

## Day 1 – Thursday, 13 September 2018

08h00 - 08h30	Registration	Tea & Coffee
<b>08h30 - 09h10</b>	<b>Opening and Keynote Session</b> <b>Chair: Prof Sampson Mamphweli</b>	<b>Room: K302</b>
08h30 - 08h40	Welcome and Opening	Prof S Mamphweli
08h40 - 09h00	<i><b>Keynote Address</b></i> – Bio-gas as a sustainable green solution	Mr Horst Unterlechner Director: IBERT (Pty) Ltd
09h00 - 09h10	Questions/discussion	
<b>09h10 - 10h30</b>	<b>Session 2 – Solar Photovoltaic Systems</b> <b>Chair: Prof Nawaz Mahomed</b>	<b>Room: K302</b>
09h10 - 09h30	Synthesis, characterization and spectral studies of copper, lead and tin dithiocarbamate complexes: Single source precursors for preparation of metal sulphide nanoparticles	M Agoro
09h30 - 09h50	A review of structural, optical and stability properties of lead-free halide double perovskites	D Mutukwa
09h50 - 10h10	Influence of nitrogen doping on TiO <sub>2</sub> nanoparticles synthesized by pneumatic spray pyrolysis system	L Ntozakhe
10h10 - 10h30	Structural and morphological analysis of hydrothermally synthesized ternary palladium alloys for use as efficient catalysts in dye sensitized solar cell counter electrodes	N Zingwe
10h30 - 11h00	Tea & Coffee break	
<b>11h00 – 12h00</b>	<b>Session 3a: Solar Photovoltaic Systems (parallel session)</b> <b>Chair: Ms Karin Kritzinger</b>	<b>Room: K302</b>
11h00 - 11h20	Performance and degradation analysis of PV modules operating in different climatic regimes	N Mahlangu
11h20 - 11h40	Micro-structural evaluation of RF sputtered TNTs on functional substrates for perovskite solar cell applications	S Zinya
11h40 - 12h00	Morphological and Structural characterization of nano-sized carbon supported MoS <sub>2</sub> as platinum free counter electrodes materials for DSSC application	A Bede
12h00 - 12h20	Numerical Investigation of pressure recovery in an induced draught air-cooled condenser for CSP application	G Bekker
12h40 - 13h40	Lunch	
<b>13h40 - 15h00</b>	<b>Session 4a: Solar Photovoltaic Systems (parallel session)</b> <b>Chair: Dr Arnold Rix</b>	<b>Room: K302</b>
13h40 - 14h00	Irradiance modelling for bi-facial PC modules using the ray tracing technique	J Louw
14h00 - 14h20	Managing peak demand and energy costs through PV and intelligent scheduling of water heaters at two schools in South Africa	S Gerber
14h20 - 14h40	Design of a flexible photovoltaic MPPT data acquisition system for analysis of MPPT process and improved data storage	A Chitura
14h40 - 15h00	Irradiance Feedback Control System for a 5-kW Xenon Arc Lamp Solar Simulator	J Nwodo
15h00 - 15h30	Tea & Coffee break	

# 9<sup>th</sup> RENEWABLE ENERGY POSTGRADUATE SYMPOSIUM

Programme

Knowledge Centre, Faculty of Engineering  
Stellenbosch University



10h30 - 11h00	Tea & Coffee break	
<b>11h00 – 12h40</b>	<b>Session 3b: Concentrated Solar Power (parallel session)</b> <b>Chair: Dr Matti Lubkoll</b>	<b>Room: K303</b>
11h00 - 11h20	Jet impingement parametric analysis for the SCRAP receiver concept	D McDougall
11h20 - 11h40	Modelling and Simulation of a Supercritical Carbon Dioxide (SCO <sub>2</sub> ) concentrated solar power (CSP) System	R van der Westhuizen
11h40 - 12h00	Derivation and simulation of a one-dimensional, compressible-flow model of a free piston Stirling engine	BJG de la Bat
12h00 - 12h20	Design Review and Manufacturing of a Redesigned Gas Turbine Compressor	T Schommarz
12h20 - 12h40	Integrating Supercritical Carbon Dioxide Brayton Cycles into Concentrating Solar Power Plants	T Hans
12h40 - 13h40	Lunch	
<b>13h40 - 15h00</b>	<b>Session 4b – Bio-energy &amp; Bio-processes (parallel session)</b> <b>Chair: Prof Sanette Marx</b>	<b>Room: K303</b>
13h40 - 14h00	Effect of operating parameters on the lignin-derived phenolic compounds using batch hydrothermal liquefaction using an experimental design approach	HB Marais
14h00 - 14h20	Biochar adsorbents for the removal of heavy metals and volatile organics from an industrial paper mill's waste water	K van der Merwe
14h20 - 14h40	The treatment of waste-waters in a Thermosiphon Photobioreactor using <i>Rhodospseudomonas palustris</i>	B Anye Cho
14h40 - 15h00	Evaluation of spend coffee ground as feedstock for continuous hydrothermal liquefaction	J v Wielligh
15h00 - 15h30	Tea & Coffee break	

15h30 - 16h15	<b>Session 5: System modelling &amp; control</b> <b>Chair: Dr Bernard Bekker</b>		<b>Room: K302</b>
15h30 – 15h50	The design of a Hybrid Power Supply using genetic algorithm		F Daniel
15h50 - 16h10	Performance of a Building Integrated Photovoltaic System installed at the Fort Hare Institute of Technology, South Africa		C Buma
16h10 - 16h15	<b>Closing of day 1</b>		Dr Bernard Bekker
18h30 - 21h45	<b>Dinner</b>		

## Day 2 – Friday, 14 September 2018

08h00 - 08h30	Registration		Tea & Coffee
<b>08h30 - 09h10</b>	<b>Keynote Session</b> <b>Chair: Dr Richmore Kaseke</b>		<b>Room: K302</b>
08h30 - 08h40	Welcome and Opening	Prof Wikus van Niekerk Dean: Faculty of Engineering	
08h40 - 09h00	<b>Keynote Address</b> – South Arica’s renewable energy landscape, current status and future projections	Prof Sampson Mamphweli Director: CRSES	
09h00 - 09h10	Questions/discussion		
<b>09h10 - 11h30</b>	<b>Session 7: Concentrated Solar Power</b> <b>Chair: Prof Johan van der Spuy</b>		<b>Room: K302</b>
09h10 - 09h30	Design and test of externally finned tube cavity receiver for Brayton cycle preheating purposes		E Basson
09h30 - 09h50	Improving the heat transfer characteristics of the Spiky Central Receiver Air Pre-heater (SCRAP) using helically swirled fins		D Grobbelaar
09h50 - 10h10	An Investigation into the use of light diffraction for the closed-loop control of heliostats		M Claassen
10h10 - 10h30	Recommissioning of ZEBRA-System to characterize heliostat facets		R Sattele
10h30 - 11h00	Tea & Coffee break		
11h00 - 11h20	<b>Keynote address</b> – Research, Development and Innovation for a Sustainable Energy Future	Dr Rebecca Maserumule DST: Chief Director for Hydrogen and Energy	
11h20 - 11h30	Questions/discussion		
<b>11h30 - 13h30</b>	<b>Session 8: General Session</b> <b>Chair: Dr Raymond Taziwa</b>		<b>Room: K302</b>
11h30 - 11h50	Integration of solar process heat at a South African micro-brewery: a feasibility study		P de Wet Taljaard
11h50 - 12h10	Estimation of global solar radiation in Kwazulu Natal from SAURAN station using air temperature-based models Hargreaves & Samani and Clemence models		C Shabangu
12h10 - 12h30	Permanent magnet wind generator technology for battery charging wind energy systems.		CJJ Labuschagne
12h30 - 12h50	Impacts of grid voltage sags on transformer-less wind energy conversion systems (WECSs) in a Wind Power Plant		A Ajayi-obe
12h50 - 13h10	<b>Keynote Address</b> - Overview of the Eskom Research Strategy	Ms Kubeshnie Bhugwandi Eskom: Renewables Manager	
13h10 - 13h20	Questions / discussion		
13h20 - 13h30	<b>Closing of REPS</b>		Prof Sampson Mamphweli
13h30 - 14h30	Lunch		

