

# **2008 International Conference on Nanoscience and Nanotechnology**

**Melbourne, Victoria, Australia  
25-29 February 2008**



**IEEE Catalog Number:**  
**ISBN 13:**

**CFP08ONN-PRT**  
**978-1-4244-1503-8**

# Table of Contents

<b>Preparation of Poly(ethylene terephthalate) / Montmorillonite Nanocomposites Films by Solution Technique .....</b>	<b>1</b>
<i>Duangdao Aht-Ong, Hathairat Benjapornthavee</i>	
<b>Joining a Carbon Nanotube and a Graphene Sheet .....</b>	<b>5</b>
<i>Duangkamon Baowan, Barry J. Cox, James M. Hill</i>	
<b>ZnO Nanostructured Arrays Grown from Aqueous Solutions on Different Substrates .....</b>	<b>9</b>
<i>Michael Breedon, Jerry Yu, Wojtek Wlodarski, Kourosh Kalantar-zadeh</i>	
<b>The Purification of Chemically Synthesized Graphene.....</b>	<b>13</b>
<i>Mohammad Choucair, John A. Stride</i>	
<b>POSS Fulleropyrrolidines .....</b>	<b>17</b>
<i>David Clarke, Stephen Clarke, Janis Matisons, George Simon, Anna Samoc, Marek Samoc</i>	
<b>Modification of the Density of Crystallites in Silicon Nano-Crystalline Thin Films by Substrate Profiling .....</b>	<b>21</b>
<i>John C.L. Cornish, Reem Abdelaal</i>	
<b>Characterisation of Methane Plasma Treated Carbon Surfaces.....</b>	<b>24</b>
<i>Alec Deslandes, Marek Jasieniak, Mihail Ionescu, Joseph G. Shapter, Jamie S. Quinton</i>	
<b>The Influence of Interphase Between Nanoparticles and Matrix on Young's Modulus of Nanocomposites.....</b>	<b>28</b>
<i>Yan Ding, Kim N. Tran, John A. Gear, David Mainwaring, Pandiyan Murugaraj</i>	
<b>Comparison of Proton and Arsenic Implantation-Induced Intermixing in InGaAsP/InGaAs/InP and InAlGaAs/InGaAs/InP Quantum Wells .....</b>	<b>32</b>
<i>Sichao Du, L. Fu, H.H. Tan, C. Jagadish</i>	
<b>Synthesis of Hollow Gold Nanoparticles and Rings Using Silver Templates .....</b>	<b>36</b>
<i>Jonathan A. Edgar, Hadi M. Zareie, Martin Blaber, Annette Dowd, Michael B. Cortie</i>	
<b>Catalyst-Free Solvothermal Synthesis of Carbon Nanotubes.....</b>	<b>40</b>
<i>Thomas Ellis, Christian Paras, John A. Stride</i>	
<b>Antimicrobial and Antibacterial Effects of Silver Nanoparticles Synthesized by Novel Electrochemical Method.....</b>	<b>44</b>
<i>Yuri Estrin, Renat Khaydarov, Rashid A. Khaydarov, Thomas Scheper, Christian Endres, Seung Y. Cho</i>	
<b>Patterned Attachment of Carbon Nanotubes to Silicon .....</b>	<b>48</b>
<i>Benjamin S. Flavel, Jingxian Yu, Daniel Tune, Joseph G. Shapter, Jamie S. Quinton</i>	
<b>Use of Pre-Defined Architectures for Incorporation of Aligned Carbon Nanotubes into Epoxy Resin.....</b>	<b>52</b>
<i>Barry Halstead, Andrew Rider, Narelle Brack, Paul Pigram</i>	
<b>Metrology for Nanotechnology .....</b>	<b>56</b>
<i>A. Jamting, J. Miles</i>	
<b>Microstructural Stability and Microhardness of Ultrafine Grained and Nanostructured Cu-5vol.%Al<sub>2</sub>O<sub>3</sub> Composite Lumps/Powders Produced by High Energy Mechanical Milling .....</b>	<b>59</b>
<i>Aamir Mukhtar, Deliang Zhang, Charlie Kong, Paul Munroe</i>	
<b>Microstructures and Photocatalytic Study of TiO<sub>2</sub> Nano Particles Coated on Glass.....</b>	<b>63</b>
<i>Koichi Niwa, Asami Masuda, Yasuro Ikuma</i>	
<b>Suppression of Current Fluctuations in Carbon Nanotube Field-Effect Transistors by Applying Alternating Current.....</b>	<b>67</b>
<i>Yasuhide Ohno, Kenzo Maehashi, Koichi Inoue, Kazuhiko Matsumoto</i>	
<b>Electro-Deposition of Gold Nano-Structures on Gold Quartz Crystal Microbalance (QCM) Electrodes for Enhanced Mercury Vapour Sensitivity in the Presence of Interferent Gases.....</b>	<b>71</b>
<i>Ylias M. Sabri, Samuel J. Ippolito, James Tardio, Dinesh K. Sood, Suresh K. Bhargava</i>	

# Table of Contents

<b>Terminal Alkynes as a Position Abstraction Tool for the Preparation of Nano Materials .....</b>	<b>75</b>
<i>Lakshmi Srinivasakannan, Subramanian Kulandaivelu, Madhulatha Wuppalamarathi</i>	
<b>Atomic Force Microscopy for Industry with the Akiyama-Probe Sensor .....</b>	<b>79</b>
<i>Stephan Stucklin, Maurizio Rosario Gullo, Terunobu Akiyama, Martin Scheidiger</i>	
<b>Aging of Magnetite Nanoparticles in Aqueous Solutions of Differing pH .....</b>	<b>83</b>
<i>Adrian Trinchì, Tim H. Muster, John B. Dunlop, Stephen J. Collocott</i>	
<b>Engineered Gold Nanotube Membranes for Molecular Separations.....</b>	<b>86</b>
<i>L. Velleman, Joseph G. Shapter, D. Losic</i>	
<b>Polyacrylic Acid Based Hydrogel-Silver Nanoparticles for Antibacterial Applications .....</b>	<b>90</b>
<i>D. Yiamsawas, K. Boonpavanitchakul, R. Sangsirimongkolying, W. Kangwansupamonkon</i>	
<b>Conductometric Sensor Based on Nanostructured Titanium Oxide Thin Film Deposited on Polyimide Substrate with Dissimilar Metallic Electrodes .....</b>	<b>94</b>
<i>C. Zhang, A.Z. Sadek, Michael Breedon, Samuel J. Ippolito, Wojtek Wlodarski, T. Truman, Kourosch Kalantar-zadeh</i>	
<b>Effect of Addition of TiO<sub>2</sub>/SiO<sub>2</sub> Nanoparticles on H<sub>2</sub> and H<sub>2</sub> irr in MgB<sub>2</sub> Bulks .....</b>	<b>97</b>
<i>Yun Zhang, Saeid Soltanian, Yue Zhao, SiHai Zhou, ShiXue Dou</i>	
<b>Green Hydrothermal Synthesis of High-Quality ZnS Quantum Dots with Different Patterning .....</b>	<b>101</b>
<i>Xiaoqin Zou, Guangshan Zhu, Hailing Guo, Hua Li, Mingyi Guo, Shilun Qiu, Ruren Xu</i>	
<b>Novel Coating of Micro-Nanoprojection Patches for Targeted Vaccine Delivery to Skin .....</b>	<b>105</b>
<i>Xianfeng Chen, Tarl W. Prow, Michael L. Crichton, Germain J.P. Fernando, Mark A.F. Kendall</i>	
<b>Encapsulation of the Anticancer Drug Cisplatin into Nanotubes.....</b>	<b>109</b>
<i>Tamsyn A. Hilder, James M. Hill</i>	
<b>Nano-Structured Surfaces Control Bacterial Attachment.....</b>	<b>113</b>
<i>Natasa Mitik-Dineva, James Wang, Paul R. Stoddart, Russell J. Crawford, Elena P. Ivanova</i>	
<b>Microstamp Patterning of Protein Arrays.....</b>	<b>117</b>
<i>Mahyar Nasabi, Arnan Mitchell, Kourosch Kalantar-zadeh, Warwick S. Nesbitt</i>	
<b>High Resolution Chemical Mapping of Biomimetic Membranes by Force Volume Imaging .....</b>	<b>121</b>
<i>Matthew R. Nussio, Nicolas H. Voelcker, Matthew J. Sykes, Benjamin S. Flavel, John O. Miners, Joseph G. Shapter</i>	
<b>Targeted Epidermal Delivery of Vaccines from Coated Micro-Nanoprojection Patches .....</b>	<b>125</b>
<i>Tarl W. Prow, Xianfeng Chen, Michael L. Crichton, Yash Tiwari, Francesca Gradassi, Kristin Raphelli, Donna Mahony, Germain J.P. Fernando, Michael S. Roberts, Mark A.F. Kendall</i>	
<b>Measuring Dynamic Phenomena at the Sub-Micron Scale.....</b>	<b>129</b>
<i>Julio Soria, Omid Amili, Callum Atkinson</i>	
<b>Synthesis and Characterization of ZnO Nanostructures with Antimicrobial Properties.....</b>	<b>133</b>
<i>D. Yiamsawas, K. Boonpavanitchakul, W. Kangwansupamonkon</i>	
<b>Integration of Enzyme Immobilised Single-Walled Carbon Nanotube Arrays into Microfluidic Devices for Glucose Detection.....</b>	<b>137</b>
<i>Jingxian Yu, Rudolph Le Roux, Yunfeng Gu, Kamran Yunus, Sinead Matthews, Joseph G. Shapter, Adrian C. Fisher</i>	
<b>QCA Implementation of a MUX-Based FPGA CLB.....</b>	<b>141</b>
<i>Mohammad Amin Amiri, Mojdeh Mahdavi, Sattar Mirzakhaki</i>	
<b>A Silicon Radio-Frequency Single Electron Transistor at 4.2K .....</b>	<b>145</b>
<i>S.J. Angus, A.J. Ferguson, A.S. Dzurak, R.G. Clark</i>	
<b>Ordering of Ge Quantum Dots on Silicon Surfaces via Bottom-Up and Top-Down Approaches .....</b>	<b>148</b>
<i>Marco Bernardi, Anna Sgarlata, Nunzio Motta, Massimo Fanfoni, Dario Del Moro, Adalberto Balzarotti</i>	

# Table of Contents

<b>A Carbon Atom Orbiting Around the Outside of a Carbon Nanotube .....</b>	<b>152</b>
<i>Yue Chan, Grant M. Cox, James M. Hill</i>	
<b>Spatial Adiabatic Passage as a Quantum Wire.....</b>	<b>156</b>
<i>Andrew D. Greentree, Lenneke M. Jong, Jessica A. Van Donkelaar, Simon J. Devitt, Jared H. Cole, Ashley M. Stephens, David N. Jamieson, Lloyd C.L. Hollenberg</i>	
<b>Coherent Tunneling Adiabatic Passage with the Alternating Coupling Scheme.....</b>	<b>160</b>
<i>Lenneke M. Jong, Andrew D. Greentree, Vincent I. Conrad, Lloyd C.L. Hollenberg, David N. Jamieson</i>	
<b>Determination of the Eigenstates and Wavefunctions of a Single Gated As Donor.....</b>	<b>164</b>
<i>G.P. Lansbergen, R. Rahman, C.J. Wellard, P.E. Rutten, J. Caro, I. Woo, N. Colleart, S. Biesemans, G. Klimeck, Lloyd C.L. Hollenberg, S. Rogge</i>	
<b>Phase Transitions in Photonic Cavities: Exact vs. Mean-Field.....</b>	<b>168</b>
<i>Melissa Makin, Jared H. Cole, Charles Tahan, Andrew D. Greentree, Lloyd C.L. Hollenberg</i>	
<b>Cavity Enhancement of a Nitrogen-Vacancy-Based Single Photon Source.....</b>	<b>172</b>
<i>Chun-Hsu Su, Andrew D. Greentree, Lloyd C.L. Hollenberg</i>	
<b>Mixed Assembly of Ferrocene/Porphyrin onto Carbon Nanotube Arrays Towards Multibit Information Storage.....</b>	<b>176</b>
<i>Jingxian Yu, Simon Mathew, Benjamin S. Flavel, Jamie S. Quinton, Martin R. Johnston, Joseph G. Shapter</i>	
<b>Organic Fluorophores Doped Nanoparticles for Thin Film Sensors.....</b>	<b>180</b>
<i>Jaekwon Do, Jungmok Yoo, Yoonjung Kim, Eunkyoun Kim</i>	
<b>Finite Element Simulation of Absorbance Modulation Optical Lithography .....</b>	<b>184</b>
<i>John Foulkes, Richard J. Blaikie</i>	
<b>Electrical Study of Memory Effects in InAs Quantum Dots Embedded in SiO<sub>2</sub> on Silicon Substrates .....</b>	<b>188</b>
<i>Maira Hocevar, Nicolas Baboux, Alain Poncet, Philippe Regreny, Michel Gendry, Abdelkader Souifi</i>	
<b>Fabrication and Characterization of Hybrid DBPPV-CdSe/ZnS Quantum Dot Light-Emitting Diodes .....</b>	<b>192</b>
<i>Chun-Yuan Huang, Ying-Chih Chen, Hsin-Chieh Yu, Yan-Kuin Su, Ten-Chin Wen, Tzung-Fang Guo</i>	
<b>Structuring of Grating Arrays in Multilayered Foil by Excimer Laser .....</b>	<b>196</b>
<i>Patrick W. Leech, Lawry McCarthy, Peter Osvath</i>	
<b>A Statistical Approach for Measuring Dislocations in 2D Photonic Crystals .....</b>	<b>200</b>
<i>R. Malureanu, L.H. Frandsen</i>	
<b>Multistep Photoinduced Electron Transfer Processes in a Self-Assembled Ternary Array --- Towards Precise Nanofabrication of Efficient Organic Solar Cells.....</b>	<b>203</b>
<i>Simon Mathew, Martin R. Johnston</i>	
<b>Surface Mounted Porphyrin-Nanotube Arrays: Towards Energy-Harvesting Surfaces .....</b>	<b>206</b>
<i>Simon Mathew, Jingxian Yu, Martin R. Johnston, Jamie S. Quinton, Joseph G. Shapter</i>	
<b>Analysis and Comparison of Simulation Techniques for Silver Superlenses .....</b>	<b>210</b>
<i>Ciaran P. Moore, Matthew D. Arnold, Philip J. Bones, Richard J. Blaikie</i>	
<b>Dislocation Related Band-Edge Photoluminescence in Boron-Implanted Silicon .....</b>	<b>214</b>
<i>Byron J. Willis, Paul G. Spizzirri, Brett C. Johnson, Jeffrey C. McCallum</i>	
<b>UV-Induced Wettability Change of Teflon-Modified ZnO Nanorod Arrays on LiNbO<sub>3</sub> Substrate.....</b>	<b>218</b>
<i>Haidong Zheng, Michael Breedon, Kouros Kalantar-zadeh</i>	
<b>Non Radiative Decay Processes in Nanocrystals: Is the Auger Model Consistent with Experiment?.....</b>	<b>222</b>
<i>Marco Califano</i>	
<b>Molecular Dynamics Simulation of Crack Propagation on Different Slip Planes of BCC Iron .....</b>	<b>226</b>
<i>Yuan Gao, Cheng Lu, Anh Kiet Tieu, Hongtao Zhu</i>	

## Table of Contents

<b>Carbon Molecules Oscillating in Carbon Nanotube Bundles .....</b>	<b>230</b>
<i>Ngamta Thamwattana, Barry J. Cox, James M. Hill</i>	
<b>Networking Resources for Research and Scientific Education in Nanoscience and Nanotechnologies .....</b>	<b>234</b>
<i>Sabina Jeschke, Nicole Natho, Olivier Pfeiffer, Christian Thomsen</i>	
<b>Risk Perception and Risk Communication: Is Nanotechnology at the Crossroads in Australia? .....</b>	<b>238</b>
<i>Brian Priestly, Margaret Stebbing</i>	