

Website update – ESR-ER presentation template

Marie-Curie Fellow

Name: WENG

First Name: Ming-Hung

Age: 32

Nationality: Taiwan / Canada

Position (ER/ESR): ER

Host institution: CNR-IMM, Catania, Italy

Contract duration: October 2008 – October 2009



Short Education Background (10 lines max.)

Ming-Hung Weng received first degree of B.A.Sc. from the University of Ottawa, Ottawa, Canada in 2001. In 2003, he joined silicon carbide technology research at Nano Materials and Electronics group in Newcastle University, participated in projects, which lead by Dr. Alton Horsfall and Professor Nick Wright and supported by European Space Agency (ESA), Engineering and Physical Sciences Research Council (EPSRC) and the Royal Society of U.K. He received his M.Sc. and Ph.D. degrees in microelectronics from Newcastle University, Newcastle, U.K., in 2004 and 2007, respectively.

Research focus and main activities carried out in the scope of the project (10 lines max.)

Ming-Hung Weng is currently a Marie-Curie Experienced Researcher at the CNR-IMM, Catania, Italy. His research interests include the high-k dielectric materials as gas sensors in silicon carbide technology and the development of Schottky diode-based radiation sensors for aerospace applications. Integrated to existing researches and current projects in the group lead by Dr. Fabrizio Roccaforte and Dr. Vito Raineri at CNR-IMM, his current research aim is to develop, design and demonstrate of functional devices which are focused on the physical aspects in 3C-SiC and heteropolytypes technology. Other scopes of the project include processing, devices fabrication (with cleanroom operation) and electrical-structural measurements of Ohmic/Schottky contact diodes, MOS capacitors, and MOSFETs by using micro- and nano-characterization techniques.

Publications (please specify when the publication has been issued in the scope of the MANSiC project)

Publications supported within MANSiC framework

1. M.H. Weng, J. Eriksson, F. Roccaforte, F. Giannazzo, S. Di Franco, C. Bongiorno, S. Leone, V. Raineri, '*Influence of defect density on the Schottky barrier height on a 3C/4H-SiC heterostructure*', abstract accepted as poster presentation at Hetero-SiC'09, May 6 – 7th, 2009, Catania, Italy
2. J. Eriksson, M.H. Weng, F. Roccaforte, F. Giannazzo, R. Lo Nigro, J. Lorenzi, S. Reshanov, G. Baratta, V. Raineri, '*Ohmic and Schottky contacts on 3C-SiC epilayers grown by VLS and CVD*', abstract accepted as oral presentation at Hetero-SiC'09, May 6 – 7th, 2009, Catania, Italy
3. M.H. Weng, R. Mahapatra, N.G. Wright, A.B. Horsfall, '*Novel high-k gas sensors for silicon carbide technology*', abstract accepted as oral presentation at Hetero-SiC'09, May 6 – 7th, 2009, Catania, Italy
4. M.H. Weng, F. Roccaforte, F. Giannazzo, R. Lo Nigro, C. Bongiorno, S. Di Franco, E. Zanetti, A. Ruggiero, M. Saggio, V. Raineri, '*Defects and electrical activation of Al ion-implanted 4H-SiC for power MOSFETs*', abstract accepted as poster presentation at WASMPE'09, May 7 – 8th, 2009, Catania, Italy
5. F. Giannazzo, F. Roccaforte, F. Iucolano, M.H. Weng, S. Di Franco, V. Raineri, '*Nanoscale electrical characterization of wide-bandgap semiconductors materials and devices*', abstract accepted as poster presentation at WASMPE'09, May 7 – 8th, 2009, Catania, Italy
6. M.H. Weng, F. Roccaforte, F. Giannazzo, V. Raineri, E. Zanetti, A. Ruggiero, M. Saggio, '*Correlation Study of Surface Morphology and Electrical Activation of Ion Implanted 4H-SiC*', abstract accepted as oral presentation at GADEST 2009, September 26 – October 2, 2009, Döllnsee-Schorfheide, Germany
7. J. Eriksson, M.H. Weng, F. Roccaforte, F. Giannazzo, V. Raineri, S. Leone, '*Defect-induced limitations to Schottky contacts on 3C-SiC grown on 4H-SiC*', abstract accepted as poster presentation at GADEST 2009, September 26 – October 2, 2009, Döllnsee-Schorfheide, Germany

Other publications

8. M.H. Weng, R. Mahapatra, N.G. Wright, A.B. Horsfall, '*Investigation of Interface Properties of High k Dielectric stacks on 4H-SiC by Post Metallisation Annealing*', Materials Science Forum vols. 600-603 (2009) pp. 771-774
9. M.H. Weng, R. Mahapatra, N.G. Wright, A.B. Horsfall, '*Role of Oxygen in High Temperature Hydrogen Sulfide Detection using MISiC Sensors*', Special issue on Sensors and Sensing Systems in the journal of Measurement Science and Technology, Institute of Physics, Meas. Sci. Technol. 19 (2008) 024002 (5pp)

10. M.H. Weng, R. Mahapatra, A.B. Horsfall, N.G. Wright, '*Trap assisted gas sensing mechanism in Pd/TiO₂/SiO₂/SiC capacitors at high temperatures*', IEEE Sensors Journal (2007), vol. 7, no. 10, pp. 1395-1399
11. A.B. Horsfall, M.H. Weng, R. Mahapatra, N.G. Wright, **Invited paper** '*Trap assisted gas sensing mechanism in MISiC capacitors*', Materials Science Forum vols. 556-557 (2007) pp. 621-626
12. M.H. Weng, R. Mahapatra, A.B. Horsfall, N.G. Wright, '*Hydrogen Sulphide Detection in Extreme Environments*', Journal of Physics: Conference Series vol. 76 (2007) 012005
13. M.H. Weng, R. Mahapatra, A.B. Horsfall, N.G. Wright, '*Trap assisted conduction in high K dielectric capacitors on 4H-SiC*', Materials Science Forum vols. 556-557 (2007) pp. 679-682
14. M.H. Weng, R. Mahapatra, P. Tappin, B. Miao, S. Chattopadhyay, A.B. Horsfall, N.G. Wright, '*High temperature characterization of high-k dielectrics on SiC*', Mater. Sci. Semicond. Process., vol. 9 (2006) pp. 1133-1136
15. M.H. Weng, R. Mahapatra, A.B. Horsfall, N.G. Wright, '*First observation of hydrogen sensing by trap assisted conduction current in Pd/TiO₂/SiC capacitors at high temperature*', Proceedings of IEEE Sensors Conference 2006 (2006) pp. 77-80
16. M.H. Weng, A.B. Horsfall, N.G. Wright, K.V. Vassilevski, I.P. Nikitina, '*Comparison of parameter extraction techniques for Schottky barrier diodes*', Mater. Res. Soc. Symp. Proc. (2006) 911 0911-B10-12