



ASSAf Third Annual South African Young Scientists' Conference

Theme: Our Energy Future

Date: 16-18 October 2012

Venue: CSIR International Convention Centre, Brummeria, Pretoria

Programme

Conference Objectives

The main objectives of the conference are as follows:

- to provide an opportunity for young scientists in their early careers to showcase their work and to share information in their research fields;
- to provide an opportunity for networking among young scientists;
- to provide a platform for young scientists to discuss issues related to the establishment of a framework of collaboration and representation within the science system in the country
- to provide an opportunity for young scientists to engage with key stakeholders NSI stakeholders

Conference Partners

The conference has been made possible through partnership of the following organisations:

1. Academy of Science of South Africa (ASSAf)
2. Department of Science and Technology (DST)
3. *Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ)*
4. Renewable Energy Centre of Research and Development (RECORD)
5. South African National Energy Development Institute (SANEDI)
6. South African Academy of Engineering (SAAE)
7. South African Agency for Science and Technology Advancement (SAASTA)
8. National Research Foundation (NRF)

DAY 1
Tuesday, 16 October 2012

07:30-08:50	Registration	
08:50-09:00	Proceed to Diamond Auditorium	
Session 1: Opening Ceremony Venue: Diamond Auditorium Facilitator: Roseanne Diab, Academy of Science of South Africa (ASSAf)		
09:00-09:05	Welcome	Roseanne Diab Executive Officer, ASSAf
09:05-09:15	Academy of Science of South Africa	Robin Crewe President, ASSAf
09:15-09:25	Parliamentary Portfolio Committee	Nqaba Ngcobo Chairperson, Science and Technology Parliamentary Portfolio Committee
09:25-09:35	Department of Science and Technology	Phil Mjwara Director General, DST
09:35-09:45	Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ)	Mr Thilo Thormeyer Human Capacity Development Division, GIZ
09:45-09:55	South African National Energy Development Institute (SANEDI) Renewable Energy Centre of Research and Development (RECORD)	Kevin Nassiep CEO, SANEDI
09:55-10:05	National Research Foundation	Albert van Jaarsveld CEO, NRF
10:05-10:15	Questions	
10:15-10:45	Keynote Address Lithium-ion Batteries for Sustainable Renewable Energy Storage	Regina Maphanga Materials Modelling Centre University of Limpopo
10:45-10:55	Discussion	
10:55-11:00	Photo Session Venue: Convention Centre Entrance	
11:00-11:15	Break Venue: Diamond Foyer	

Session 2: Symposium on the State of Energy in South Africa
Venue: Diamond Auditorium
Facilitator: TBC

11:15-11:35	The State of Energy in South Africa	South African National Energy Development Institute
11:35-11:55	RECORD Research Priorities and Focus Areas	Karen Surridge-Talbot Renewable Energy Centre of Research and Development
11:55-12:15	Opportunities for Study, Collaboration and Funding in Renewable Energy research	Marlett Balmer <i>Deutsche Gesellschaft fuer Internationale Zusammenarbeit</i>
12:15-13:00	Roundtable Discussion on the State of Energy in South Africa	<ol style="list-style-type: none"> 1. Dr Tonny Surridge 2. South African National Energy Development Institute 3. Renewable Energy Centre of Research and Development 4. <i>Deutsche Gesellschaft fuer Internationale Zusammenarbeit</i> 5. Technology Innovation Agency 6. Council for Scientific and Industrial Research 7. ESKOM 8. Department of Energy
13:00-14:00	Lunch Venue: The Deck	

Session 3		
	Theme: Renewable Energy Sources and Energy Efficiency Venue: Diamond Auditorium Facilitator: TBC	Theme: Energy and Health, Water, Food and Environment Venue: Emerald Facilitator: TBC
14:00-14:15	Carbon and Graphite Materials for Solar Energy Capture and Storage Heinrich Badenhorst, University of Pretoria	Phloroglucinol and a Sterol, Derivatives from the Brown Alga <i>CEM-K.</i> , Potential Candidates for the Effective Treatment of Cancer Cells Henry Mwangi
14:15-14:30	Investigation of Perfluorocarbons as Potential Physical Solvents for Flue Gas Cleaning Prabir Nandi, University of KwaZulu-Natal	Neutron and X-ray Tomography Applications to Energy, Food and the Environment Mabuti Radebe
14:30-14:45	Fostering Sesirable Behaviour towards Sustainable Energy utilisation in Low-income Households Brenda Malese Ndhlovu, SAP Research Pretoria	Water Recycling a Sustainable Approach to Water Management in Mineral Processing Malibongwe Manono
14:45-15:00	A Robust Statistic, as a Tool for interpreting Noise Levels of Micro Wind Turbines Chantelle Clohessy, Nelson Mandela Metropolitan University	Geophysical 3D Modelling of the Karoo Basin, South Africa – Preliminary Results Stephanie Scheiber-Enslin
15:00-15:15	Enhancing the Properties of the Layered $\text{Li}[\text{Li}_{0.2}\text{Mn}_{0.54}\text{Ni}_{0.13}\text{Co}_{0.13}]\text{O}_2$ Cathode Material for Lithium-ion Batteries by Aluminium-Doping Charl Jafta, CSIR / University of Pretoria	Adsorption of Oxyanions As from Coal Fly Ash Leachates using Al^{3+} Modified Bentonite Clay Masindi Vhahangwele
15:15-15:30	Analysis of the Biofuel Institutions in Zimbabwe using the Institutional Analysis Development (IAD) Framework Chipo Nyamwena-Mukonza, Tshwane University of Technology	Electrification Programme in South Africa and Restructuring of Electricity Distribution Segment: Is ESKOM Performing well in terms of Eradication of Rural Electricity Backlogs? Matome Hosea Modipane
15:30-15:45	Discussion	
15:45-16:00	Break Venue: Diamond Foyer Proceed to Poster Session Venue	

Session 4: Poster Session Venue: Amethyst Room Facilitator: Prabir Nandi, University of KwaZulu-Natal		
16:00-16:05	Introduction to Session	
16:05-17:30	5-minute Poster Presentations	

17:45-21:30	SAYAS New Member Inauguration Ceremony Venue: Amber Dining Room
21:30	End of Day 1 and Departure

DAY 2 Wednesday, 17 October 2012		
Session 5		
	Theme: Renewable Energy Sources and Energy Efficiency Venue: Diamond Auditorium Facilitator: TBC	Theme: Energy and Health, Water, Food and Environment Venue: Emerald Facilitator: TBC
09:00-09:15	Recap of Day 1 Activities and Programme for the Day	
09:15-09:30	Advanced Power Sources for Portable Electronics and Electric Vehicles Cliffon Masedi, University of Limpopo	Assessment of Water and Nutritional Productivity of Spinacea Oralecea (Ford Hook Giant) for Four Irrigation Treatments and FAO Aquacrop Model Validation in Roodeplaat, Republic of South Africa Melvin Nyathi
09:30-09:45	Solar Water Heating and Power Generation at Emasithandane Children's Home in Nyanga, Cape Town David Oyedokun, University of Cape Town	Effects of Organic Inputs in Urban Agriculture and their Optimisation for Poverty Alleviation in Senegal, West-Africa Saliou Niassy
09:45-10:00	Evaluation, Sizing and Cost Analysis of a PV array for Rural Development in Vuwani area, Vhembe District, Limpopo, South Africa Eric Maluta, University of Venda	Application of South African Natural Zeolite to enhance Biogas Production in Anaerobic Treatment of Industrial Wastewater Seth Otieno Apollo
10:00-10:15	The Tree as a Feedstock in the Emerging Bioeconomy Eshchar Mizrachi, University of Pretoria	Risk of Failure to meet Regional and National Goals relevant to Agricultural Development and Poverty Reduction in South Africa Simbarashe Ndhleve
10:15-10:30	Discussion	
10:30-11:00	Break Venue: Diamond Foyer	

Session 6		
	Theme: Renewable energy sources and energy efficiency Venue: Diamond Auditorium Facilitator: TBC	Theme: Energy and health, water, food and environment Venue: Emerald Facilitator: TBC

11:00-11:15	Characteristics Evaluations and Analysis of a Photovoltaic Module under Partial Shaded Conditions Fhulufhelo Nemangwele, University of Venda	PUMP: A Multi-facet <i>in situ</i> Model to Combat Acid Mine Drainage (AMD) and the Shortage of Potable Water in South Africa using Bio-mimicry and Low Enthalpy Geothermal Energy Thakane Ntholi
11:15-11:30	Thermochromic Doped Vanadium Dioxide Coatings with Enhanced Properties Ghouwaa Philander, iThemba Labs	Effects of Packaging and Chemical Treatment on Storage Life and Quality Attributes of Tomato Varieties in Nigeria Tonna Anyasi
11:30-11:45	Design of Heat Exchanger Networks to Reduce Energy Usage Adeniyi Jide Isafiade, University of Cape Town	Nitrogen Oxides Abatement by Chars Derived from High Ash Coals under Fluidized Bed Combustion Conditions Zebron Phiri
11:45-12:00	Energy Diversification: Option in Waste-to-energy/Fuel approach via Municipal Solid Waste Thermo-chemical Conversion Ismail Babatunde Adefeso, Cape Peninsular University of Technology	Domestic sources of Energy in Africa: A Profile of Households De Wet Nicole
12:00-12:15	Discussion	
12:15-13:30	Lunch Venue: The Deck Proceed to Plenary Sessions	

Session 7: Plenary Session Theme: Renewable Energy Sources and Energy Efficiency Venue: Diamond Auditorium Facilitator: TBC		
13:30-13:45	The Green Economy and Sustainable Job Growth	Jacqueline Borel-Saladin Human Sciences Research Council
13:45-14:00	Evaluating the Adsorption Capacity of Subcritical CO ₂ on South African Coals using a Simulated Flue Gas	Major Mabuza Tshwane University of Technology
14:00-14:15	Renewable Energy and the Five Tourism Sectors in South Africa- Best Practices Paradigm	Malefane Monyane Tshwane University of Technology
14:15-14:30	Large-scale Cultivation of a Microalgae/Cyanobacteria/Bacteria Consortium for Biofuel Production	Maranda Esterhuizen-Londt Nelson Mandela Metropolitan University
14:30-14:45	How do Residential Consumers in Pretoria save Electricity?	Mathilda du Preez University of Pretoria
14:45-15:00	Energy Efficiency in Future Wireless Broadband Networks	Moshe Masonta Tshwane University of Technology
15:00-15:15	Computational Study of Anatase TiO ₂ Nanotube as an Anode Material for Lithium Ion Batteries	Mulatedzi Gandamipfa University of Limpopo

15:15-15:30	Discussion
15:30-15:45	Break Venue: Diamond Foyer

Session 8: Plenary Session Theme: Renewable Energy Sources and Energy Efficiency Venue: Diamond Auditorium Facilitator: TBC		
15:45-16:00	Mathematical Model of the Social Impacts of Energy Efficiency Projects	Uduakobong Edet Ekpenyong University of Pretoria
16:00-16:15	Thermotropic Liquid Crystalline Polyurethanes: Synthesis, Spectral and Microscopic Studies	Siva Mohan Reddy Tshwane University of Technology
16:15-16:30	Estimation of Global Solar Radiation on the Horizontal Surface from the Temperature Data for Vhembe District in Limpopo Province, South Africa	Sophie Mulaudzi University of Venda
16:30-16:45	Analysis of the Peak Power of a Photovoltaic Array System under Outdoor Conditions	Vhutshilo Nekhubvi University of Venda
16:45-17:00	Multiobjective Optimisation of a Thermoacoustic Regenerator	Kwanda Tartibu Cape Peninsula University of Technology
17:00-17:15	Defining and Measuring Sustainable Energy Use in the Residential Sector of South Africa	Mamahloko Senatla University of Cape Town
17:15-17:30	First-principle Stability Study of LiFePO ₄ Polymorphs as Future Battery Material	Ndanduleni Lesley Lethole University of Limpopo
17:30-17:45	Discussion	

17:45	End of Day 2 and Departure
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DAY 3 Thursday, 18 October 2012		
Session 9: Science Communication Workshop Venue: Diamond Auditorium Facilitator: TBC		
09:00-12:30	Science Communication Workshop presented by the South African Agency for Science and Technology Advancement	
12:30-13:00	Conference Closing Address and Final Thoughts	Heinrich Badenhorst University of Pretoria

13:00-14:00	Lunch and Departure Venue: The Deck	
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