

# 2nd ASEAN – APCTP Workshop on Advanced Materials Science and Nanotechnology (AMSN 2010)

*Penang, Malaysia 21 – 23 December 2010*

## ***EDITORS***

A. K. Masrom  
K. Noorsal  
M. R. Muhamad  
A. H. You

Authorization to photocopy items for internal or personal use, beyond the free copying permitted under the 1978 U.S. Copyright Law (see statement below), is granted by the American Institute of Physics for users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of \$30.00 per copy is paid directly to CCC, 222 Rosewood Drive, Danvers, MA 01923, USA: <http://www.copyright.com>. For those organizations that have been granted a photocopy license by CCC, a separate system of payment has been arranged. The fee code for users of the Transactional Reporting Services is: 978-2/9576/3278/7/32/\$30.00.

© 2032 American Institute of Physics

No claim is made to original U.S. Government works.

Permission is granted to quote from the AIP Conference Proceedings with the customary acknowledgment of the source. Republication of an article or portions thereof (e.g., extensive excerpts, figures, tables, etc.) in original form or in translation, as well as other types of reuse (e.g., in course packs) require formal permission from AIP and may be subject to fees. As a courtesy, the author of the original proceedings article should be informed of any request for republication/reuse. Permission may be obtained online using RightsLink. Locate the article online at <http://proceedings.aip.org>, then simply click on the RightsLink icon/“Permissions/Reprints” link found in the article abstract. You may also address requests to: AIP Office of Rights and Permissions, Suite 1N01, 2 Huntington Quadrangle, Melville, NY 11747-4502, USA; Fax: 516-576-2450; Tel.: 516-576-2268; E-mail: [rights@aip.org](mailto:rights@aip.org).

ISBN 978-2/9576/3278/2\*  
ISSN 0094-243X  
Printed in the United States of America

# TABLE OF CONTENTS

|   |     |
|---|-----|
| <b>Preface: 2<sup>nd</sup> ASEAN - APCTP Workshop on Advanced Materials Science and Nanotechnology (AMSN 2010)</b> .....  | 1   |
| <b>A Mechanism of Mixed-Parity Superconductivity in Noncentrosymmetric Correlated Electron System</b> .....   | 9   |
| <i>T. Takimoto</i>  |     |
| <b>Single Crystal X-ray Structural Determination of Natural Products</b> .....  | 19  |
| <i>H. Fun, N. Boonnak, S. Chantrapromma</i>   |     |
| <b>Novel Inorganic Materials for Polymer Electrolyte and Alkaline Fuel Cells</b> .....  | 29  |
| <i>K. Tadanaga</i>  |     |
| <b>Subnanometer Poly-silicon Gap Structure Formation: Comparison Study Between Size Expansion and Size Reduction</b> .....  | 33  |
| <i>U. Hashim, T. Nazwa, T. Dhahi</i>  |     |
| <b>Synthesis And Structural Characterization Of Nano-Hydroxyapatite Biomaterials Prepared By Microwave Processing</b> .....                                       | 45  |
| <i>R. Ramli, A. Arawi, M. Talari, M. Mahat, U. Jais</i>   |     |
| <b>Properties of Nano Structured Ag-TiO<sub>2</sub> Composite Coating on Stainless Steel Using RF Sputtering Method</b> .....                                     | 49  |
| <i>S. Bakar, K. Jamuna-Thevi, N. Abu, M. Toff</i>   |     |
| <b>Nanopolyaniline as Immobilization Template for Signal Enhancement of Surface Plasmon Resonance Biosensor – A Preliminary Study</b> .....                       | 60  |
| <i>D. Kamarun, N. Azem, S. Sarijo, A. Mohd, M. Abdullah, M. Noor</i>  |     |
| <b>Preparation and Characterization of Conjugated Polyamidoamine-MPEG-Methotrexate for Potential Drug Delivery System</b> .....                                   | 70  |
| <i>S. Sabri, N. Abu, A. Mastor, S. Hisham, K. Noorsal</i>   |     |
| <b>Electrochemical Synthesis of Highly Ordered Magnetic Multilayered Nanowire Arrays</b> .....  | 85  |
| <i>K. Kok, I. Ng, N. Saidin, N. Zali, F. Bustamam, A. Shaari</i>  |     |
| <b>MSM-Photodetectors Based on Al<sub>x</sub>Ga<sub>1-x</sub>N/GaN Heterostructures Grown on Si(111) by Molecular Beam Epitaxy</b> .....                          | 91  |
| <i>A. Hussein, Z. Hassan, S. Thahab, H. Hassan, N. Ahmed</i>  |     |
| <b>FTIR Study on Phase Behavior of Magnesium-doped Biphasic Calcium Phosphate Synthesized via Sol-gel Method</b> .....  | 97  |
| <i>A. Toibah, I. Sopyan, Y. Yuhazri, A. Jeefferie, O. Nooririnah</i>  |     |
| <b>Fabrication of Porous Alumina Templates for Electrochemical Synthesis of Nanowires</b> .....   | 104 |
| <i>N. Saidin, K. Kok, I. Ng, F. Bustamam, N. Zali, S. Abidin</i>  |     |
| <b>Synthesis of Palladium-doped Silica Nanofibers by Sol-gel Reaction and Electrospinning Process</b> .....   | 109 |
| <i>T. San, W. Daud, A. Kadhum, A. Mohamad, S. Kamarudin, L. Shyuan, E. Majlan</i>   |     |
| <b>A Preliminary Study On Microbiologically Influenced Corrosion (MIC) Of Mild Steel By Pseudomonas aeruginosa By Using Infinite Focus Microscope (IFM)</b> ..... | 117 |
| <i>M. Mahat, A. Aris, U. Jais, M. Yahya, R. Ramli, N. Bonnia, M. Mamat</i>  |     |
| <b>Characterization of Functionalized Multi-Walled Carbon Nanotubes in Pre-Vulcanized Natural Rubber Latex</b> .....  | 124 |
| <i>A. Aziz, N. Ismail, C. Su, M. Rusop</i>  |     |
| <b>The Effect of Woven and Non-Woven Fiber Structure on Mechanical Properties Polyester Composite Reinforced Kenaf</b> .....                                      | 131 |
| <i>S. Ratim, N. Bonnia, S. Surip</i>  |     |
| <b>Mechanical Performance of Hybrid Polyester Composites Reinforced Cloisite 30B and Kenaf Fibre</b> .....  | 136 |
| <i>N. Bonnia, S. Surip, S. Ratim, M. Mahat</i>  |     |
| <b>Mechanical Behavior of Polyester-Based Woven Jute/Glass Hybrid Composites</b> .....  | 145 |
| <i>Q. Ahsan, S. Tanju</i>   |     |
| <b>Investigation on Hardness and Impact Resistance of Automotive Brake Pad Composed with Rice Husk Dust</b> .....   | 155 |
| <i>S. Bahari, K. Isa, M. Kassim, Z. Mohamed, E. Othman</i>  |     |
| <b>Frictional and Heat Resistance Characteristics of Coconut Husk Particle Filled Automotive Brake Pad</b> .....  | 162 |
| <i>S. Bahari, M. Chik, M. Kassim, C. Said, M. Misnon, Z. Mohamed, E. Othman</i>   |     |

|  |     |
|--|-----|
| <b>New Nanomaterials for Photonic Application</b> .....  | 171 |
| <i>L. Minh, T. Anh, N. Binh, V. Mien</i>   |     |
| <b>AlInGaN Based Ultraviolet Photodetector with Au Contact Electrodes</b> .....  | 176 |
| <i>A. Ghazai, S. Thahab, H. Hassan, Z. Hassan, A. Hussein</i>  |     |
| <b>Direct Synthesis of Nitrogen-containing Carbon Nanotubes on Carbon Paper for Fuel Cell Electrode</b> .....  | 181 |
| <i>W. Yin, W. Daud, A. Mohamad, A. Kadhum, E. Majlan, L. Shyuan</i>  |     |
| <b>Prominent 946 Lines Induced From Flashlamp Pumped Nd: YAG Rod</b> .....   | 187 |
| <i>N. Bidin, R. Zainal, Y. Daud, S. Pourmand, H. Bakhtiar</i>  |     |
| <b>Thermal Stress Effect in Diode End-Pumped Nd:YVO<sub>4</sub> Bar Laser</b> .....  | 191 |
| <i>N. Bidin, G. Krishnan, N. Khamsan, R. Zainal, H. Bakhtiar</i>   |     |
| <b>The Influence of the Amorphous Polymer on Conductivity, Morphologies and Thermal Properties of Polyether-Based Blends with Addition of Inorganic Salt</b> .....                   | 197 |
| <i>C. Chan, L. Sim, H. Kammer, W. Tan</i>  |     |
| <b>Mechanical Properties of Multi-walled Carbon Nanotube (MWCNT) / Polymethyl Methacrylate (PMMA) Nanocomposite Prepared via the Coagulation Method</b> .....                        | 208 |
| <i>N. Ismail, A. Aziz, M. Jaafar</i>   |     |
| <b>Thermal Stability and Electrical Conductivity of Multi-walled Carbon Nanotube (MWCNT)/ Polymethyl Methacrylate (PMMA) Nanocomposite Prepared via the Coagulation Method</b> ..... | 212 |
| <i>N. Ismail, A. Aziz, M. Jaafar</i>   |     |
| <b>Properties of Gold Nanoparticles Synthesized in Aqueous Solution</b> .....  | 219 |
| <i>T. Ling, K. Razak, A. Aziz</i>  |     |
| <b>Plasma Properties of RF Magnetron Sputtering System using Zn Target</b> .....   | 225 |
| <i>N. Nafarizal, A. Albert, A. Amirah, O. Salwa, M. Ahmad</i>  |     |
| <b>Nanocrystalline Er-Doped SnO<sub>2</sub> Prepared by Sol-Gel Route</b> .....  | 229 |
| <i>M. Zulfadly, M. Kamil, U. Jais</i>  |     |
| <b>Study on the Effect of Ar Ion Beam Bombardment on ZnO Nanowires</b> .....   | 235 |
| <i>C. Dee, S. Yap, C. Yap, C. Wong, B. Majlis</i>  |     |
| <b>Investigation of Optical Properties of Anthocyanin Doped Into Sol-gel Based Matrix</b> .....  | 242 |
| <i>H. Hashim, N. Aziz, A. Isnin</i>  |     |
| <b>The Investigation of Al<sub>0.29</sub>Ga<sub>0.71</sub>N/GaN/AlN and AlN/GaN/AlN Thin Films Grown on Si (111) by RF Plasmaassisted MBE</b> .....                                  | 248 |
| <i>M. Yusoff, A. Mahyuddin, Z. Hassan, H. Hassan, M. Abdullah</i>  |     |
| <b>Formation of 42 nm Polysilicon Nanogap Structure by Using Size Expansion Technique</b> .....  | 255 |
| <i>T. Nazwa, U. Hashim, T. Dhahi, S. Mohamad</i>   |     |
| <b>Traceable Nanoscale Measurement at NML-SIRIM</b> .....  | 264 |
| <i>A. Dahlan, A. Hapip</i>   |     |
| <b>Structural and Optical Studies of GaN PN-Junction with AlN Buffer Layer Grown on Si (111) by RF Plasma Enhanced MBE</b> .....   | 271 |
| <i>M. Yusoff, Z. Hassan, C. Woei, H. Hassan, M. Abdullah</i>   |     |
| <b>List of Participants</b> .....  | 279 |
| <b>Author Index</b>  |     |