About AP

Prof. LAU Shu Ping, Daniel

Professor & Head, Director of University Research Facility in Materials Characterization and Device Fabrication (UMF)

Daniel.Lau@polyu.edu.hk

(mailto:Daniel.Lau@polyu.edu.hk)

CD628

2766 5679

Web Page: http://ap.polyu.edu.hk/apsplau/ (http://ap.polyu.edu.hk/apsplau/)

Research profile (/ap/images/content/Research_Profile/Lau_SP.pdf) (pdf)

Researcher ID: A-6083-2008 (http://www.researcherid.com/rid/A-6083-2008)

ORCID: 0000-0002-5315-8472 (http://orcid.org/0000-0002-5315-8472)

Google Scholar (http://scholar.google.com/citations?user=KRrkGwQAAAAJ)

Research interests:

- Two-dimensional (2D) materials: graphene, graphene oxide, MoS2, SnS etc.
- Optoelectronic properties of graphene quantum dots
- Strain engineering in 2D materials

LAU Shu Ping, Daniel

Address	Department of Applied Physics, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong
Telephone	+8525 2766 5679
Fax	+852 2333 7629
E-mail	daniel.lau@polyu.edu.hk

Academic Qualifications :

1995 **Ph.D.**, Materials Engineering, University of Wales Swansea, U.K.

1991 **BSc (Hons)**, First Class, Physics and Computer Electronics, The University of North London, U.K.

Working Experience :

Sep 2008 - present	Professor, Department of Applied Physics, The Hong Kong Polytechnic University
April 2007 – Aug 2008	Assistant Head, Division of Microelectronics, School of Electrical and Electronic Engineering, Nanyang Technological University
Jan. 2004 - Aug 2008	Associate Professor, School of Electrical and Electronic Engineering, Nanyang Technological University
Oct. 1998 – Dec. 2003	Assistant Professor, School of Electrical and Electronic Engineering, Nanyang Technological University
Feb. 1996- Oct. 1998	Research Fellow, Department of Electronic Engineering, University of Surrey, U.K.
Fe. 1995 – Jan. 1996	Senior Research Assistant, Department of Materials Engineering, University of Wales Swansea, U.K.
Oct. 1991 – Feb. 1995	Research Student, Department of Materials Engineering, University of Wales Swansea, U.K.

RESEARCH

Awards

2008	Royal Society Grant for International Incoming Short Visit
2006	Nanyang Award for Research and Innovation

	The highest recognition to individuals and teams who have made outstanding contributions in scientific knowledge through research breakthroughs, and significant technological innovations on the world stage.
2004	R.F. Bunshah Award for the best published paper presented at the International Conference on Metallurgical Coatings and Thin Films (ICMCTF 2003).
2001	Japan Society Promotion for Science (JSPS) Fellowship Scientist at Department of Environmental Technology, Graduate School of Engineering, Nagoya Institute of Technology
2001	Overseas Attachment Programme Fellowship (A*STAR Singapore) Scientist at School of Physics, University of Melbourne
1994	The Institute of Physics C.R. Barber Trust Fund, Travel Award Attended international conference, Materials Research Society Spring Meeting in San Francisco
1992 -1995	Overseas Research Students Awards, UK Government Studentship from Department of Materials Engineering, University of Wales Swansea

Citations as of 1 July 2011

Number of papers published in international refereed Journals	216
Total number of citations*	3300
Hirsch-index*	30

Listed as Top 1% Scientists in Materials Science in ISI Essential Science Indicators.#

**The citation of each published paper was obtained from www.Scopus.com.*

#ISI Web of Knowledge Essential Science Indicators, under citation rankings Scientists.

Highlighted Research

Applied Physics Letters Cover image of 27 June 2011, volume 98, number 26

Top 20 most downloaded articles published in Applied Physics Letters in August 2006.
"Wavelength-tunable and high-temperature lasing in ZnMgO nanoneedles"
H. Y. Yang, S. P. Lau, *et al.*
http://scitation.aip.org/dbt/most_downloaded.jsp?KEY=APPLAB&Year=2006&Month=8

Nanotechnology Journal Highlight at Nanotechweb.com – November 2005

Highlighted our work entitled "Aligned InN nanofingers prepared by the ion-beam assisted filtered cathodic vacuum arc technique" published in Nanotechnology 16 (2005) 3069.
http://nanotechweb.org/articles/journal/4/11/1/1

Laser Focus World February 2004 issue – News Break
Highlighted our work entitled "Ultraviolet amplified spontaneous emission from ZnO ridge waveguide on silicon substrate" published in Applied Physics Letters 83 (2003) 4288.

Research project entitled "Invisible Integrated Electronic Devices on Plastic Substrates" was selected to be exhibited at the Global Entrepolis @ Singapore (GES) 2004.

Research project entitled "Carbon nanotubes for vacuum microelectronics" was selected to be exhibited at the Global Entrepolis @ Singapore (GES) 2003.

Demonstration of field emission display (FED) prototype. The FED research was featured in the Channel News Asia, Channel 5 and Channel 8 on 15 October 2003.

International Conference Organizer

1998 - 1999	2nd International Specialist Meeting on Amorphous Carbon (SMAC'99) 14-16 July 1999 Participants: 50+	Secretary
2000 - 2001	International Conference on Materials for Advanced Technologies 2001 (ICMAT 2001) 1-5 July 2001 Participants: 1300+	Secretary
2000 - 2001	Symposium F: Diamond, Diamond-like Carbon & Related Materials (ICMAT 2001) 1-5 July 2001 Participants: 80+	Chairman
2001 - 2002	The 7th Asian Symposium on Information Display (ASID'02) 2-4 September 2002 Participants: 250+	Program Chair

2001 - 2003	International Conference on Materials for Advanced Technologies 2001 (ICMAT 2001) and 7th IUMRS International Conference in Asia (ICA 2003) 8 – 12 December 2003 Participants: 1500+	Secretary
2004- 2005	International Conference on Materials for Advanced Technologies 2005 (ICMAT 2005) and 9th International Conference on Advanced Materials (ICAM 2005) 3-8 July 2005 Participants: over 2500+	Treasurer
2004- 2005	Symposium N: ZnO and Related Materials (ICMAT 2005) 3-8 July 2005 Participants: 150	Chairman
2005 - 2006	NanoSingapore 2006: IEEE conference on Emerging Technologies - Nanoelectronics, Carbon Nanotubes session Participants: 100	Session Chair
2007- 2008	The 2nd IEEE International Nanoelectronics Conference, Shanghai, China, 24-27 March 2008. Carbon Nanotubes session	Session Chair
2007 - 2008	Symposium on ZnO-Based Thin Films, Nano-Wires, and Nano-Belts for Photonic and Electronic Devices and Sensors Electrochemical Society 2008, Fall Hawaii meeting (Oct 12-17, 2008)	Co-Chairman

Guest Editor

2001 - 2002 International Journal of Modern Physics B
Special issue Diamond, Diamond-like Carbon and Related Materials
Proceedings of the Symposium of the ICMAT 2001
Edited by S.P. Lau, S.F. Yoon, B.K. Tay and Rusli
Volume 16, Numbers 6 & 7, March 2002 (World Scientific)

2002 - 2003 Journal of Society for Information Display
Special issue on selected papers from the 7th Asian Symposium on Information Display (ASID'02)
Edited by S.P. Lau, X.W. Sun, T.K.S. Wong
Volume 11, Number 2, 2003 (Society for Information Display)

2004 - 2005 Journal of Crystal Growth
Special issue on ZnO and Related Materials
Proceedings of the Symposium N of the ICMAT 2005
Edited by S.P. Lau, S.F. Yu, G-C. Yi and M. Kawasaki
Elsevier Publisher

Research Interests

- Nanomaterials: graphene, BN, MoS_2 and AlN nanowires
- BN and III-nitrides based deep ultraviolet light emitting devices.
- Graphene based optoelectronic and spintronic devices
- Oxide-based diluted magnetic semiconductors.

Selected Recent Publications

1. S.P. Lau, H.Y. Yang, S.F. Yu, C. Yuen, E.S.P. Leong, H.D. Li and H.H. Hng, "flexible ultraviolet random laser based on nanoparticles", Small **1** (2005) 956-959.

2. T.T. Tan, H.S. Sim, S.P. Lau, H.Y. Yang, M. Tanemura, T. Tanaka, "X-ray generation using carbon-nanofiber-based flexible emitters, Appl. Phys. Lett **88** (2006) 103105.

3. H.D. Li, S.F. Yu, S.P. Lau, Eunice S.P. Leong, H.Y. Yang, T.P. Chen, A.P. Abiyasa and C.Y. Ng, "High-temperature lasing characteristics of ZnO epilayers", Adv. Mat. **1**8 (2006) 771-774.

4. E.S.P. Leong, S.F. Yu, A.P. Abiyasa, and S.P. Lau, "Polarization characteristics of ZnO rib waveguide random lasers", Appl. Phys. Lett **88** (2006) 091116.

5. S.P. Lau, L. Huang, S.F. Yu, H.Y. Yang, J.K. Yoo, S.J. An, G-C. Yi, "Enhanced secondary electron emission from III-nitride/ZnO coaxial heterostructures", Small **2** (2006) 736.

6. T.S. Herng, S.P. Lau, S.F. Yu, H.Y. Yang, X.H. Ji, J.S. Chen, N. Yasui and H. Inaba, "Origin of room-temperature ferromagnetism in ZnO:Cu films", J. Appl. Phys. **99** (2006) 086101.

7. A.P. Abiyasa, S.F. Yu, W.J. Fan and S.P. Lau, "Theoretical Investigation of Excitonic Gain in ZnO/$Mg_xZn_{1-x}O$ Strained Quantum Wells", IEEE J Quantum Electronic **42** (2006) 455-463.

8. S.F. Yu, H.D. Li, Eunice S.P. Leong, A.P. Abiyasa, S.P. Lau, "The formation characteristics of closed-loop random cavities inside highly disordered ZnO polycrystalline thin films", Appl. Phys. Lett. **88** (2006) 121126.

9. H.Y. Yang, S.P. Lau, S. F. Yu, A.P. Abiyasa, M. Tanemura, T. Okita, and H. Hatano, "High-temperature random lasing in ZnO nanoneedles", Appl. Phys. Lett. **89** (2006) 011103.

10. H.D. Li, S.F. Yu, S.P. Lau, E.S.P. Leong, "Simultaneous formation of visible and ultraviolet random lasing in ZnO films", Appl. Phys. Lett. **89** (2006) 021110.

11. H.Y. Yang, S.P. Lau, S.F. Yu, M. Tanemura, T. Okita, H. Hatano, K.S. Teng and S.P. Wilks, "Wavelength-tunable and high-temperature lasing in ZnMgO nanoneedles", Appl. Phys. Lett.**89** (2006) 081107.

12. T.S. Herng, S.P. Lau, S.F. Yu, H.Y. Yang, L. Wang, M. Tanemura, J.S. Chen, "Magnetic anisotropy of ferromagnetic copper-doped ZnO nannoneedles", Appl. Phys. Lett **90** (2007) 032509.

13. H.S. Sim, S.P. Lau, H.Y. Yang, L.K. Ang, M. Tanemura, K. Yamaguchi, "Reliable and flexible carbon-nanofibers-based all-plastic field emission devices", Appl. Phys. Lett. **90** (2007) 143103.

14. T.S. Herng, S.P. Lau, S.F. Yu, J.S. Chen. K.S. Teng, "Zn-interstitial-enhanced ferromagnetism in Cu-doped ZnO films", J. Magnetism and Magnetic Materials **315** (2007) 107-110.

15. X.H. Ji, S.P. Lau, S.F. Yu, H.Y. Yang, T.S. Herng, A. Sedhain, J.Y. Lin, H.X. Jiang, K.S. Teng, J.S. Chen, " Ultraviolet photoluminescence from ferromagnetic Fe-doped AlN nanorods", Appl. Phys. Lett. **90** (2007) 193118.

16. H.S. Sim, S.P. Lau, L.K. Ang, G.F. You, M. Tanemura, K. Yamaguchi, and M. Zamri, "Field emission from a single carbon nanofiber at sub 100 nm gap", Applied Physics Letters 93 (2008) 023131.

17. T.S. Herng, S.P. Lau, S.F. Yu, S.H. Tsang, K.S. Teng, J.S. Chen, "Ferromagnetic and conductive Cu-doped ZnO as an electron injector in heterojunction light emitting diodes", J. of Applied Physics 104 (2008) 103104.

18. Q.Y. Zhang, J.Q. Xu, Y.M. Zhao, X.H. Ji and S. P. Lau,"Fabrication of large-scale single-crystalline PrB6 nanorods and their temperature-dependent electron field emission", Advanced Functional Materials 19 (2009) 742-747.

19. X.H. Ji, Q.Y. Zhang, S.P. Lau, H.X. Jiang, J.Y. Lin, "Temperature-dependent photoluminescence and electron field emission properties of AlN nanotip arrays", Appl. Phys. Lett. 94 (2009) 173106.

20. H.Y. Yang, S. F. Yu, S. P. Lau, S.H. Tsang, G.H. Xing and T. Wu, "Ultraviolet coherent random lasing in randomly assembled SnO_2 nanowires", Applied Physics Letters 94 (2009) 241121.

21. T.S. Herng, S. P. Lau, L. Wang, B.C. Zhao, S.F. Yu, M. Tanemura, A. Akaike and K.S. Teng, "Magnetotransport properties of p-type carbon-doped ZnO thin films", Applied Physics Letters 95 (2009) 012505.

22. H.Y. Yang, S. F. Yu, S. P. Lau, X.W. Zhang, D.D. Sun, J. Gao, "Direct growth of ZnO nanocrystals onto the surface of porous TiO_2 nanotube arrays for highly efficient and recyclable photocatalysts", Small 5 (2009) 2260-2264.

23. T.S. Herng, S. P. Lau, C. S. Wei, L. Wang, B.C. Zhao, M. Tanemura, Y. Akaike, "Stable ferromagnetism in p-type carbon-doped ZnO nanoneedles", Applied Physics Letters 95 (2009) 133103.

24. X. H. Ji, Q. Y. Zhang, Z. Y. Ling and S. P. Lau, "Stress and its effect on optical properties of AlN nanorods", Appl. Phys. Letts 95 (2009) 233105.

25. H.Y. Yang, S.F. Yu, H.K. Liang, S. P. Lau, S. S. Pramana, C. Ferraris, C. W. Cheng and H. J. Fan, "Ultraviolet Electroluminescence from randomly assembled n-SnO_2 nanwires p-GaN:Mg heterojunction", ACS Applied Materials and Interfaces 2 (2010) 1191.

26. Y. Zhao, X.J. Zhang, J. Ye, L.M. Chen, S. P. Lau, W.J. Zhang and S.T. Lee, "Metallo dielectric photonic crystals for surface enhanced Raman scattering", ACS Nano 5 (2011) 3027.

27. J. Ye, Y. Zhao, L.B. Tang, L.M. Chen, C.M. Luk, S.F. Yu, S.T. Lee and S.P. Lau, "Ultraviolet electroluminescence from two-dimensional ZnO nanomesh/GaN heterojunction light emitting diodes", Applied Physics Letters 98 (2011) 263101.