Conference Agenda

11th South African Conference on Computational and Applied Mechanics 2018

Date: Sunday, 16/Sep/2018

4:00pm	**WELCOME BANQUET and REGISTRATION** Location: **Main Hall** Knowing the conference venue and early conference registration

Date: Monday, 17/Sep/2018

7:30am	**REGISTRATION DAY 1** Location: **Main Hall**

- 9:15am	Location: Main Hall Conference Registration			
9:15am - 9:30am	**Opening Remarks** Location: Main Hall Chair: **Thomas Tengen** Chair: **Alfayo Alugongo** Opening Remarks			
9:30am - 10:00am	**Welcome address by VC of VUT** Location: Main Hall VC of VUT will welcome SACAM 2018 conference delegates			
10:00am - 11:00am	**Keynote Lecture by Key Government Official (Minister)** Location: Main Hall			
11:00am - 11:15am	**Q&A: Question and Answer session to VC and Government** Location: Main Hall			
11:15am - 11:45am	**Academic Keynote Lecture: JN REDDY (Title: Recent Developments in Shell Finite Elements and Non-Local Continuum Mechanics Theories)** Location: Main Hall			
11:45am - 12:15pm	**TEA BREAK** Location: Main Hall			
12:20pm - 1:00pm	**Session 1: Thermodynamics and Heat Transfer** **12:20pm - 12:40pm** **Toward computational combustion models of metallurgical converting processes** **Q. G. Reynolds, M. W. Erwee, S. P. Tsebe** Mintek, South Africa **12:40pm - 1:00pm** **Modelling of convection heat transfer in the SNU Riser Heat transfer Experimental Facility (RHEF)** **C. G. Du Toit[1], D.-H. Shin[2], G.-C. Park[2]** 1: North-West University, South Africa; 2: Seoul National University, South Korea	**Session 2: Biomechanics** **12:20pm - 12:40pm** **A Micromorphic Approach Modelling the Anisotropic Material Behaviour of the Human Heart** **D. Dollery[1,2], S. Skatulla[1,2], N. Ntusi[3]** 1: Computational Continuum Mechanics Research Group, Department of Civil Engineering, University of Cape Town, Rondebosch 7701, South Africa; 2: Centre for Research in Computational and Applied Mechanics, University of Cape Town, Rondebosch 7701, South Africa; 3: Division of Cardiology, Department of Medicine, University of Cape Town, Rondebosch 7701, South Africa **12:40pm - 1:00pm** **The effect of side ventilator positions a on single span, naturally ventilated greenhouse – a CFD Study** **S. Kruger[1], L. Pretorius[2]** 1: University of Johannesburg, South Africa; 2: University of Pretoria, South Africa	**Session 3: Computational Fluid Dynamics** **12:20pm - 12:40pm** **Comparison between Free Vibration Response of Healthy and Damaged Pinned Turbine Blades** **L. Brits, P S. Heyns, H. M Inglis** Center for Asset Integrity Management (C-AIM), University of Pretoria, South Africa **12:40pm - 1:00pm** **Improved accuracy considerations in Radial Basis Function surrogate models for variable resolution, scale, dimension and discontinuity.** **G. J. Jansen van Rensburg[1,2], A. E. J. Bogaers[1,2]** 1: MDS Advanced Mathematical Modelling, CSIR, Pretoria, South Africa; 2: Computer Science and Applied Mathematics, University of the Witwatersrand, Johannesburg, South Africa	**Session 4: Mechanics of Vibrations** **12:20pm - 12:40pm** **Adaptive SAFE model of a rail for parameter estimation** **I. I. Setshedi, C. S. Long, P. W. Loveday, D. N. Wilke** CSIR, South Africa **12:40pm - 1:00pm** **Temperature Compensation for Ultrasonic Guided Wave Measurements** **K. Dhuness, D. Ramatlo, C. Long, P. Loveday** CSIR, South Africa
1:00pm - 2:00pm	**LUNCH** Location: Main Hall			
2:00pm - 3:20pm	**Session 5: Fluid Structure Interactions** **2:00pm - 2:20pm** **The Effect of Fibre Length on the Tensile Strength of Natural Fibre Composites** **J. Singh, R. Reid** University of the Witwatersrand, South Africa **2:20pm - 2:40pm** **One dimensional dynamic modelling of the HPS2**	**Session 6: Mechanics of Materials** **2:00pm - 2:20pm** **The Effect of Weld Bead Heat Input on 3CR12 Stainless Steel** **C. Phiri** AFRICAN ACADEMY, South Africa **2:20pm - 2:40pm** **3D PRINTING OF CARBON NANOFIBER-**	**Session 7: Computational Methods in Mechanics** **2:00pm - 2:20pm** **The stochastic effects of nano-particles size, morphology and spatial distribution on surface energy** **P. B. Sob, A. A. Alugongo, T. Tengen** Vaal University of Technology, South Africa	**Session 8: Finite Element Modelling and Analysis** **2:00pm - 2:20pm** **Non-Linear Finite Element Analysis of Boiler Tubes under Localized Thinning Caused by Wall Loss Mechanisms** **I. E. Kalu[1,2], H. Inglis[1,2], S. Kok[1,2]** 1: Department of Mechanical and

	CSP molten salt trough test facility **R. Temlett, P. Rousseau** University of Cape Town, South Africa **2:40pm - 3:00pm** **Balancing ventilation airflow of healthcare facilities against various duct systems** **J. Magampa, T. J. Kunene, L. Tartibu** University of Johannesburg, South Africa **3:00pm - 3:20pm** **Feedwater heater component development using the Flownex SE** **W. L le Grange, W. F Fuls** University of Cape Town, South Africa	**PLA COMPOSITE** **M. Msibi, A. Mashamba, M. Mashinini, V. Hashe** University of Johannesburg, South Africa **2:40pm - 3:00pm** **The Effect of Particle Inter-Separation Distances and Volume Fraction on Thermal Stability and Strength of 3D Printing Composite Material** **T. A. Matyatya, T. B. Tengen** Vaal University of Technology, South Africa **3:00pm - 3:20pm** **A study of the factors affecting the adhesion of 3 D printed PLA on cotton fabrics** **S. N. Mpofu[1], J. I. Mwasiagi[1], L. Nkiwane[2], D. Njuguna[1]** 1: Moi University, Kenya; 2: NUST, Bulawayo	**2:20pm - 2:40pm** **Modeling and Simulation of first pass in the Cold Rolling Process of Aluminium 8015 Alloy** **O. Olaogun[1,4], J. Edberg[2], L.-E. Lindgren[2], O. Oluwole[3], E. Akinlabi[1]** 1: University of Johannesburg, South Africa; 2: Lulea University of Technology, Sweden; 3: University of Ibadan, Nigeria; 4: Kwara State University, Malete. Nigeria **2:40pm - 3:00pm** **A method to model the effect of excess superheat on the performance of a feedwater heater.** **W. Fuls[1], N. Allie[2]** 1: UCT, South Africa; 2: Eskom, South Africa **3:00pm - 3:20pm** **Mechanical Characterisation of Bambusabalcooa for Bicycle Construction** **J. M. Dikotope, D. Madyira** University of Johannesburg, South Africa	Aeronautical Engineering, University of Pretoria, South Africa; 2: Centre for Asset Integrity Management, University of Pretoria, South Africa. **2:20pm - 2:40pm** **Solving Nonlinear FEA problems** **G. Visser** ESTEQ Engineering, South Africa **2:40pm - 3:00pm** **Application of Modal Analysis to Establish the Wavelength Fixing Mechanism for Rail Corrugation** **D. V. V. Kallon, B. Balekwa, A. Mashamba, P. Dube** University of Johannesburg, South Africa
3:20pm - 3:50pm	**TEA BREAK** Location: **Main Hall**			
3:50pm - 4:30pm	**Session 9: Thermodynamics and Heat Transfer** **3:50pm - 4:10pm** **The influence of rotational speed and pressure on the properties of rotary friction welded titanium alloy (Ti6Al4V)** **M. C. Zulu, D. M. Mashinini** University of Johanesburg, South Africa **4:10pm - 4:30pm** **CFD analysis of thermal dispersion in a structured packed bed** **H. J. Vermaak, C. G. du Toit** School of Mechanical and Nuclear Engineering. North- West University, Potchefstroom, 2520, South Africa	**Session 10: Solid, Soil and Rock Mechanics** **3:50pm - 4:10pm** **SURVEY STUDY FOR THE CAUSES OF FAILURE OF PLASTIC CHAIRS USING FINITE ELEMENT ANALYSIS (case for Plastic Industries, Pretoria, South Africa.** **T. Mushiri[1], M. S. Ganyani[2], C. Mbohwa[1]** 1: University of Johannesburg, South Africa; 2: University of Zimbabwe, Zimbabwe **4:10pm - 4:30pm** **A numerical study in the modelling of particle non-** **convexity for hopper discharge applications** **D. N. Wilke[1], N. Govender[2], P. Pizette[3], L. Gastbye[4]** 1: University of Pretoria, South Africa; 2: University of Surrey, United Kingdom; 3: IMT Lille Douai, France; 4: Tsinghua University, China	**Session 11: Fluid Mechanics** **3:50pm - 4:10pm** **A comparison of different CFD and Gaussian dispersion models** **A. Bogaers, G. Jansen van Rensburg** Council for Scientific and Industrial Research, South Africa **4:10pm - 4:30pm** **Estimation of Probability of Defect Detection by Combining Simulated Defect Signatures with Operational Measured Data** **D. A. Ramatlo[1], P. W.** **Loveday[2], C. S. Long[3], D. N. Wilke[4]** 1: CSIR; University of Pretoria, South Africa; 2: CSIR; 3: CSIR; 4: University of Pretoria	**Session 12: Finite Element Modelling and Analysis** **3:50pm - 4:10pm** **Development of a Transient Numerical Model for a Hybrid Rotary Kiln** **N. Phiri** University of Johannesburg, South Africa **4:10pm - 4:30pm** **A Review of 4D Printing technology and future trends** **N. Z. Nkomo** National University of Science and Technology, Zimbabwe
5:30pm - 7:30pm	**POSTER SESSION** Location: **Main Hall** **Experimental Temperature Profiling of a Direct Heated Kiln** **N. Phiri** African Academy, South Africa			

Experimental Performance Assessment of an Indirect Heated Rotary Kiln
N. Phiri
African Academy, South Africa

Limitations of the Predictive Capacity of Newtonian Fluid Theories on the Shear Moduli Ratio (Gc/Gm) of Particulate Composites
M. Maringa
CUT, South Africa

The stochastic effect of nano-particles size, morphology, spatial distribution on flow rate through a nanostructured membrane surface
P. Sob, A. A. Alugongo, T. Tengen
Vaal University of Technology, South Africa

Relating the parameters of flow rate, surface tension and surface energy to nanoparticles
P. Sob, A. A. Alugongo, T. Tengen
Vaal University of Technology, South Africa

Going from Mathematical model to the real world: translating a Matlab/Simulink control algorithm onto a fixed time step controller
N. Grant[2], D. Madyira[1], L. Tartibu[1], K. Tekweme[1], P. Naidoo[1]
1: University of Johannesburg; 2: Ducere holdings Pty Ltd, South Africa

Development of a numerical model for failure prediction in carbon fibre composite wheels
S. N. Czypionka, F. Kienhöfer
University of the Witwatersrand, South Africa

Date: Tuesday, 18/Sep/2018

8:00am - 9:00am	**REGISTRATION DAY 2** Location: **Main Hall**			
9:00am - 9:30am	**Academic Keynote Lecture; DAYA REDDY (Modelling and computational aspects of strain-gradient plasticity)** Location: **Main Hall**			
9:30am - 10:30am	**Session 13: Mechanics of Composites** **9:30am - 9:50am** **Implementation of a visco-plastic sea-ice model into OpenFOAM** **A. Bogaers[1], G. Jansen van Rensburg[1], R. Marquart[2], S. Skatulla[2]**	**Session 14: Mechanics of Vibrations** **9:30am - 9:50am** **VALIDATION THROUGH DIGITAL IMAGE CORRELATION OF FINITE ELEMENT ANALYSIS USED IN THE DESIGN OF A TI6AL4V MANDIBULAR**	**Session 15: Computational Methods in Mechanics** **9:30am - 9:50am** **The Compression and Shear Mechanical Properties of Treated and Untreated Sisal Fibre-Epoxy Resin Composites** **W. Webo, L. Masu, M.**	**Session 16: Fluid Mechanics** **9:30am - 9:50am** **DEM-CFD air flow simulation through varying coal dump porous media packing structures** **M. Kekana[1], J. Baloyi[1], A.**

	1: Council for Scientific and Industrial Research, South Africa; 2: University of Cape Town, South Africa **9:50am - 10:10am** **Bilinear Response in Paper-Silicone Composite Material** **D. Ellis, M. Venter, G. Venter** Stellenbosch University, South Africa **10:10am - 10:30am** **Open source implementation of a user material subroutine for composite materials** **N. Botha[1,2], H. Inglis[2]** 1: CSIR, South Africa; 2: University of Pretoria, South Africa	**IMPLANT** **L. F. Monaheng[1], W. du Preez[2], T. Becker[3]** 1: Central University of Technology, South Africa; 2: Central University of Technology, South Africa; 3: Stellenbosch University, South Africa **9:50am - 10:10am** **Parametric Study of Natural Frequencies and Mode Shapes of Planar Flexible-link Robots with Elastic Rotational Restraints at the Joint-Link Couplings** **F. K. Tekweme** University of Johannesburg, South Africa **10:10am - 10:30am** **Comparison between SAFE forced response and Abaqus/Explicit solutions of a rail excited at cut-off frequency** **C. S. Long, D. A. Ramatlo, P. W. Loveday** CSIR, South Africa	**Maringa** Vaal University of Technology, South Africa **9:50am - 10:10am** **Simulation of suction recirculation in double suction centrifugal pumps** **J. van der Walt[2], J.-H. Kruger[1], C. G. Du Toit[1]** 1: North-West University, South Africa; 2: Sasol, South Africa **10:10am - 10:30am** **An integrated model to study the root causes of ID fan capacity limitations in coal fired power plants.** **R. Y.-B.S. Khobo, P. Rousseau, P. Gosai** University of Cape Town, South Africa	**Kolesnikov[2]** 1: CSIR, MDS, AMM South Africa; 2: TUT, Department of Chemical and Metallurgical Engineering **9:50am - 10:10am** **A System CFD Model of the Heat Transfer in a Prismatic Block of a VHTR.** **G. J. Nel, C. G. du Toit** North-West University, South Africa **10:10am - 10:30am** **Virtual heart models: finite element based patient-specific analysis** **M. Kaliske, B. Cansiz** Technische Universität Dresden, Germany
10:30am - 11:00am	**TEA BREAK** Location: **Main Hall**			
11:00am - 12:40pm	**Session 17: Structural Mechanics** **11:00am - 11:20am** **A Numerically Stable Eulerian-Eulerian Model of Air-Core Formation in a Hydrocyclone** **D. M. Chirnside, M. Bhamjee** Department of Mechanical Engineering Science, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa **11:20am - 11:40am** **Model to Predict Dynamic Performance of a Tractor Semi-trailer Car-carrier** **J. A. Deiss[1], R. Berman[2], F. Kienhofer[1]** 1: University of the Witwatersrand, South Africa; 2: Council for Scientific and Industrial Research (CSIR) **11:40am - 12:00pm** **Dynamic Modelling and Simulation of Planar Flexible-link Robots with Elastic Rotational Restraints at the Joint-Link Couplings** **F. K. Tekweme** University of Johannesburg, South Africa **12:00pm - 12:20pm**	**Session 18: Fluid Mechanics** **11:00am - 11:20am** **Dynamic modelling of once-through boiler heat exchangers during shutdown with level tracking as a tool to investigate quenching** **G. de Klerk, P. Rousseau** University of Cape Town, South Africa **11:20am - 11:40am** **Numerical simulation of the hydrodynamics in a bubble column reactor: influence of turbulence models** **J. Akach, N. Nyembe, A. Ochieng** Centre for Renewable Energy and Water, Vaal University of Technology, South Africa **11:40am - 12:00pm** **Relationship between surface tension and surface energy in oil/water separation process** **P. Sob, A. A. Alugongo, T. Tengen** Vaal University of Technology, South Africa **12:00pm - 12:20pm** **Analysis of the Microstructure and**	**Session 19: Micro-scale and Nano-scale Mechanics** **11:00am - 11:20am** **The effect of random dynamic forces on membrane surfaces and their impact on surface energy, surface tension and flow rate during oil/water separation** **P. Sob, A. A. Alugongo, T. Tengen** Vaal University of Technology, South Africa **11:20am - 11:40am** **Characterization and Wear Behaviour of Hydrophobic Silane Coating** **A. D. Baruwa[1], E. T. Akinlabi[1], P. O. Oladijo[2], N. Maledi[3]** 1: University of Johannesburg, South Africa; 2: Botswana International University of Science and Technology, Botswana; 3: University of the Witwatersrand, South Africa **11:40am - 12:00pm** **Elastic behaviour of gold-polymer nanocomposites and the simulation of a chemo-electro-mechanical coupled problem within nanocomposites.** **E. T. Griffiths[1], S.**	**Session 20: Finite Element Modelling and Analysis** **11:00am - 11:20am** **Error Analysis of the Discontinuous Galerkin Method of Finite Element Using Quadrilateral Meshes For Stokes Problem** **K. W. Ekpe, K. Arunakirinathar** University of KwaZulu Natal, South Africa **11:20am - 11:40am** **Updating finite element models of composite aircraft structures using full field digital image correlation** **C. J. Qambela, P. S. Heyns, H. M. Inglis** University of Pretoria, South Africa **11:40am - 12:00pm** **A Review of Finite Element Modeling of Nanoindentation and Micro-Scratch Techniques in Characterizing Thin Films** **F. M. Mwema[1], A. Esther Titilayo[1], O. P. Oladijo[2]** 1: University of Johannesburg, South

	STRUCTURAL ANALYSIS OF NUCLEAR SPENT FUEL DRY STORAGE CASKS **T. T. KAMPOY** CPUT, South Africa **12:20pm - 12:40pm** **Simulation of a hydraulic-electrical hybrid compared to a conventional Electric vehicle** **N. Grant[2], D. Madyira[1], L. Tartibu[1], K. Tekweme[1], P. Naidoo[1]** 1: University of Johannesburg; 2: Ducere holdings Pty Ltd, South Africa	**Microhardness of Rotary friction welded Titanium (Ti-6AL-V4) Rods** **D. Mukhawana, M. Mashinini, D. Madyira** University of Johannesburg, South Africa **12:20pm - 12:40pm** **Rub-Impact of Coupled Vibration of Vertical Rotor-Stator System Submerged in Incompressible Fluid** **D. F. Sozinando, A. A. Alugongo, B. X. Tchomeni** Vaal University of Technology, South Africa	**Bargmann[2], B D Reddy[1]** 1: Centre for Research in Computational and Applied Mechanics, University of Cape Town, South Africa; 2: Chair of Solid Mechanics, University of Wuppertal, Germany **12:00pm - 12:20pm** **Numerical optimization of small-scale thermo-acoustic refrigerators considering maximum cooling** **L. K. Tartibu** University of Johannesburg, South Africa **12:20pm - 12:40pm** **Analysis of the performance of a hybrid hydraulic Pump/Motor using MATLAB Simulink** **D. L. Wressell[1], L. Tartibu[1], K. Tekweme[1], N. Pathmanathan[2], D. Madyira[2]** 1: Mechanical Engineering Technology Department, University of Johannesburg, Doornfontein Campus, Johannesburg 2028, South Africa.; 2: Mechanical Engineering Science Department, University of Johannesburg, Auckland Park Campus, Johannesburg 2006, South Africa.	Africa; 2: Botswana International University of Science and Technology, Botswana **12:00pm - 12:20pm** **Towards a Computational Dynamical Model for Tumbling Mill Power Draw** **D. Kallon[1], A. Halodou[1], A. Nel[1], I. Govender[2], A. Mainza[3]** 1: University of Johannesburg, South Africa; 2: University of KwaZulu-Natal, South Africa; 3: University of Cape Town, South Africa **12:20pm - 12:40pm** **Experimental and Numerical Investigation of the Structural Performance of a Direct Fired Rotary Kiln** **D. D. Tyczynski, D. D. Madyira, D. W. Cieslakiewicz** University of Johannesburg, South Africa
12:40pm - 1:40pm	**LUNCH** Location: **Main Hall**			
1:40pm - 3:00pm	**Session 21: Fluid Structure Interactions** **1:40pm - 2:00pm** **Reduction of the torque ripple of a vertical axis wind turbine with genetic algorithm optimization** **G. Erfort, T. W. von Backstrom, G. Venter** Stellenbosch University, South Africa **2:00pm - 2:20pm** **ARTIFICIAL INTELLIGENCE NEURAL NETWORK TECHNIQUES TO PREDICT THE REMOVAL OF ANIONS FROM WASTEWATER** **J. Kabuba, A. Kalufandu** Vaal University of Technology, South Africa **2:20pm - 2:40pm** **Experimental and Numerical Validation of a Simplified Rigid Torso Surrogate used for Investigating the Fluid-Structure Interaction of Air Blast Waves** **T. Pandelani[1,2], F. Wium[1], Z.**	**Session 22: Mechanics of Materials** **1:40pm - 2:00pm** **On the uniqueness of material identification for aluminium using spherical indentation** **N. Kossolapov, S. Kok** University of Pretoria, South Africa **2:00pm - 2:20pm** **Towards modelling the penetration of Iron III chloride in reinforced concrete affected by chloride-induced corrosion using the Theory of Porous Media** **J. Ndawula, S. Skatulla, H. Beushausen** Department of Civil Engineering, University of Cape Town, South Africa **2:20pm - 2:40pm** **Can hardness measurements be used to determine mechanical properties of hammer forged overhead line hardware?**	**Session 23: Aerodynamics** **1:40pm - 2:00pm** **Experimental Development of Electromagnetic Acoustic Transducers for Measuring Ultrasonic Guided Waves** **P. W. Loveday, K. Dhuness, C. S. Long** CSIR, South Africa **2:00pm - 2:20pm** **Development Design of an Acoustic Cleaning Apparatus for Boilers at SASOL Synfuels Power Station Plant in Secunda** **D. Kallon, P. M. Shandu, L. Tartibu, R. Mutyavavire** University of Johannesburg, South Africa **2:20pm - 2:40pm** **Numerical Simulation of the Dynamic Characteristics of Power line Conductors:** **E. Ojo** DUT, South Africa **2:40pm - 3:00pm**	**Session 24: Engineering Education & Education in Applied Mechanics** **1:40pm - 2:00pm** **Impact of gaps in mathematics abilities before learners start their engineering studies** **H. Steenkamp, G. Muyengwa** University of Johannesburg, South Africa **2:00pm - 2:20pm** **Student and Lecturer support offered by ESTEQ** **P. Naude** ESTEQ, South Africa **2:20pm - 2:40pm** **Data driven teaching and learning interaction, a case study** **E. K Tshitshonu** Vaal University of Technology, South Africa **2:40pm - 3:00pm** **Evaluation of the**

	T. Pandelani[1], E. Widm[1], Z. Schutte[1] 1: Council for Scientific and Industrial Research, South Africa; 2: Centre for Blast Injury Studies, Department of Bio -engineering, Imperial College London, UK **2:40pm - 3:00pm** **Computational fluid dynamic modelling of density-wave oscillation for compressible internal flow** **M. A. E. Kaunda[1], A. Ile[2]** 1: Cape Peninsula University of Technology, South Africa; 2: Cape Peninsula University of Technology, South Africa	**J. Calitz[1], S. Kok[2], D. Delport[3]** 1: Tshwane University of Technology; 2: University of Pretoria; 3: Tshwane University of Technology **2:40pm - 3:00pm** **Numerical Investigation of strain gradient theories of plasticity** **N. P. Mhlongo, D. Reddy** Centre for Research in Computational and Applied Mechanics (CERECAM), University of Cape Town, South Africa	**Effect of cold climate on wind turbine in terms of aerodynamic lift and drag** **F. O. Odiagbe, A. A. Alugongo, L. M Masu** Vaal University of Technology, South Africa	**applicability of Employability Improvement Skills during students' Work Integrated Learning training program.** **G. Muyengwa, A. Baloyi, H. Steenkamp** University of Johannesburg, South Africa
3:00pm - 3:30pm	**TEA BREAK** Location: **Main Hall**			
3:30pm - 5:00pm	**SAAM: SAAM AGM** Location: **Main Hall**			
6:30pm - 9:30pm	**BOAT CRUISE and CONFERENCE DINNER** Location: **Vaal River & Stonehaven** Chair: **Simphiwe Nelana**			

Date: Wednesday, 19/Sep/2018

8:00am - 9:00am	**REGISTRATION DAY 3** Location: **Main Hall**			
9:00am - 9:30am	**Academic Keynote Lecture; ERIK -LARS LINDGREN (Modelling and Computational Challenges in Manufacturing Simulations)** Location: **Main Hall**			
9:30am - 10:30am	**Session 25: Discrete element modelling** **9:30am - 9:50am** **Improving the Predictive Capacity of Newtonian Fluid Theories on the Elastics Moduli Ratio (Ec/Em) of Particulate Composites** **M. Maringa** CUT, South Africa **9:50am - 10:10am** **A Discrete Element Model (DEM) for Predicting Apple Damage during Handling** **O. Scheffler, C. Coetzee** Mechanical and Mechatronic Engineering, Stellenbosch University, South Africa **10:10am - 10:30am** **Variation of the**	**Session 26: Reserved**	**Session 27: Fluid Mechanics** **9:30am - 9:50am** **Investigation of 1D system CFD and 3D CFD numerical methodology applied to an experimental facility** **P. F. Niemand, C. G. Du Toit** North-West University, South Africa **9:50am - 10:10am** **Design and Performance Analysis of Vegetable Seed Oil Expellers: A review** **E. Nyoni, E. T Akinlabi, D. M Madyira** University of Johannesburg, South Africa **10:10am - 10:30am** **INVESTIGATION OF MATERIAL WEAR**	**Session 28: Applied Experimental Mechanics** **9:30am - 9:50am** **Experimental study of Part load performance of a counter flow cooling tower** **E. Bakaya-Kyahurwa** University of Johannesburg, South Africa **9:50am - 10:10am** **The control algorithm of a hydraulic hybrid transmission for a heavy duty truck in a controlled environment such as Gerotek** **N. Grant[2], D. Madyira[1], L. Tartibu[1], K. Tekweme[1], P. Naidoo[1]** 1: University of Johannesburg; 2: Ducere Holdings Pty Ltd, South

	Transverse Strain Matrix/Fibre Magnification/Reduction and Stress Ratio with the inter-fibre spacing/fibre radius (s/r) ratio **M. Maringa[1], L. Masu[2]** 1: Central University of Technology, South Africa; 2: Vaal University of Technology, South Africa		**FORMATION ON CENTRIFUGAL IMPELLER** **K. A. Mabunda, D. P. Mashinini** University of Johannesburg, South Africa	Africa **10:10am - 10:30am** **A Tri-Phasic Model for the Numerical Analysis of Biological Tissue Growth and Remodelling using the Theory of Porous Media – With Application to the Human Heart with Rheumatic Heart Disease** **A. Mosam[1], S. Skatulla[1], N. Ntusi[1], T. Ricken[2]** 1: University of Cape Town, South Africa; 2: University of Stuttgart
10:30am - 11:00am	**TEA BREAK** Location: Main Hall			
11:00am - 12:40pm	**Session 29: Thermodynamics and Heat Transfer** **11:00am - 11:20am** **NEWTONIAN HEATING WITH VARIABLE THERMAL DIFFUSIVITY ON SECOND LAW ANALYSIS FOR MHD** **STAGNATION POINT FLOW OVER A FLAT PLATE** **O. A. Oyem[1], G. K. Ganga[2], N. Sandeep[3]** 1: Islamic University in Uganda, Uganda; 2: Acharya Nagarjuna University, India; 3: Central University of Karnataka, India **11:20am - 11:40am** **Determination of the head loss coefficient of closely spaced pipe bends** **T. J. Kunene, G. Oliver, J. Steyn** University of Johannesburg, South Africa **11:40am - 12:00pm** **Mass and energy balance and associated uncertainty analysis of super heater process parameters at 100% boiler maximum continuous rating** **L. N. Vilakazi[1], A. A. Alugongo[1], P. G. Rousseau[2]** 1: Vaal University of Technology, South Africa; 2: University of Capetown **12:00pm - 12:20pm** **Steady-state Heat Transit Analysis in a Spherical Domain** **R. S. Lebelo, K. C. Moloi, C. Chitumwa, M. Sadiki, P.**	**Session 30: Applied Reliability** **11:00am - 11:20am** **A probabilistic quarter-car model for predicting worst-case vehicle performance** **A. Clarke[1], D. Sabatta[2]** 1: Council for Scientific and Industrial Research; 2: University of Johannesburg, South Africa **11:20am - 11:40am** **USE OF FINITE ELEMENT ANAYSIS TO ANALYSE POTENTIAL CAUSES OF PRODUCT FAILURE ALONG WITH LABORATORY TESTING DURING PRODUCT TESTING: (CASE OF THE STANDARDS ASSOCIATION OF ZIMBABWE).** **T. Mushiri[1], T. Gotora[2], C. Mbohwa[1]** 1: University of Johannesburg, South Africa; 2: University of Zimbabwe, Zimbabwe **11:40am - 12:00pm** **Accurate numerical solution of the van der Pol equation** **M. A. E. Kaunda** Cape Peninsula University of Technology, South Africa **12:00pm - 12:20pm** **Phase Field Modelling of Dynamic Brittle Fracture** **E. N. Omatuku[1,2], S. Skatulla[1,2]** 1: Centre for Research in Computational and Applied Mechanics, University of Cape Town, South Africa; 2: Computational Continuum	**Session 31: Computational Methods in Mechanics** **11:00am - 11:20am** **ANALYSIS AND APPLICATIONS OF THE VIRTUAL ELEMENT METHOD (VEM)** **D. van Huyssteen, D. Reddy** University of Cape Town, South Africa **11:20am - 11:40am** **RELATIONSHIP BETWEEN VIBRATING SCREEN DYNAMICS AND SELF-SYNCHRONISED EXCITATION** **M. T. Victor[1], K. Mayhew-Ridgers[2]** 1: Kwatani; 2: Kwatani **11:40am - 12:00pm** **Sygas yield comparison study on municipal waste and bamboo** **C. K Manala[1], D. M Madyira[2]** 1: University of Johannesburg, South Africa; 2: University of Johannesburg, South Africa **12:00pm - 12:20pm** **Micromorphic cardiac mechanics: modelling the active contraction of cardiac muscle tissue** **M. Kamper, S. Skatulla** Department of Civil Engineering, University of Cape Town, South Africa	**Session 32: Mechanics of Materials** **11:00am - 11:20am** **Prediction of fibre waviness in a thermosetting composite panel with ply drop-offs** **M. R. Botete, G. Venter** Stellenbosch University, South Africa **11:20am - 11:40am** **MODELING OF STRUCTURAL DAMAGE BY DISPLACEMENT AND STRAIN MODES** **N. I. Mutengela, A. A. Alugongo, X. B. Tchomeni** Vaal University of technology, South Africa **11:40am - 12:00pm** **Effect of surface treatment on the mechanical properties of a polymer clay nanocomposite** **B. Ellis, W. van Wyk, H. M. Inglis, J. Labuschagne** University of Pretoria, South Africa **12:00pm - 12:20pm** **Large-scale industrial GPU DEM simulations for civil engineering applications: focus on the history-dependent contact model effects** **P. Pizette[1], N. Govender[1,2], D. N. Wilke[3], N.-E. Abriak[1], R. K. Rajamani[4]** 1: IMT Lille Douai, Univ. Lille, EA 4515 - LGCgE - Laboratoire de Génie Civil et géoEnvironnement,

	Baloyi Vaal Univesrity of Technology, South Africa	Mechanics Research Group, Department of Civil Engineering, University of Cape Town, South Africa **12:20pm - 12:40pm** **Numerical and experimental procedures for determining characteristics of Stockbridge dampers** **M. A. E. Kaunda[1], Z. M. Zondi[2]** 1: Cape Peninsula University of Technology, South Africa; 2: Mangosuthu University of Technology		department Genie Civil & Environnemental, F-59000 Lille, France; 2: Department of Chemical and Process Engineering, University of Surrey, Guildford GU2 7XH, UK; 3: Centre of Asset and Integrity Management, University of Pretoria, South Africa; 4: University of Utah, Metallurgical Engineering Department, University of Utah, USA
12:40pm - 1:40pm	**LUNCH** Location: **Main Hall**			
2:00pm - 3:00pm	**VC AWARDS (best poster presentations and best oral presentations)** Location: **Main Hall** Chair: **Maurice NDEGE**			
3:00pm - 5:30pm	**Tour**			