058 (1997).

Selected Grants
(Total: $ 1.5 Million - average funding per year = $125,000 over the time period of 1988 - 2000)

- Theoretical study on quantum entangled states in coupled quantum dots, PSC-CUNY, 2006 - 2007.
- High density solid state memory, National Aeronautics and Space Administration (NASA), 1998 – 2001.
- Photo-receivers based on SiGe grown on Si substrates, IBM, 1999 – 2001.
- Optical interconnect for high performance computers, NEC, 1997 - 1999.
- Hot electron SiGe laser, Air Force Office of Scientific Research (AFOSR), 1994 – 1997.
- Quantum transport of femtosecond photo-excited carriers in semiconductor hetero-structures of GaAs and Si, National Science Foundation (NSF), 1992 - 1995.