Curriculum Vitae

Geng-Chiau (Albert) Liang

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CURRENT EMPLOYMENT:

Assistant Professor *12/2006~onwards*
Department of Electrical and Computer Engineering,
National University of Singapore, Singapore

Adjunct Assistant Professor *11/2007~onwards*
Institute of High Performance Computing, A*STAR, Singapore

RESEARCH INTERSTS

My research interests focus on computational nanotechnology, emphasizing opportunities to work closely with experimentalists. I enjoy working on multidisciplinary problems in the area of nano-electronics, molecular electronics, and biological electronics and systems. I would like to address important problems related to experiments and technologies, understand essential physics, develop simulation tools and approaches, collaborate with various experimental/computational teams, and provide theories and insights into experimental work.

EDUCATION:

Ph.D. in Electrical and Computer Engineering, Purdue University, West Lafayette, IN 47907 U.S.A. *8/2000 ~ 8/2005*
Thesis: Modeling of Electron Transport in Hybrid Silicon-Molecule Devices
Advisor: Prof. Supriyo Datta

M.S. in Physics, National Tsing-Hua University, Hsinchu, Taiwan 300, R.O.C. *9/1995 ~ 6/1997*
Thesis: Multi-band Quantum Transmitting Boundary Method for Non-orthogonal Basis
Advisor: Prof. David Ting
Scholarship *(9/96 ~ 6/97)*; ***Ranking(Overall):*** *2nd in the class of 24*

B.S. in Physics, National Tsing-Hua University, Hsinchu, Taiwan 300, R.O.C *9/1991 ~ 6/1995*
The Academic Achievement Award; Ranking(overall)*: 3rd in the class of 42*

PROFESSIONAL EXPERIENCE:

Supervisor of Computational Nanoelectronics and Nano-devices Lab 2009~presnt

Postdoctoral research associate; *School of ECE, Purdue University, West Lafayette, IN 47907, USA.* *7/2005 ~ 12/2006*
Field of interest*: Nano-Device Physics and modeling, Nanowire Transistor/Sensors, Optical Properties of Nanowire Devices*
Supervisor: *Professor Mark Lundstrom*

Research Assistant; *School of ECE, Purdue University, West Lafayette, IN 47907, USA.* *8/2000 ~ 8/2005*
Field of interest*: Nanoelectronics, Molecular Electronics and Devices.*
Adviser*: Professor Supriyo Datta*

Course Assistant; *School of ECE, Purdue University, West Lafayette, IN 47907, USA* *1/2005~5/2005*
Course offering: *Advanced CMOS devices (http://shay.ecn.purdue.edu/~ee612)*

Lab. Instructor, *Summer School on Computational Materials Science at University of Illinois, Urbana-Champaign, 2002* *5/2002*

Research Assistant; *Institute of Atomic and Molecular Science, Academia Sinica, Taipei Taiwan 106, R.O.C* *6/1999 ~ 6/2000*
Field of study: *Phenomena of Optical parametric Oscillators (OPO) in nonlinear optics*

Supervisor: *Dr. Andrew Kung*

Research Assistant; *Physics, National Tsing-Hua University, Hsinchu, Taiwan 300, R.O.C.* *9/1995 ~ 6/1997*
Field of interest: *Computer Simulation of Quantum Phenomena in Heterostructures*
Adviser: *Professor David Ting*

Teaching Assistant; *Physics, National Tsing-Hua University, Hsinchu, Taiwan 300, R.O.C.* *9/1995 ~ 6/1996*
Course offering: *Classical Mechanics (a required course for sophomore students in the department of Physics)*

RESEARCH HIGHLIGHTS

Founder member and Supervisor of Computational Nanoelectronics and Nano-devices Lab 2009~presnt

Energy harvesting devices: Thermoelectric properties of nano-devices 2008~ Present
Investigation of thermoelectric properties of nano-devices, such as Ge/Si Nanowires, and evaluation of thermoelectric devices for clean energy applications. Furthermore, we also develop the appropriate model to understand both of electron and heat transport properties in the nano-scale devices.

Low power consumption devices 2008 ~ Present
Development of quantum transport modeling for low power consumption devices. Furthermore, we also explore fundamentals of device physics and device performance of the potential low power consumption devices for future applications.

Nanoscale Field-Effect Transistor Modeling: Explored the device performance and device physics of nanoscale FETs with various channel materials such as carbon nanoribbons, silicon-nanowires, and organic molecules. 2005 ~ Present

Atomistic Modeling of Silicon Nanowires: Developed an atomistic treatment of bandstructure to handle bulk silicon devices, nanowires, as well as surfaces, thin films and quantum dots. 2005 ~ Present

Hybrid Silicon-Molecule Devices: In collaboration with an experimental group (Mark Hersam's group at Northwestern University) explored the new physics of a molecular resonant tunneling diode (RTD). 2002 ~ 2005

Hybrid-basis modeling of Electron Transport through Nano-Devices: Developed a ***'multi-scaling'*** approach to couple to ***'first-principles'*** calculations to study quantum transport through hybrid elements by embedding molecular clusters in a crystalline environment. The *Non-equilibrium Green's function (***NEGF)** formalism was implemented to describe quantum transport 2002 ~ 2004

Molecular Electronics: Explored the physics of the molecular potential profile, contact geometry, charging and screening, and their effects on molecular conduction by using semi-empirical model. 2001 ~ 2003

Compact Solid Laser Development: Developed the grazing-incidence IR optical parametric oscillator (OPO) and modulated diode laser coupling with a photo-acoustical detector. 6/1999~7/2000

Electron Transport in Heterostructure Device: Modeling of electron transport in heterostructures and superlattices. 1/1996~5/1997

Research projects:

PI:
Title: *Theoretical investigation of thermoelectric properties and device performance of nanostructures* (MOE).

Title: Simulation and modeling of one-dimensional nano-FETs (A*STAR).

Title: Development of Three-dimensional Quantum Simulation to Investigate Electron Transport in Nano-Devices *(NUS and MOE fund).*

Co-PI & colloborator:
Title: Theoretical Study of Microscopic Spin Transport Phenomena for Next-Generational Spintronics Applications

Title: Graphene Related Materials and Devices

Title: Nanoelectronics based on Advanced Theory of Gauge Symmetry and Relativistic Transport

Title: Phase Coherent Charge and Spin Transport in Nanostrutcured Graphene and Ferromagnet Hybrid Devices

PROFESSIONAL ACTIVITIES and SERVICE:

Reviewer	*ACS nano; Applied Physics Letters; IEEE transaction on computers; IEEE transaction on nanotechnology; IEEE transaction on Electronic devices; IEEE EDL; Journal of Physics: Condensed Matter; Solid State Science; Solid State Electronics; Semiconductor Science and Technology; Book chapter*
Judge	*2007, 2009, 2010, 2011 Singapore Science and Engineering Fair (SSEF)*
Editorial board	*Journal of Nanoscience Letters 2011-2014*

PUBLICATIONS:

The total citation number of his work is over 447, and h-index: 12 and g-index: 22.

Books and Book chapters

1. Darren Koong and Gengchiau Liang, "Effects of Channel Materials & Channel Orientations and Dimensional on the Performance of Nanowire FETs," (Book Chapter) Solid State Circuits Technologies, INTECH, 2010, ISBN 978-953-307-045-2.
2. Kaitak Lam and **Gengchiau Liang**, "Electronic Structure of Monolayer and Bilayer Graphene Nanoribbons and their Device Application: A Computational Study," (Book Chapter) Spinger.

Journal articles (* corresponding author/ or work conducted under my supervision)

1. Kai-Tak Lam, Yue Yang, G. S. Samudra, Yee-Chia Yeo and **Gengchiau Liang***, "Electrostatics of Ultimately-Thin Body Tunneling FET using Graphene Nanoribbon," IEEE Electron Device Letter. (In press)
2. Kai-Tak Lam, Yunhao Lu, Yuan Ping Feng, and **Gengchiau Liang***," Stability and electronic structure of two dimensional Cx(BN)y compound," Appl. Phys. Lett. (In press).
3. Young Jun Shin, Jae Hyun Kwon, Gopinadhan Kalon, Kai-Tak Lam, Charanjit Singh Bhatia, **Gengchiau Liang**, and Hyunsoo Yang, "Ambipolar bistable switching effect of graphene," Appl. Phys. Lett**, 97**, 262105, 2010.
4. Young Jun Shin, Gopinadhan Kalon, Jaesung Son, Jae Hyun Kwon, Jing Niu, Charanjit Singh Bhatia, **Gengchiau Liang**, and Hyunsoo Yang, "Tunneling characteristics of graphene" Appl. Phys. Lett. **97**, 252102, 2010.
5. S. K. Chin, D. W. Seah, K.-T. Lam, Ganesh S. Samudra, and **Gengchiau Liang*,** "Device Characteristics and Physics of Ballistic Graphene Nanoribbon Tunneling FET," *IEEE Transactions on Electron Devices* 10.1109/TED.2010.2065809.
6. S. Bala, M. B. A. Jalil, S. G. Tan, and **Gengchiau Liang***, "The effect of magnetic field and disorders on the electronic transport in graphene nanoribbons," Journal of Physics: Condensed Matter, 22, 375303 (2010).
7. Wen Huang, Chee Shin Koong and **Gengchiau Liang***, "Theoretical study of thermoelectric properties of Ge nanowires based on electronic band structures," IEEE Electron Device Letter, Page(s): 1026 – 1028 (2010).
8. S. Bala, M. B. A. Jalil, S. G. Tan, and **Gengchiau Liang*,** "Theoretical study on the magnetoresistive effect in armchair graphene nanoribbon due to magnetic field induced band gap modulation," Journal of Applied Physics, 108, 033709 (2010)
9. Kai-Tak Lam, Dawei Seah, S. K. Chin, S. Bala Kumar, G. Samudra, Yee-Chia Yeo, and **Gengchiau Liang***, "A Simulation Study of Graphene Nanoribbon Tunneling FET with Heterojunction Channel" IEEE Electron Device Letter, 31(6) 557, 2010.
10. **Gengchiau Liang***, Sharjeel Bin Khalid, and Kaitak Lam, "Influence of edge roughness on graphene nanoribbon resonant tunneling diodes," Journal of Physics D: Applied Physics, 43, 215101 (2010).

11. Kai-Tak Lam, Sai Kong Chin, Da Wei Seah, S. Bala Kumar, and **Gengchiau Liang***, "Effect of Ribbon Width and Doping Concentration on Device Performance of Graphene Nanoribbon Tunneling Field-Effect Transistors," Japanese Journal of Applied Physics, 49 (2010) 04DJ10.
12. Chee Shin Koong, Ganesh Samudra, and **Gengchiau Liang**, "Shape Effects on the Performance of Si and Ge Nanowire FETs based on Size Dependent Bandstructure," Japanese Journal of Applied Physics, 49 (2010) 04DN07.
13. **Gengchiau Liang**, Wen Huang, Chee Shin Koong, Jian-Sheng Wang, and Jinghua Lan, "Geometry effects on thermoelectric properties of silicon nanowires based on electronic band structures" J. Appl. Phys., **107,** 014317, 2010.
14. Xiaoxi Ni, **Gengchiau Liang**, Jian-Sheng Wang, and Baowen Li, "Disorder enhances thermoelectric figure of merit in armchair graphane nanoribbons," Appl. Phys. Lett. Appl. Phys. Lett. **95**, 192114, (2009).
15. Kaitak Lam, Chengkuo Lee and **Gengchiau Liang**, "Bilayer Graphene Nanoribbon Nanoelectromechanical System Devices: a Computational Study," Appl. Phys. Lett.**95** 143107 (2009).
16. Bala Kumar, S. G. Tan, M. B. A. Jalil, and **Gengchiau Liang**, "High and Tunable Spin Current Induced by Magnetic-Electric Fields in a Single-Mode Spintronic Device," Nanotechnology 20 365204 (2009).
17. Hassen Teong, Kaitak Lam, Sharjeel Bin Khalid, and **Gengchiau Liang,** "shape dependence on Shape Effects in Graphene Nanoribbon Resonant Tunneling Diodes : a computational study" J. Appl. Phys. **105** 084317 (2009).
18. Hassen Teong, Kaitak Lam, and **Gengchiau Liang**, "A computational study on the device performance of graphene nanoribbon resonant tunneling diodes (GNR RTDs)," Japanese Journal of Applied Physics 48, 04C156 (2009).
19. W. F. Yang, S. J. Lee, **G. C. Liang**, Eswar R, Z.Q. Sun, S. J. Whang, and D.L. Kwong, "Temperature Dependence of Carrier Transport of a Silicon Nanowire Schottky-Barrier Field-Effect Transistor," IEEE transition on nanotechnology, **7** 728-732 (2008).
20. **G.-C. Liang,** N. Neophytos, M. Lundstrom, and D. Nikonov, "Simualtion study of the Double-Gate Graphene Nanoribbon MOSFETs," Journal of Computational Electronics, 7 (3) 394-397, (2008)**.**
21. J.W. Peng, S. J. Lee, **G. C. Liang,** N. Singh, S. Y. Zhu, C. M. Ng, G. Q. Lo, N. Balasubramanian and D. L. Kwong, "Improved Carrier Injection in Gate-All-Around Schottky Barrier Silicon Nanowire Field Effect," Appl. Phys. Lett.**93** 073503 (2008).
22. **Gengchiau Liang,** N. Neophytos, Mark Lundstrom and D. Nikonov, "Contact Effects in Graphene Nanoribbon Transistors", Nano letters, 8(7); 1819-1824, 2008.
23. Kaitak Lam and **Gengchiau Liang**, "An Ab Initio Study on Energy Gap of Bilayer Graphene Nanoribbons with Armchair Edges," Appl. Phys. Lett. 92, 223106 (2008).
24. W. F. Yang, S. J. Lee, **G. C. Liang**, S. J. Whang, B. J. Cho, "Electrical Transport of Bottom-Up Grown Single-Crystal Si1-xGex Nanowire," *nanotechnology* 19, 225203, 2008.
25. Zhen-Gang Zhu, **Gengchiau Liang,** and G.S. Samudra "Pseudopotential Method on Surface Roughness", J. Phys.: Cond. Matt. 20, 235229 (2008).
26. Yongjie Hu, Jie Xiang, Hao Yan, **Gengchiau Liang**, and Charles M. Lieber "High Performance Sub-100nm Channel Ge/Si Nanowire Field-effect Transistors," Nano Lett.; (Letter); 2008; 8(3); 925-930.
27. S. G. Tan, M. B. A. Jalil, S. Bala Kumar, and **G.-C. Liang**, "Spin tunneling in multilayer spintronic devices," Phys. Rev. B vol. 77, 085424 (2008). **2007**
28. **G.-C. Liang**, N. Neophytos, M. Lundstrom, and D. Nikonov, "Ballistic Graphene Nanoribbon MOSFETs: a full quantum real-space simualtion study," Journal of Applied Physics, 102, 054307, 2007.
29. **G.-C. Liang,** J. Xiang, Neerav Kharche, Gerhard Klimeck, C. Lieber, and M. Lundstrom, "Performance Analysis of a Ge/Si Core/Shell Nanowire Field Effect Transistor," *Nano Letters*, **7** 642 (2007).
30. **G.-C. Liang**, N. Neophytos, D. Nikonov, and M. Lundstrom "Performance projections for ballistic graphene nanoribbon field-effect transistors," *IEEE Transactions on Electron Devices,* Volume 54, Issue 4, April 2007, page(s):677 - 682.
31. **Gengchiau Liang**, Diego Kienle, Sunil K. R. Patil, Jing Wang, Avik W. Ghosh, and Sanjay V. Khare, "Impact of structure relaxation on the ultimate performance of a small diameter, n-type <110> Si-Nanowire MOSFET," *IEEE Transactions on Nanotechnology***,** Volume: 6, Issue: 2, March 2007, page(s): 225-229.
32. D. Kienle, K. Bevan, **G-C. Liang**, L. Siddiqui, J. I. Cerda, and A. W. Ghosh, "Combining bulk bandstructure and surface chemistry using Extended Huckel theory for transport calculations," *J. Appl. Phys.* 100, 043715 (2006).

33. T. Rakshit, **G-C. Liang**, A. W. Ghosh, and S. Datta, "Molecules on Silicon: Self-Consistent First-Principles Theory and Calibration to Experiments," *Phys. Rev. B* **72,** 125305 (2005).

34. **G.-C. Liang,** and A. Ghosh, "Identifying contact effects in electronic conduction through buckyballs on Silicon," *Phys. Rev. Lett.* **95,** 076403 (2005).

35. T. Rakshit, **G-C. Liang**, A. W. Ghosh, and S. Datta, "Self-consistent Field Method based on NEGF: applied to Molecules on Silicon," *Journal of Computational Electronics* **4**, 83 (2005).

36. T. Rakshit, **G-C. Liang**, A. W. Ghosh, and S. Datta, "Silicon-based molecular electronics," *Nano Letters*, **4** 1803 (2004). (Author list is reversed alphabetically. All authors contributed equally.)

37. **G.-C. Liang,** A. Ghosh, M. Paulsson, and S. Datta, "Electrostatic potential profiles of molecular conductors," *Phys. Rev. B* **69** 115302 (2004).

38. A. Miklos, CH Lim, WW Hsiang, **G-C. Liang**, A Kung, A Schmohl, and P. Hess, "Photoacoustic measurement of methane concentrations with a compact pulsed optical parametric oscillator," *Applied Optics* **41 (15)**, 2985 (2002).

39. **G.-C. Liang**, H-H Liu, and A. H. Kung A. Mohacsi, A. Miklos, and P. Hess, "Photoacoustic Trace Detection of Methane Using Compact Solid-State Lasers," *J. Phys. Chem. A* **104**, 10179 (2000).

40. **G. -C. Liang**, Y. A. Lin, D.Z.-Y. Ting, and Y. -C. Chang, "Multi-band Quantum Transmitting Boundary Method for Non-orthogonal Basis," *VLSI Design* **8**, 507 (1998).

Conference proceedings (+)/ contributions/invited talk (*) (selected)

1. **(Invited talk) *Gengchiau Liang, ICCE-19** 19th INTERNATIONAL CONFERENCE ON COMPOSITES or NANO ENGINEERING July 24-30, 2011, Shanghai, China

2. ***Gengchiau Liang**, "Fundamentals of Graphene Nanoribbons and their Possible Electronic Device Applications" Zhejing University, HangZhou, China, (invited talk), November 5 2010.

3. ***Gengchiau Liang**, "Graphene-based Nano-devices nano-devices—Future of Nanoelectronic Device" Fudan University, Shanghai, China, (invited talk), November 8 2010.

4. **Gengchiau Liang**, S.-K. Chin, D. W. Seah, K.-T. Lam, and Ganesh S. Samudra, "Doping and Temperature Effects on Graphene Nanoribbon Tunneling Field-Effect-Transistors," International Conference on Solid-State and Integrated Circuit Technology (icsict2010), InterContinental, Pudong, Shanghai, China, Nov. 1-4, 2010.

5. Wen Huang, Chee Shin Koong, and **Gengchiau Liang**, "Theoretical Study on Geometry and Temperature Effects of Thermoelectric Properties of Si and Ge Nanowires," International Conference on Solid-State and Integrated Circuit Technology (icsict2010), InterContinental, Pudong, Shanghai, China, Nov. 1-4, 2010.

6. Kai-Tak Lam, Marie Stephen Leo, Chengkuo Lee, and **Gengchiau Liang**, "Comparison of bilayer GNR NEMS devices based on attractive and repulsive force actuators," 14th International Workshop on Computational Electronics (IWCE 2010) Pisa, Italy, October 27th-29th, 2010.

7. H. Da, K.-T. Lam, S. K. Chin, G. S. Samudra, Y.-C. Yeo, and **G. Liang**, "Performance evaluation of graphene nanoribbon heterojunction tunneling field effect transistors with various source/drain doping concentration and heterojunction structure," 2010 International Conference on Solid State Devices and Materials, Tokyo, Japan, Sep. 22-24, 2010.

8. S. B. Kumar, T. Fujita, and **G. Liang**, "Graphene based transversal-gated field effect transistor due to band gap modulation," 2010 International Conference on Solid State Devices and Materials, Tokyo, Japan, Sep. 22-24, 2010.

9. W. Huang, and **G. Liang**, "Size and Chirality Dependence on Thermoelectric Properties of Graphene Nanoribbons," 2010 International Conference on Solid State Devices and Materials, Tokyo, Japan, Sep. 22-24, 2010.

10. S. Bala Kumar, **Gengchiau Liang,** S. G. Tan, and M. B. A. Jalil, "High magnetoresistive effect in armchair graphene nanoribbon utilizing n=0 Landau Level," THE 11TH JOINT MMM–INTERMAG CONFERENCE, Washington, DC, January 18–22, 2010.

11. Kai-tak Lam and **Gengchiau Liang**, "A Computational Evaluation of the Designs of a Novel Nanoelectromechanical Switch Based on Bilayer Graphene Nanoribbon" 2009 IEEE International Electron Devices Meeting (IEDM), to be held at the Hilton Baltimore, Baltimore, MD, December 7-9, 2009.

12. Chee Shin Koong, Ganesh Samudra, and **Gengchiau Liang**, "Shape Effects on the Performance of Si and Ge Nanowire FETs Based on Size Dependent Bandstructure," 2009 International Conference on Solid State Devices and Materials (SSDM 2009),

Sendai Kokusai Hotel, Miyagi, Japan, October 7-9, 2009.

13. Sharjeel Bin Khalid, Kai-Tak Lam and **Gengchiau Liang**, "Computational Study of Edge Roughness Effect on the Device Performance of Graphene Nanoribbon Resonant Tunneling Diodes," 2009 International Conference on Solid State Devices and Materials (SSDM 2009), Sendai Kokusai Hotel, Miyagi, Japan, October 7-9, 2009.
14. Wen Huang, Chee Shin Koong, and **Gengchiau Liang**, "Theoretical Study on Thermoelectric Properties of Ge and Si Nanowires," 2009 International Conference on Solid State Devices and Materials (SSDM 2009), Sendai Kokusai Hotel, Miyagi, Japan, October 7-9, 2009.
15. Kai-Tak Lam, Sundaram Pillay Bala Kumar, Sai Kong Chin, Seah Da Wei1 and **Gengchiau Liang**, "Performance Evaluation of Graphene Nanoribbon Tunneling Field Effect Transistors," 2009 International Conference on Solid State Devices and Materials (SSDM 2009), Sendai Kokusai Hotel, Miyagi, Japan, October 7-9, 2009.
16. Kai-Tak Lam, Yan-Zheng Peck, Chengkuo Lee and Gengc**hiau Liang,** "Graphene Nanoribbon Schottky-Barrier Field Effect Transistor and its Application as a Nanoelectromechanical Device," IEEE 9th Nanotechnology conference, (IEEE NANO 2009), July 26-30, 2009, Genoa, Italy.
17. Kai-Tak Lam, Chengkuo Lee and **Gengchiau Liang**, "Computational Study of Nanoelectromechanical Device Using Bilayer Graphene Nanoribbon,"International Conference on Materials for Advanced Technologies (ICMAT) 2009, June 28- July 3, 2009, Singapore.
18. Zuan-Yi Leong, Kaitak Lam, and **Gengchiau Liang,** "Device Performance of Graphene Nanoribbon Field Effect Transistors with Edge Roughness Effects: A Computational Study," 13th International Workshop on Computational Electronics (IWCE), May 27-29, 2009 Bejing, China.
19. **Gengchiau Liang**, Hansen Teong, and Kai-Tak Lam, "Computational study of Graphene Nanoribbon Resonant Tunneling," 13th International Workshop on Computational Electronics (IWCE), May 27-29, 2009 Bejing, China.
20. Kai-Tak Lam and **Gengchiau Liang,** "Computational Study on the Performance of Monolayer and Bilayer Graphene Nanoribbon devices," 13th International Workshop on Computational Electronics (IWCE), May 27-29, 2009 Bejing, China.
21. **Gengchiau Liang,** Hansen, Teong and Kaitak Lam**,** "Possible Electronic Device Applications of Graphene Nanoribbons," The 2008 Asian Conference on Nanoscience and Nanotechnology (AsiaNANO2008), Nov. 3-Nov. 7, 2008, Singapore.
22. Kaitak Lam and **Gengchiau Liang,** "A First Principle Study of Bilayer Graphene Nanoribbon Devices," The 2008 Asian Conference on Nanoscience and Nanotechnology (AsiaNANO2008), Nov. 3-Nov. 7, 2008, Singapore.
23. J. W. Peng, S. J. Lee, **G. C. Albert Liang**, N. Singh, C. M. Ng, G. Q. Lo and D. L. Kwong, "Gate-All-Around 4-nm Silicon Nanowire Schottky Barrier MOSFET with 1-D NiSi Source/Drain" 2008 International Conference on Solid-State Devices and Materials, Ibaraki, Japan, Sep. 23 - 26, 2008.
24. Chee Shin Koong, Ganesh Samudra, **Gengchiau Liang**, "Investigate the Effects of Channel Materials & Channel Orientations on the Performance of Nanowire FETs," 2008 International Conference on Solid-State Devices and Materials, Ibaraki, Japan, Sep. 23 - 26, 2008.
25. **Gengchiau Liang**, Hansen Teong, Kaitak Lam, Neophytos Neophytou, and Dmitri E. Nikonov, "Graphene Nanoribbon Transistors and Resonant Tunneling Diodes," 2008 International Conference on Solid-State Devices and Materials, Ibaraki, Japan, Sep. 23 - 26, 2008.
26. Kai-Tak Lam and **G.-C. Liang**, "An ab initio investigation of energy bandgap of monolayer and bilayer graphene nanoribbon based on different basis sets," IEEE nano 2008, TX USA **Aug.** 18-21, 2008.
27. [*] **G.-C. Liang,** "Graphene related nano-devices," National Taiwan Normal Univeristy, Taipei Taiwan, (invited talk), June 2008.
28. **G.-C. Liang,** "Theoretical Study of Graphene Nanoribbon (GNR) FETs," 2nd International Conference on New Diamond and Nano Carbons (NDNC2008), **May 26-29**, Taipei, Taiwan.
29. Kai-Tak Lam an**d G.-C. Liang,** Electronic Properties of Edge-doped Armchair Graphene Nanoribbon: an ab initio Approach, **MRS** 2008 spring meeting, **March 24 – 28,** Moscone West and San Francisco Marriott, USA.
30. **G.-C. Liang,** "Width Effects in Ballistic Graphene Nanoribbon FETs," IEEE International Nanoelectronics Conference 2008, 24-27 March 2008, Shanghai, China.
31. [+]Kai-Tak Lam and **G.-C. Liang,** "A first-principals study on edge doping of armchair graphene nanoribbon," International IEEE International Nanoelectronics Conference 2008, 24-27 March 2008, Shanghai, China.
32. [*] **G.-C. Liang,** "Graphene related nano-devices," Institute of Atomic and Molecular Science, Academia Sinica, Taipei Taiwan, (invited talk), December 2007.

33. [*]**G.-C. Liang,** "Graphene Nano-Ribbon (GNR) devices," National Taiwan University of Science and Technology, Taipei Taiwan, (invited talk), December 2007.

34. [+]**G.-C. Liang, "**Structure effect of all-gate-around Si Nanowire MOSFETs**",** 2007 IEEE Conference on Electron Devices and Solid-State Circuits, Taiwan, December 20-22, 2007.

35. [+]**G.-C. Liang,** N. Neophytos, M. Lundstrom, and D. Nikonov, "Simualtion study of the Double-Gate Graphene Nanoribbon MOSFETs," 12th International Workshop on C 12th International Workshop on Computational Electronics (IWCE-12), Amherst, USA, Oct. 8-10, 2007.

36. **G.-C. Liang,** "Geometry effect of Si Nanowire MOSFETs", 2007 Silicon Nanoelectronics Workshop, Kyoto Japan 2007.

37. **G.-C. Liang**, N. Neophytos, M. Lundstrom and D. Nikonov, "Contact effects on Graphene Nanoribbon Field-Effect Transistors," IEEE nano 2007, Hong Kong China 2007.

38. [+]**G.-C. Liang**, N. Neophytos, D. Nikonov, and M. Lundstrom "Theoretical study of Graphene Nanoribbon Field-Effect Transistors ," Nano tech 2007, Santa Clara, California, U.S.A 2007.

39. A. W. Ghosh, B. Muralidharan, **G-C. Liang**, S. Datta, "Towards a Theory of Single Molecule Conduction, " IEEE Nano 2006, Cincinnati USA 2006.

40. ***G.-C. Liang,*** D. Kienle, S. Patil, S. Khare, A. W. Ghosh, and J. Wang, "Impact of Structure Relaxation on Performance of Silicon Nanowire FETs", 2006 IEEE SILICON NANOELECTRONICS WORKSHOP, Hawaii USA, 2006

41. [*]***G.-C. Liang,*** "Towards Nanoscale Devices Fundamental Physics & Device Applications," invited talk in National University of Sigapore, Signapore, 2006.

42. [*]***G.-C. Liang,*** " Electron transport through Si (100) surface and Si Nanowires," invited talk in Institute of High Performance Computing (IHPC), Signapore, 2006.

43. [*]***G.-C. Liang,*** "Towards Nanoscale Devices Fundamental Physics & Device Applications," invited talk in Research Center for Applied Sciences, Academic Sinica, Taipei, 2006.

44. [*]***G.-C. Liang,*** "Molecular Electronic Devices: Physics & Applications," invited talk in National Tsing Hua University, Hsinchu Taiwan, 2005.

45. [*]***G.-C. Liang,*** "Molecular Electronic Devices: its applications and future," invited talk in National Chiao Tung University, Hsinchu Taiwan, 2005.

46. ***G.-C. Liang,*** A. Ghosh, T. Rakshit and S. Datta, "Hybrid-basis modeling of electron transport through molecules on Silicon", IEEE, International Workshop on Computational Electronics 10, West Lafayette, US., Aug 2004.

47. A.W. Ghosh, ***G.-C. Liang***, T. Rakshit, D. Kienle, and S. Datta, "Molecular Elements on Silicon Substrates: Modeling Issues and Device Prospect", IEEE nano 2004, Munich, Germany, Aug. 2004.

48. ***G.-C. Liang,*** A. Ghosh, T. Rakshit and S. Datta, "Quantum Simulation of Current through Molecules on Silicon", Workshop on Molecular Conduction, Northwestern University, IL, US., June 2004.

49. ***G.-C. Liang,*** A. Ghosh, T. Rakshit and S. Datta, "Hybrid-Basis Modeling of Transport Through Silicon-Based Molecular Devices" 46th Annual Electronic Material Conference, Notre Dame, May 200

50. ***G.-C. Liang,*** A. Ghosh, M. Paulsson, and S. Datta, "Hybrid-basis modeling of transport through molecule-semiconductor interfaces". Trends in Nanotechnology (TNT), Salamanca, Spain, Sep. 2003.