Yung C. Liang, Ph.D., P.Eng
Associate Professor, Power Electronics Laboratory
Department of Electrical and Computer Engineering
National University of Singapore, Singapore 119260

Research Interest and Grants

MOS-bipolar Semiconductor Devices and Smart Power IC's; Wide Bandgap Devices, Micro-actuator and Sensors; RF Power Semiconductor Devices and Integration; RF MEMS; Micro Fuel Cell; Ferroelectric Photovoltaic Thin Film; On-Chip Power Source and Management; Smart Dust Sensor Network

- *Neural network tooled power electronic design automation*
  January 1992 – December 1993
  S$72,000 (Academic Research Fund), Principal Investigator

- Fabrication and characterisation of semiconductor-type gas sensor
  January 1997 – January 1999
  S$69,800 (Academic Research Fund), Collaborator

- *Design of lateral IGBT devices with integrated current sensor*
  September 1996 – July 1999
  S$150,048 (Academic Research Fund), Principal Investigator

- Design and development of a kinetic battery for notebook computers
  April 1997 – April 1998
  S$273,960 (Funded by Serial Systems Pte Ltd), Principal Investigator

- Advanced MIL standard DC/DC converter
  May 1998 – May 1999
  S$81,000 (Funded by the Defense Science Organisation), Collaborator

- Design of synchronous rectifier for ultra high-density power conversion
  October 1998 – July 2001
  S$228,272 (Academic Research Fund), Principal Investigator

- *Design of low-rate MEMS microgyroscope*
  October 1998 – October 2001
  S$1,500,000 (DSO-IMRE Research Grant), Collaborator

- Development of high-power RF MEMS system-on-chip technology for mobile applications
  November 1999 – December 2001
  S$563,000 (NSTB Research Fund), Principal Investigator

- *Integrated Microelectromechanical Systems on Chip*
  May 2000 – November 2002
  S$170,000 (Academic Research Fund), Collaborator

- Development of Superjunction technology for Smart Power Integration
  July 2001 – June 2003
  S$200,000 (Ontario-Singapore Research Programme), Principal Investigator

- Multiple-gate Lateral Superjunction MOSFET Device Technology
  June 2004 – May 2007
  S$294,642 (Academic Research Fund & IME Collaboration), Principal Investigator

- Functionality Enhancement of Electrical Capacitance Tomography System for Advanced Multiphase System Research
  December 2006 – November 2009
  S$168,646 (Academic Research Fund), Collaborator

- *Ferroelectric Direct-Optical Capturing Device for Wearable Applications*
  January 2010 – June 2012
  S$292,110 (Keio-NUS CUTE Centre), *Principal Investigator*

- *GaN Power Device Technology (MOS-HEMT) on GaN-on-Si for High Voltage (kV) High Power (kW) Applications*
  April 2011 – March 2014
  S$1,500,461 (A*STAR), *Principal Investigator*

- *Power Semiconductor Device Technology for Traction Applications*
  January 2012 – December 2013
  US$100,000 (NUSRI), *Principal Investigator*

- *Grid/Building cooperation through a Building Operating System*
  August 2012 – July 2015
  S$2,684,000 (SinBerBest*), *Co-Principal Investigator*
  *: Singapore Berkeley Building Efficiency and Sustainability in the Tropics

Patent

- Oxide-bypassed MOSFET (OBMOS) (US Provisional Patent 60/295,581)
- Process for device using partial SOI (US Patent Number 6,551,937B2)
- Power MOSFET having enhanced breakdown voltage (US Patent Number 6,853,033 B2)

Professional Society Membership

Senior Member, Institute of Electrical & Electronics Engineers, USA
Member, Association of Professional Engineers, Scientists and Managers, Australia
Member, Phi Tau Phi Scholastic Honourary Society, Taiwan
Member, Association of Professional Engineers, Taiwan
Fellow, Society of Industry Technology, Singapore

Professional Activities

- *Founding Chairman, IEEE Industry Applications Chapter, Singapore Section, 1993 – 1995*
- *Member, Power Electronic Devices and Components Committee (IEEE IA Society), 1997 – 1999*
- *Chairman, Computer and Workstation Sub-committee (Green label, Ministry of Environment, Singapore), 1997 – 1999*
- *Vice Chairman, IEEE Singapore Section, 1997 – 1998*
- *Chairman, IEEE Singapore Section, 1998 – 1999*
- *President, Society of Industry Technology, Singapore, 1999-2000*
- *Member, Mediation Committee, Consumers Association of Singapore, 1999 – 2002*

Conference Activities

- *Programme Committee, IEEE ISEDEM Conference, Singapore 1993*
- *Technical Programme Chairman, IEEE International Conference on Power Electronics and Drive Systems, Singapore, 1995*
- *Programme Committee, IEEE EMPD Conference, Singapore 1995*
- *Organising Chairman, IEEE International Conference on Power Electronics and Drive System, Singapore, 1997*
- *Programme Committee, Globaltronics and Enex Asia Conference, Singapore, 1998*
- *The 28th IEEE Power Electronics Specialist Conference, Japan, 1998*
- *International Conference on Power Electronics, Drives and Energy Systems, Australia, 1998*
- *International Conference on Applications of Computers, Electronics & Electrical Engineering in Petroleum & Chemical Industry, India, 1998*
- *IEEE Asia-Pacific Conference on ASIC's, Korea 1999*
- *IEEE Region 10 Conference, Korea, 1999*
- *Third IASTED International Conference on Power and Energy Systems, USA, 1999*
- *Third IEEE International Conference on Power Electronics and Drive Systems, Hong Kong, 1999*
- *Management Committee, The Third IEEE International Conference on Power Electronics and Drive Systems, Hong Kong, 1999*
- *Committee Member, IEEE Power Engineering Society Winter Meeting, Singapore, 2000*
- *Programme Committee, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, France, 2000*
- *Programme Committee, Globaltronics Conference, Singapore 2000*
- *IEEE Region 10 Conference, Malaysia 2000*
- *IEEE Asia-Pacific Conference on ASIC's, Korea 2000*
- *Fourth IASTED International Conference on Power and Energy Systems, Spain, 2000*
- *Fifth IASTED International Conference on Power and Energy Systems, USA, 2001*
- *The 32nd IEEE Power Electronics Specialist Conference, Canada, 2001*
- *Organising Chairman, IEEE Region 10 International Conference on Electrical and Electronics Technology, Singapore-Thailand, 2001*
- *Programme Committee, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, France, 2001*
- *Management Committee, The Fourth IEEE International Conference on Power Electronics and Drive Systems, Indonesia, 2001*
- *Programme Committee, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, France, 2002*
- *Sixth IASTED International Conference on Power and Energy Systems, USA, 2002*
- *First International Conference on Information Technology & Applications, Australia, 2002*
- *Conference Co-chairman, The Fifth IEEE International Conference on Power Electronics and Drive Systems, Singapore 2003*
- *Programme Committee, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, France, 2003*
- *Programme Committee, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, Switzerland, 2004*
- *Second International Conference on Information Technology & Applications, China, 2004*
- *Programme Committee, 7th IASTED International Conference on Power and Energy Systems, Florida, USA, 2004*
- *Technical programme Committee, IASTED International Conference on Energy and Power Systems, Marina del Rey, USA, 2005*
- *Programme Committee, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, Switzerland, 2005*
- *Third International Conference on Information Technology & Applications, Sydney, Australia, 2005*
- *The Sixth International Conference on Power Electronics and Drive Systems, Malaysia, 2005*
- *International Scientific Committee, International MEMS Conference, Singapore, 2006*

- *Programme Committee, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, Italy, 2006*
- *Programme Committee, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, Italy, 2007*
- *The Seventh International Conference on Power Electronics and Drive Systems, Thailand, 2007*
- *Conference Co-Chairman, IEEE International Conference on Sustainable Energy Technologies, Singapore, 2008*
- *Programme Committee, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, France, 2008*
- *Publication Chairman, 5th International Conference on Information Technology and Applications, Australia, 2008*
- *Programme Committee, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, Italy, 2009*
- *Technical Programme Coordinator, 6th International Conference on Information Technology and Applications, Vietnam, 2009*
- *Management Committee*, *The 8th International Conference on Power Electronics and Drive Systems, Taiwan, 2009*
- *Programme Committee, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, Spain, 2010*
- *Technical Programme Chair*, 2nd IEEE International Conference on Sustainable Energy Technologies, Sri Lanka, 2010
- *Management Committee*, The 9th International Conference on Power Electronics and Drive Systems, Singapore, 2011
- *International Programme Committee*, The 10th IASTED European Conference on Power and Energy Systems, Greece, 2011
- *Programme Committee*, Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, France, April, 2012
- *Management Committee*, 3nd IEEE International Conference on Sustainable Energy Technologies, Nepal, 2012
- *Management Committee*, The 10th International Conference on Power Electronics and Drive Systems, Japan, 201

Editorial Service and Reviewer

IEEE Transactions on Power Electronics (Associate Editor, 2002 – present)
Recent Patents on Electrical Engineering (Editorial Board, 2007 – 2011)
International Journal of Power Electronics (Associate Editor, 2008 – present)
International Journal of Electronics (Guest Editor on power electronics)

Reviewer: *IEEE Transactions on Power Electronics*
IEEE Transactions on Industrial Electronics
IEEE Electron Device Letters
Electronic Journal, Institute of Physics Publishing
Mechatronics Journal
International Journal of Power and Energy Systems
IEEE Transactions on Electron Devices
Microelectronics Journal: Circuits and Systems
Journal of Physics D: Applied Physics
Analog Integrated Circuits and Signal Processing
Semiconductor Science and Technology
IEEE Sensor Journal

Accreditation Assessor/Academic Examiner

- *External Examiner, University of Wales, UK (B.Sc.(Honour) Computer Science and Information Technology Programme at Informatics College), 1998 – 2002*

- *Assessor, Singapore Laboratory Accreditation Council, Singapore, 1994 – 1999*
- *Assessor, TEKES Telectronics Programme, Finland, 2001*
- *Research grant reviewer, University of California, Microelectronics Innovation and Computer Research Opportunities, 2006*

Technical and Service Award

The Second Prize, Inter-universities/colleges hardware design award, Taiwan (1982)
Motorola Microcontroller University Design Award (Asia Pacific Region) (1993)
IEEE Third Millennium Medal, 2000
IEEE Transactions Paper Prize Award, 2000 (Power Electronics Society)

University Services

ECE Department:
IEE Accreditation Committee, 1994 – 1996
Social Committee, 1992 – 1997
Computer Advisory Committee, 1996 – 1998
Web Committee, 1994 – 1999
Computer Engineering Programme Workgroup, 1995
Supervisor, Power Electronic Laboratory, 2004 – present
ECE Research Task Force, 2008-2010
*A*STAR Thematic Programme Coordinator, 2011 – present*
Research Student Admission Committee, 2012 – present
PhD Examination Committee, 2012 - present

Faculty of Engineering:
Industrial Attachment Committee, 1996-2004
Intranet Committee, 1998-1999
Professional Activities Committee, 1998 – 2000
Research Publication Committee, 2003 – 2004
Assistant Dean (Undergraduate Programme), 2004 – 2008
DCC Programme Coordinator, 2009 - 2011

Teaching Experience

Analogue Electronics; Power Semiconductor Devices and ICs; Power Electronics; Electrical Machines; Digital Electronics; Mechatronics; Microprocessors and Microcontrollers; Logic Designs; Power Systems; Transmission and Distribution; Protection and Switchgear; Software Programming.

Device/System Prototypes Developed

PWM Modem for LAN communication (1980)
Computerised 3-axis CNC Controller (1979-80)
Maximum Power Point Tracker for Solar Panel (1982)
High-voltage PWM Inverter (1985)
High-voltage Insulated Gate Bipolar Transistor (1992)
Integrated Lateral Current Sensor in IGBT Structure (1995)
Bi-direction IGBT Power Devices (1998)
MOS-Bipolar HF Synchronous Rectifier (1999-2000)
Smart Power Integration for IGBT over-current protection (2000)
Partial SOI LDMOS with Cylindrical Drain Trench (2000)
Silicon Bulk Micromached Microgyroscope (2000)
Silicon Surface Micromachined Microgyroscope (2000)
ASIC for driving/detection circuits for Silicon Microgyroscope (2000)
2 GHz RF Power LDMOS (1999-2001)
2D/3D Micro-inductor on Silicon wafer (2000-2001)
Poly-franked High-voltage Superjunction VDMOS Devices (2000)

Novel Superjunction Diode with better Reverse Recovery (2001)
Superjunction IGBT devices (2001)
Long Range Micro-actuators/Optical Switches (2001)
MEMS Pressure Sensors (2001)
Power OBUMOS Breaking Silicon Limit (2001)
2GHz RFIC Power Amplifier System on Chip (2001)
Tunable HF OBUMOS (2002)
Buried-Channel Lateral Superjunction MOSFET (2003)
Partial-SOI Lateral Superjunction MOSFET (2004-7)
Passive Delivery System for DM Fuel Cell System (2005-6)
On-Chip DMFC integration (2007)
PLZT Ferroelectric Thin Film Device (2007-9)
Micro Fuel Cell System (2008)
Smart Power Synchronous Rectifiers (2010)
Ferroelectric Optical sensor (2010 – 11)
GaN based power HEMT devices (2012)

Academic Visit and Seminars

Japan Advanced Institute of Science and Technology, Kanazawa, September 1997
National Chung Cheng University, Taiwan, November 2000
University of California, Berkeley, USA, December 2001 – September 2002
University of Toronto, Canada, October 2002
Tsing Hua University, China, March 2003
Institute of Microelectronics, Shanghai Jiao Tung University, China, April 2005 and 2008
Charles Sturt University, Australia, November 2005
National Cheng Kung University, Taiwan, December 2005
National Tsing Hua University, Taiwan, 2006
Heilongjiang University, China, January 2007
I-Shou University, Taiwan, December 2007
National Taiwan University of Science and Technology, 2008
National Tsing Hua University, Taiwan, March, 2011

PUBLICATION: JOURNAL ARTICLES

1. Y C Liang and V J Gosbell, “A versatile switch model for power electronics SPICE2 simulations”, *IEEE Transactions on Industrial Electronics,* 36, no.1, pp. 86 – 88, 1989 (United States).

2. Y C Liang and V J Gosbell, “DC machine model for SPICE2 simulation”, *IEEE Transactions on Power Electronics*, 4, no.1, pp. 16 – 20, 1990 (United States).

3. Y C Liang and V J Gosbell, “Diode forward and reverse recovery model for power electronics SPICE simulations”, *IEEE Transactions on Power Electronics*, 5, no.3, pp. 346 – 356, 1990 (United States).

4. Y C Liang and V J Gosbell, “A transient model for gate turn-off thyristor in power electronic simulations”, *International Journal of Electronics*, 70, no.1, pp. 85 – 99, 1991 (United Kingdom).

5. Y C. Liang and V J Gosbell, “A concise SPICE transient model for bipolar power transistor quasi-saturation simulation”, *International Journal of Electronics*, 70, no.5, pp. 901 – 915, 1991 (United Kingdom).

6. C S Chang and Y C Liang, “Fuzzy logic control of static var systems for transient stability enhancement of longitudinal power systems”, *International Journal of Engineering Intelligent Systems for Electrical Engineering and Communications*, 1, no.1, pp. 49 – 56, 1993 (United Kingdom).

7. Y C Liang and T K Ng, “Design of battery charging system with fuzzy logic controller”, *International Journal of Electronics*, 75, no.1, pp. 75 – 86, 1993 (United Kingdom)

8. Y C Liang and T K Kee, "Failure mechanism of GTO devices and optimisation for minimum current crowding during turn-off", *International Journal of Electronics*, 77, no.6, pp. 869 – 886, 1994 (United Kingdom).

9. Y C Liang, R Oruganti and T B Oh, "Design optimisation of power MOSFET for high frequency synchronous rectification", *IEEE Transactions on Power Electronics*, 10, no. 3, pp. 388 – 395, 1995 (United States).

10. C E Seah, R Oruganti and Y C Liang, "An automated algorithm for small signal analysis of DC-DC converters", *IEEE Transactions on Power Electronics*, 11, no. 1, pp. 45 – 52, 1996 (United States).

11. S K Panda and Y C Liang, "A review of power electronic technology in electric vehicles", *Journal of Institute of Engineers, Singapore*, 36, no. 5, pp. 32 – 39, 1996 (Singapore).

12. Y C Liang and K K Koh, "Concise anti-swing approach for fuzzy crane control", *Electronics Letters*, 33, No. 2, pp. 167 – 168, 1997 (United Kingdom).

13. C S Chang, Y C Liang and B H Lim, "Development of fuzzy controller through hybrid simulation for power system stability enhancement: A showcase", *Journal of Institute of Engineers, Singapore*, 37, No. 1, pp. 56 – 64, 1997 (Singapore).

14. W Shi, R Cheng and Y C Liang, "A ZVT quasi-resonant PWM converter for unity power factor application", *International Journal of Electronics*, 84, No. 4, pp. 421 – 428, 1998 (United Kingdom).

15. Y C Liang, G S Samudra and S Hor, "Design of Integrated Current Sensor for Lateral IGBT Power Devices", *IEEE Transactions on Electron Devices*, 45, No. 7, pp. 1614 – 1616, 1998 (United States).

16. H Pan, Y C Liang and R Oruganti, "Design of smart power synchronous rectifier", *IEEE Transactions on Power Electronics*, 14, No. 2, pp. 308 – 315, 1999 (United States).

17. E H Tay, Y C Liang and VJ Logeeswaran, "Design and Fabrication of Micromachined Resonant Gyroscope", *International Journal of Electronics*, 86, No. 10, pp. 1179 – 1191, 1999 (United Kingdom).

18. E H Tay, Y C Liang, V J Logeeswaran, J Xu, Y F Yao, K Sooriakumar and Y H Loh, "The effects of non-parallel plates in a differential capacitive microaccelerometer", *Journal of Micromechanics & Microengineering*, 9, No. 4, pp. 283 – 293, 1999 (United Kingdom).

19. J Luo, Y C Liang and B J Cho, "Design of LIGBT protection circuit for smart power integration", *IEEE Transactions on Industrial Electronics*, 47, No. 4, pp. 744 – 750, 2000 (United States).

20. S Xu, K P Gan, G S Samudra, Y C Liang and J K O Sin, "120V interdigitated drain LDMOS (IDLDMOS) on SOI substrate breaking power LDMOS limit", *IEEE Transactions on Electron Devices*, 47, No. 10, pp. 1980 – 1985, 2000 (United States).

21. B Y Yeh, Y C Liang and F E H Tay, "Mathematical modeling on the quadrature error of low-rate microgyroscope for aerospace applications", *Analog Integrated Circuits and Signal Processing*, Vol. 29, No. 1/2, pp. 85 – 94, 2001 (The Netherlands)

22. E H Tay, A Ongkodjojo, and Y C Liang, "Backpropagation approximation approach for the generation of macromodels", *Journal of Modeling and Simulation of Microsystems*, Vol. 2, No. 1, pp. 57 - 70, 2001.(United States)

23. S Xu, C H Ren, Y C Liang, P-D Foo and J K O Sin, "Theoretical analysis and experimental characterisation of the dummy gated VDMOSFET", *IEEE Transactions on Electron Devices*, Vol.48, No.9, pp.2168 – 2176, 2001 (United States)

24. Y C Liang, K P Gan and G S Samudra, "Oxide-bypassed VDMOS (OBVDMOS): an alternative to superjunction high voltage MOS power devices", *IEEE Electron Device Letters*, Vol.22, No.8, pp. 407 – 409, 2001 (United States)

25. Y Zhu, Y C Liang, S Xu, P-D Foo and J.K.O. Sin, "Folded gate LDMOS transistor with low on-resistance and high transconductance", *IEEE Transactions on Electron Devices,* Vol.48, No. 12, pp. 2917 – 2928, 2001 (United States)

26. E H Tay, A Ongkodjojo and Y C Liang, "Backpropagation approximation approach based generations of macromodels for static and dynamic simulations", *Microsystem Technologies,* Vol. 7, pp. 120 – 136, 2001 (United States)

27. K P Gan, X Yang, Y C Liang, G S Samudra and Y Liu, "A simple technology for superjunction device fabrication: poly flanked VDMOSFET", *IEEE Electron Device Letters*, Vol. 23, No. 10, pp. 627 – 629, 2002 (United States)

28. Y C Liang, W Zeng, P H Ong, Z Gao, J Cai and N Balasubramanian, "A concise process technology for 3-D suspended radio frequency micro-inductors on silicon substrate", *IEEE Electron Device Letters*, Vol. 23, No.12, pp. 700 – 703, 2002 (United States)

29. C Ren, J Cai, Y C Liang, P H Ong, N Balasubramanian and J K O Sin, "The partial silicon-on-insulator technology for RF power LDMOSFET devices and on-chip micro-inductors", *IEEE Transactions on Electron Devices*, Vol. 49, No. 12, pp. 2271 – 2278, 2002 (United States)

30. V J Logeeswaran, E H F Tay, M L Chan, F S Chau and Y C Liang, "Second harmonic (2f) characterization of resonant frequency and Q-factor of micromechanical transducers", *Analog Integrated Circuits and Signal Processing*, Vol. 37, No. 10, pp. 17-33, 2003 (The Netherlands)

31. T Zhao and Y C Liang, "New actuation method for push-pull electrostatic MEMS comb drive", *IEEE Transactions on Industrial Electronics*, 2003 (in press) (United States)

32. Y C Liang, G S Samudra, A J D Lim and P H Ong, "Accurate current sensor for lateral IGBT smart power integration", *IEEE Transactions on Power Electronics*, Vol. 18, No. 5, 2003, pp. 1238 – 1243 (United States)

33. X Yang, Y C Liang, G S Samudra and Y Liu, "Tunable oxide-bypassed trench gate MOSFET: breaking the ideal superjunction MOSFET performance line at equal column width", *IEEE Electron Device Letters*, Vol.24, No.11, 2003, pp. 704 – 706 (United States)

34. H Zhong, Y C Liang, G S Samudra and X Yang, "Practical superjunction MOSFET device performance under given process thermal cycles", *Semiconductor Science and Technology*, Vol. 19, 2004, pp. 987 – 996 (United Kingdom)

35. E Liao, S Ang, A T A Ong, Y C Liang and A Y U Jin, "Surface micromachined pressure sensing structures with biocompatible interface", *Sensors and Materials*, Vol.16, No.1, 2004, pp. 159 – 169 (Japan)

36. T. Zhao and Y C Liang, "A new actuation scheme to enhance the linear momentum of MEMS inertia sensors", *Sensors and Actuators, Part A: Physical*, Vol 119, No. 2, 2005, pp. 390 – 397 (The Netherlands)

37. Y Chen, Y C. Liang and G S. Samudra, "Theoretical analyses on oxide-bypassed superjunction power MOSFET devices", *Japanese Applied Physics Journal*, Vol. 44, No. 2, 2005, pp. 847-856 (Japan)

38. J. Yao, Y Zhang, C H Wang and Y C Liang, "On the electrostatic equilibrium of granular flow in pneumatic conveying systems", *AIChE Journal*, Vol.52, No.11, 2006. pp. 3775 – 3793 (United States)

39. M Qin, K Yao and Y C Liang, "Photo induced current in $(Pb_{0.97}La_{0.03})$ $(Zr_{0.52}Ti_{0.48})O_3$ thin films of different thicknesses", *Integrated Ferroelectrics*, Vo.88, No.1, 2006, pp. 58 – 67 (United Kingdom)

40. M Qin, K Yao, Y C Liang and S Shannigrahi, "Thicknesseffects on photoinduced current in ferroelectric $(Pb_{0.97}La_{0.03})(Zr_{0.52}Ti_{0.48})O_3$ thin films", *Journal of Applied Physics*, Vol. 101, 2007, pp. 014104-1 – 014104-8 (United States)

41. Y Chen, Y C Liang and G S Samudra, "Design of gradient oxide-bypassed superjunction power MOSFET devices", *IEEE Transactions on Power Electronics*, Vol. 22, No.4, 2007, pp. 1303 – 1310 (United States)

42. M Qin, K Yao and Y C Liang, "Stability of photovoltage and trap of light induced charges in ferroelectric WO_3-doped $(Pb_{0.97}La_{0.03})(Zr_{0.52}Ti_{0.48})O_3$ thin films", *Applied Physics Letters*, Vol. 91, 2007, pp. 092904-1-3 (United States)

43. M Qin, K Yao, Y C Liang and B K Gan, "Stability and magnitude of photovoltage in ferroelectric $(Pb_{0.97}La_{0.03})(Zr_{0.52}Ti_{0.48})O_3$ thin films in multi-cycle UV light illumination", *Integrated Ferroelectrics*, Vol. 95, No.1, 2007, pp. 105–116 (United Kingdom)

44. Y Chen, Y C Liang, G S Samudra, X Yang, K D Buddharaju and H Feng, "Progressive development of superjunction power MOSFET devices", *IEEE Transactions on Electron Devices*, 2008 (United States)

45. Y Zhang, Y C Liang and C-H Wang, "Hazard of electrostatic generation in a pneumatic conveying system: electrostatic effects on the accuracy of electrical capacitance tomography measurements and generation of spark", *Measurement Science and Technology*, Vol. 19, 2008 (United States)

46. M Qin, K Yao and Y C Liang, "High efficient photovoltaics in nanoscaled ferroelectric thin films", *Applied Physics Letters*, Vol. 93, No. 12, 122904-1-3, 2008 (United States)

47. M Qin, K Yao and Y C Liang, "Photovoltaic characteristics in polycrystalline and epitaxial $(Pb_{0.97}La_{0.03})(Zr_{0.52}Ti_{0.48})O_3$ ferroelectric thin films sandwiched between different top and bottom electrodes", *Journal of Applied Physics*, Vol. 105, No. 6, 2009, pp. 061624-061624-7 (United States)

48. Y Yang and Y C Liang, "Modelling and analysis of a direct methanol fuel cell with under-rib mass transport and two-phase flow at the anode", *Journal of Power Sources,* Vol. 194, No. 2, 2009, pp. 712 – 729 (United States)

49. M Qin, K Yao, and Y C. Liang, "Photovoltaic mechanisms in ferroelectric thin films with the effects of the electrodes and interfaces", *Applied Physics Letters*, Vol. 95, No. 2, 2009, 022912/1-022912/3 (United States)

50. W Ji, K Yao, Y C Liang, "Bulk photovoltaic effect at visible wavelength in epitaxial ferroelectric $BiFeO_3$ thin films", *Advanced Materials*, Vol. 22, No. 15, April, 2010, pp. 1763-1766 (Germany)

51. Y W Shwe and Y C Liang, "Smart dust sensor network with piezoelectric energy harvesting", *International Journal of Intelligent Systems Technologies and Applications*, Vol. 9, Nos. 3/4, 2010, pp. 253 – 261 (United Kingdom)

52. Y Chen, Y C Liang and G S Samudra, "Partial SOI superjunction power LDMOS for power IC applications", *International Journal of Power Electronics*, Vol. 2, No. 4, 2010, pp. 363 – 373 (United Kingdom)

53. C Y Lim, Y C Liang, G S Samudra and N Balasubramanian, "A smart-power synchronous rectifier by CMOS process", *IEEE Transactions on Power Electronics*, Vol. 25, No. 9, 2010, pp. 2469 – 2477 (United States)

54. Y M Yang, Y C Liang and K Yao, "Low-power fuel delivery with programmable concentration control for micro direct methanol fuel cells", *IEEE Transactions on Industry Applications*, Vol. 47, No. 3, May/June 2011, pp. 1470 – 1479 (United States)

55. W Ji, K Yao and Y C Liang, "Evidence of bulk photovoltaic effect and large tensor coefficient in ferroelectric $BiFeO_3$ thin films", *Physical Review B*, Vol.84, No.9, 094115, pp. 1 – 5, 2011 (United States)

56. A Rezvanpour, C-H Wang, Y C Liang and W Yang, "Investigation of droplet distribution in electrohydrodynamic atomization (EHDA) using an ac-based electrical capacitance tomography (ECT) system with an internal–external electrode sensor", *Measurement Science and Technology*, Vol. 23, No.1, 2012, pp. 015301 – 015310 (United States)

57. G Wei, Y C Liang and G S Samudra, "Realistic simulations on reverse junction characteristics of SiC and GaN power semiconductor devices", *Journal of Power Electronics*, Vol. 12, No. 1, January 2012, pp. 19 – 23 (Korea)

PUBLICATION: CONFERENCE PAPERS

1. Y C Liang, C T Pan and S L Chen, "Simulations of TRV of circuit breaker under symmetrical and asymmetrical fault current interruptions", *Proceedings of the 5th Symposium on Electrical Power Engineering,* Taiwan, pp. 512 – 540, 1984

2. Y C Liang and S L Chen, "Hybrid simulation of voltage-fed PWM inverter induction/permanent magnet motor drives", *Proceedings of the 6th Symposium on Electrical Power Engineering*, Taiwan, 1985

3. Y C Liang, V J Gosbell and D Tien, "Expert system aided diagnosis by using fuzzy feedback", *Annual Conference of the Engineering and the Physical Science in Medicine*, New Zealand, pp. 45 – 47, 1987

4. D Tien, P Nickllos, W Liew, A Yeung, Y C Liang and J Tucker, "Performance comparison of extracted features in classification of cervical cells", *Annual Conference of the Engineering and the Physical Science in Medicine*, New Zealand, pp. 62 – 63, 1987.

5. Y C Liang and S L Chen, "A hybrid test system for microprocessor controlled PWM inverter motor drives", *Electric Energy Conference 87 IE Australia*, Australia, pp. 661 – 667, 1987.

6. D Tien, P M Nickllos, W Liew, A Yeung, Y C Liang and J Tucker, "Cervical smear feature extraction and evaluation", *Six Southern Biomedical Engineering Conference*, United States, pp. 650-652, 1987.

7. D Tien , P M Nickllos, W Liew, A Yeung, Y C Liang and J Tucker, "Automated cervical smear classification", *IEEE EMBS 87 Conference*, United States, pp. 1457 – 1458, 1987.

8. Y C Liang and V J Gosbell, "Realistic computer models of DC machine for CADA topology on SPICE2", *IEEE Power Electronics Specialists Conference*, Japan, pp. 765 – 771, 1988.

9. Y C Liang and V J Gosbell, "Device model enhancement for power electronic circuit simulation", *SSA IMACS Conference on Modelling and Simulation*, Australia, pp. 503 – 508, 1989.

10. V J Gosbell, Y C Liang and J D Scott, "Device modelling for power electronic circuit simulation", *6th Conference on Power Electronics and Motion Control*, Hungary, pp. 1025 – 1030, 1990.

11. Y C Liang, H Yee and V J Gosbell, "Neural networks and fuzzy database for power electronic design automation", *IEEE Industrial Electronics Society Annual Conference*, United States, pp. 1112 – 1117, 1990.

12. T K Ng, Y C Liang and K S Lock, "Design and implementation of fuzzy logic controller for high performance battery charging systems", *Second International Conference on Automation, Robotics and Computer Vision*, Singapore, pp. co-7.6.1-co-7.6.5, 1992.

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