

# SOUTH AFRICA

## THE PROPERTIES OF GOLD NANOSYSTEMS: COMPUTATIONAL STUDY OF CLUSTERS, TUBES AND WIRES

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## SIMULATION OF NATURAL FIBRE SURFACE PROPERTIES

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## INVESTIGATION OF SCALE ECONOMIES FOR AFRICAN BIOGAS INSTALLATIONS

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## ELECTROCHEMICAL CORROSION TESTING OF SOLID STATE SINTERED SILICON CARBIDE (SSiC)

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## TOWARDS A NUMERICAL MODEL FOR THE RATE OF HEAT EVOLUTION IN CONCRETE BASED ON BINDER CHEMISTRY AND COMPOSITION

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## POLYACETYLENIC MOLECULES IN THE MOLLUSCAN SHELL MATRIX

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## PERIODIC PROPERTIES OF NUCLEAR MATERIAL

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## THE SCALE OF GOLD CONCENTRATION ON Au-TiO<sub>2</sub> SYSTEM BY ION IMPLANTATION

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## DEFECT PRODUCTION IN IRRADIATED ALKALI IODIDES STUDIED BY OPTICAL SPECTROSCOPY

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## HIGH TEMPERATURE SURFACE BRILLOUIN SCATTERING STUDIES OF AN AMORPHOUS BORON CARBIDE (B<sub>4</sub>C<sub>3</sub>) FILM

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## NATURAL AND SYNTHETIC PIGMENTS IN ART AND ARCHAEOLOGY

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## SPATIAL DISPERSION IN ACOUSTIC WAVE PROPAGATION IN SOLIDS

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## NANOSTRUCTURING DIAMOND SURFACES WITH HIGHLY CHARGED IONS

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## RAMAN ANALYSIS OF ANCIENT PIGMENTS ON A TILE FROM THE CITADEL OF ALGIERS

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## ANALYSIS OF RESIDUAL STRESS IN POLYCRYSTALLINE DIAMOND TOOLBITS USING RAMAN SPECTROSCOPY

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## STRUCTURAL, OPTICAL AND ELECTRICAL PROPERTIES OF UNDOPED AND ZnO-DOPED BaTiO<sub>3</sub> THIN FILMS PREPARED BY LASER ABLATION

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<p><b>OPTIMIZATION OF GROWTH PARAMETERS AND POST-GROWTH ANNEALING OF ZnO FILMS GROWN BY MOCVD</b>  <b>K.J. Dangbégnon<sup>a</sup></b>, A.C. Bèye<sup>a</sup>, C. Weichsel<sup>b</sup>, K.T. Roro<sup>b</sup>, J. R. Botha<sup>b</sup>, A. Venter<sup>b</sup> &amp; A.W.R. Leitch<sup>b</sup>  <sup>a</sup> Department of Physics, Université Cheikh Anta Diop de Dakar, Sénégal  <sup>b</sup> Department of Physics, Nelson Mandela Metropolitan University, P.O. Box 77000, Port Elizabeth 6031, South Africa</p>
<p><b>ZnO MATERIALS-RELATED RESEARCH AT THE NMMU, SOUTH AFRICA</b>  <b>AWR Leitch</b>, KT Roro, GR James, C Weichsel, PR Berndt, A Venter &amp; JR Botha  Department of Physics, Nelson Mandela Metropolitan University, P.O. Box 77000, Port Elizabeth 6031, South Africa</p>
<p><b>ANALYSIS OF A NEW TECHNIQUE TO MEASURE THE ADHESION OF THIN COATINGS</b>  M Hollwarth &amp; <b>S Luyckx</b>  School of Chemical and Metallurgical Engineering  and  Center of Excellence in Strong Materials, University of the Witwatersrand, Johannesburg, South Africa</p>
<p><b>NANOAFNET: A NEW CONTINENTAL VEHICLE FOR PROMOTION &amp; IMPLEMENTATION OF NANOSCIENCES &amp; NANOTECHNOLOGIES IN AFRICA</b>  <b>M.Maaza<sup>(a)</sup></b>, A.C.Beye<sup>(b)</sup>, T.Otiti<sup>(c)</sup>, N. Manyala<sup>(d)</sup>, I.Zorkani<sup>(e)</sup>, S.Sathiaraj<sup>(f)</sup>, J.M.Ndjaka<sup>(g)</sup>, K.Chinyama<sup>(h)</sup>, A. Varkey<sup>(i)</sup>, F. Kavishe<sup>(j)</sup> &amp; R. Kivaisi<sup>(k)</sup>  <sup>(a)</sup>:Nanosciences Labs, MRG, iThemba LABS, N.R.F., South-Africa,  <sup>(b)</sup>:Groupe de Physique des Solides, Univ. Cheikh Anta-Diop, Senegal,  <sup>(c)</sup>:Dept. Of Physics, Kampala University, Kampala, Uganda,  <sup>(d)</sup>:Dept. Of Physics, National University of Lesotho, Maseru, Lesotho,  <sup>(e)</sup>:Dept. of Physics, Dar El Mehrez University, Fez, Morocco,  <sup>(f)</sup>:Dept. of Physics, University of Botswana, Gaborone, Botswana,  <sup>(g)</sup>: Faculty of Sciences, University of Yaounde, Yaounde, Cameroon,  <sup>(h)</sup>:Dept. of Physics, National University of Zambia, Lusaka, Zambia,  <sup>(i)</sup>:Dept. of Physics, Royal University of Swaziland, Kwaluseni, Swaziland,  <sup>(j)</sup>:Faculty of Engineering, University of Namibia, Windhoek, Namibia,  <sup>(k)</sup>:Faculty of Sciences, Dar Essalam University, Dar Essalam, Tanzania</p>
<p><b>FIRST SYNTHESIS OF VANADIUM DIOXIDE BY ULTRASONIC NEBULA- SPRAY PYROLYSIS</b>  Bonex Wakufwa <b>Mwakikunga<sup>a*</sup></b>, Elias Sideras-Haddad<sup>a</sup>, Malik Maaza<sup>b</sup>  <sup>a</sup>School of Physics, University of the Witwatersrand, Private Bag X3, P.O. Wits, Johannesburg, Gauteng 2050, South Africa.  <sup>b</sup>iThemba Labs, P.O. Box 722, Somerset West 7129, Cape Town, South Africa</p>
<p><b>INFRARED ATTENUATED TOTAL REFLECTION INTERFERENCE PHENOMENA IN CNTS</b>  TH Ntshangase<sup>(a)</sup>, M Ndwandwe<sup>(b)</sup>, <b>C Theron<sup>(c)</sup></b>, N Cingo<sup>(c)</sup> &amp; M Maaza<sup>(a)</sup>  (a): NANO-Sciences Laboratories, Materials Research Group, iThemba LABS, National Research Foundation, POBox 722, Somersetwest 7129, South Africa,  (b): Department of Physics, University of Zululand, Private Bag X1001, Kwadlangezwa 3886, South Africa,  (c): Department of Chemistry, University of South Africa, PO Box 392, Pretoria, South Africa</p>
<p><b>RAMAN STUDY OF THE SUPERIONIC BEHAVIOUR OF LANTHANIDE-DOPED FLUORITE CRYSTALS</b>  M Mujaji &amp; J D Comins  Materials Physics Research Institute, School of Physics, University of the Witwatersrand, Johannesburg, South Africa</p>
<p><b>SYNTHESIS AND CHARACTERISATION OF NANOSCALE COBALT ALUMINATE (CoAl<sub>2</sub>O<sub>4</sub>) PARTICLES</b>  <b>E Mwenesongole</b>, D de Waal &amp; J C A Boeyens  Department of Chemistry, University of Pretoria, Pretoria, South Africa</p>
<p><b>INDENTATION STUDIES IN HOMOGENOUS AND INHOMOGENOUS MATERIALS</b>  <b>FRN Nabarro<sup>a</sup></b>, S Shrivastava<sup>a</sup> &amp; S Luyckx<sup>b</sup>  <sup>a</sup>School of Physics  <sup>b</sup>School of Chemical and Metallurgical Engineering, DST/NRF Center of Excellence in Strong Materials, University of the Witwatersrand, Private Bag 3, WITS 2050, Johannesburg, South Africa</p>
<p><b>OPTICAL SECOND HARMONIC GENERATION AS A PROBE FOR SEMICONDUCTOR THIN FILMS</b>  <b>PH Neethling</b>, EG Rohwer &amp; HM von Bergmann  Laser Research Institute, Physics Department, University of Stellenbosch, Private Bag X1, Matieland, 7602, South Africa</p>
<p><b>STRUCTURAL PROPERTIES OF PULSED LASER DEPOSITED Al:ZnO NANOSTRUCTURES</b>  T Mpahane<sup>(a)</sup>, <b>B Ngom<sup>(a)</sup></b>, D Knoessen<sup>(b)</sup>, C Theron<sup>(a)</sup>, U Buttner<sup>(c)</sup> &amp; M Maaza<sup>(a)</sup>  (a): NANO-Sciences Laboratories, Materials Research Group, iThemba LABS, National Research Foundation, POBox 722, Somersetwest 7129, South Africa,  (b): Department of Physics, University of Western Cape, South Africa,  (c): Department of Electrical Engineering, Stellenbosch University, Western Cape, South Africa,</p>
<p><b>OPTICAL PROPERTIES OF PULSED LASER DEPOSITED ZnO NANOSTRUCTURES</b>  <b>B Ngom<sup>(a)</sup></b>, T Mpahane<sup>(a)</sup>, D Knoessen<sup>(b)</sup>, C Theron<sup>(a)</sup>, N Cingo<sup>(c)</sup>, AC Beye<sup>(d)</sup> &amp; M Maaza<sup>(a)</sup>  <sup>(a)</sup>NANO-Sciences Laboratories, Materials Research Group, iThemba LABS National Research Foundation, POBox 722, Somersetwest 7129, South Africa</p>

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<p><b>DIPHOSPHONATES' ADSORPTION ON HYDROXYAPATITE IN BONE CANCER THERAPY BY RAMAN SPECTROSCOPY</b>  <b>L Popović</b>, I Cukrowski &amp; D de Waal  Department of Chemistry, University of Pretoria, Pretoria 0002, South Africa</p>
<p><b>AN EXAFS STUDY OF Y, Zr AND Nb DOPED NANO-CRYSTALLINE SnO<sub>2</sub></b>  <b>KE Rammutla</b><sup>a,b</sup>, AV Chadwick<sup>b</sup>, J Harding<sup>c</sup> &amp; DC Sayle<sup>d</sup>  <sup>a</sup> University of Limpopo, Physics Department, SOVENGA, 0727, RSA  <sup>b</sup> University of Kent, Centre for Materials Research, Canterbury, UK  <sup>c</sup> University College London, Physics and Astronomy, UK  <sup>d</sup> Cranfield University, Centre for Materials Science, Swindon, UK</p>
<p><b>TRIBOLOGY AS AN IMPORTANT &amp; AFFORDABLE FIELD OF RESEARCH FOR AFRICA: A CASE STUDY</b>  <b>N Sacks</b>, TA Mokgalagadi<sup>a,b</sup> &amp; S Luyckx<sup>a</sup>  <sup>a</sup>School of Chemical and Metallurgical Engineering, DST/NRF Center of Excellence in Strong Materials, University of the Witwatersrand, South Africa  <sup>b</sup>South African Civil Aviation Authority</p>
<p><b>ION IMPLANTATION AS A METHOD OF PREPARING GOLD-TITANIA CATALYSTS, INCLUDING MODIFIED CATALYTIC SYSTEMS.</b>  H Chambalo, T Derry<sup>(a)</sup> &amp; <b>MS Scurrall</b><sup>(b)</sup>  <sup>(a)</sup> School of Physics, University of the Witwatersrand, Johannesburg, Johannesburg, South Africa  <sup>(b)</sup> School of Chemistry, University of the Witwatersrand, Johannesburg, Johannesburg, South Africa</p>
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