Sunday 16 March 2014

14:00 **Registration at Nombolo Mdhluli Conference Centre**

19:00 **Dinner in Boma**

Monday 17 March 2014

06:00 **Sightseeing in the Park**

07:30 **Breakfast**

Session 1

Welcoming Chairperson: Christo Schutte

09:00 ***Welcome***
Tsepo Monaheng
CEO, Denel Dynamics, South Africa

09:10 ***Reaping innovation benefits in South Africa [50]***
Kobus Viljoen
Cassidian Optronics (Pty) Ltd, South Africa

09:50 ***Microdisplays [52]***
Ian Underwood
University of Edinburgh, UK

10:30 ***Research & Innovation infrastructure [32]***
Anthon Botha
TechnoScene, South Africa

11:00 **Coffee/Tea**

Session 2

Novel integrated circuit devices and applications Chairperson: Robert van Zyl

11:20 ***State of the Art and future trends in analog-to-digital converters for image sensors [49]***
Kenton Veeder
Senseeker Engineering Inc, USA

12:00 ***Porous silicon nano explosives: A review [31]***
Monuko du Plessis
CEFIM, University of Pretoria, South Africa

12:20 ***Novel applications of silicon-based CMOS light sources [41]***
Marius Goosen
INSiAVA (Pty) Ltd, South Africa

12:40 ***Integrating silicon hot carrier electroluminescent light sources in standard CMOS [34]***
Jannes Venter
CEFIM, University of Pretoria, South Africa

13:00 **Lunch**

Session 3

Materials and physical phenomena Chairperson: Monuko du Plessis

13:50 ***InAs - based dilute nitride materials and devices for the mid-infrared spectral range [48]***
Tony Krier
Lancaster University, UK

14:30 ***Replacing TCO electrodes in dye sensitized solar cells by metal grids [15]***
Ulrich Hilleringmann
University of Paderborn, Germany

14:50 ***Photoluminescence of chemically treated InAs (111)A [20]***
Reinhardt Botha
Nelson Mandela Metropolitan University, South Africa

15:10 ***Layer structure and material properties of an epitaxially grown InGaAs PIN photodetector on an InP substrate [1]***
Wynand Lambrechts
Detek, Denel Dynamics, South Africa

15:30 **Sightseeing in the Park**

19:00 **Dinner**

Tuesday 18 March 2014

06:00 **Sightseeing in the Park**

07:30 **Breakfast**

Session 4

Optical systems and modelling Chairperson: Reinhardt Botha

09:00 ***Fabrication and testing of mirrors for astronomical telescopes [51]***
Jim Burge
University of Arizona, USA

09:40 ***Optics development for two-photon based optical frequency standard [23]***
Johan Burger
National Metrology Institute of South Africa, South Africa

10:00 ***How to make a digital laser [17]***
Liesl Burger
National Laser Centre, South Africa

10:20 ***Optical system modelling and simulation of a laser proximity fuze [45]***
Melanie Saayman
Denel Dynamics, South Africa

10:40 ***Characterization of commercially available uncooled microbolometer thermal cameras [43]***
Hannetjie Minnaar
Denel Dynamics, South Africa

11:00 **Coffee/Tea**

Session 5

Spectral characterization Chairperson: Johan Steyl

11:20 ***UVGI fixture characterization using integrating sphere technology[14]***
Wilhelm Leuschner
University of Pretoria, South Africa

11:40 ***A transparent look at the measurement and application of colour rendering index in the use of LED light sources [44]***
Koos van der Westhuyzen
Denel Dynamics, South Africa

Session 6

Poster session Chairperson: Trudi Joubert

12:00 ***Poster snapshots***

12:30 ***Poster viewing***

13:00 **Lunch**

Session 7

Fabrication and system production Chairperson: Wilhelm Leuschner

13:50 ***Wafer bonding process for building MEMS devices [47]***
Josef Meiler
EV Group, Austria

14:10 ***Low temperature solder process to join a copper tube to a silicon wafer for ultra high vacuum applications [8]***
Christo Versteeg
Detek, Denel Dynamics, South Africa

14:30 ***Tailoring the mechanical properties of SU8/Clay nanocomposites: Polymer microcantilever fabrication perspective [19]***
Jerry Chen
Material Science and Manufacturing, CSIR, South Africa

14:50 ***Challenges in the design of military laser products [33]***
Johan Steyl
Cassidian Optronics (Pty) Ltd, South Africa

15:10 ***Challenges faced during the design and production of a diffraction limited multispectral HD zoom camera system [21]***
Rikus Cronjé
Cassidian Optronics (Pty) Ltd, South Africa

15:30 **Sightseeing in the Park**

19:00 **Dinner**

Wednesday 19 March 2014

06:00 **Sightseeing in the Park**

07:30 **Breakfast**

Session 8

Image processing and applications Chairperson: Anthon Botha

09:00 ***Innovations in nanosatellite technologies for emerging sensing applications [52]***
Robert van Zyl
Cape Peninsula University of Technology, South Africa

09:40 ***Infrared recordings for characterization of an aircraft plume [38]***
Stephanus Retief
Denel Dynamics, South Africa

10:00 ***Visual surveying platform for the automated detection of road surface distresses [39]***
Deon Joubert
Material Science and Manufacturing, CSIR, South Africa

10:20 ***Fine-Correlation: Inter-sample template matching [37]***
Pieter Reyneke
Fastar Research Group, South Africa

10:40 ***Gauss-Laguerre transform based rotational image correlation [40]***
Etienne van der Berg
Fastar Research Group, South Africa

11:00 **Coffee/Tea**

Session 9

Sensor design Chairperson: Philip Minnaar

11:20 ***Optimisation of the thermal coupling for a dual element uncooled bolometer [25]***
Johan Schoeman
CEFIM, University of Pretoria, South Africa

11:40 ***A HTS DC SQUID-NMR: Fabrication of the SQUID and application to low-field NMR for fruit quality detection [7]***
Frederic Nturambirwe
Stellenbosch University, South Africa

12:00 ***A PMOS transistor fabricated on InSb as a test structure for evaluating photo-diode detector processes [4]***
Callie Maré
Detek, Denel Dynamics, South Africa

12:20 ***A novel CMOS Hall effect sensor [2]***
Dieter Mellet
CEFIM, University of Pretoria, South Africa

12:40 ***Label-free impedance detection of E.coli in water [42]***
Trudi Joubert
Material Science and Manufacturing, CSIR, South Africa

13:00 **Lunch**

	Session 10
Optical communication links	Chairperson: Johan Burger
13:50	***Precise verification of fibre link for frequency transfer [29]*** Chris Matthee *National Metrology Institute of South Africa, South Africa*
14:10	***Realization of 10 GHz minus 30DB on-chip micro-optical links with Si-Ge RF bi-polar technology [6]*** Kingsley Ogudo *Tshwane University of Technology, South Africa*
	Session 11
Closing session	
14:30	***Closing remarks and prize-giving*** Christo Schutte *Chair: 3rd SMEOS 2014 organising committee*
15:30	**Sightseeing in the Park**
17:00	**Bush braai**

Thursday 20 March 2014

07:00	**Breakfast**
08:30	**Vehicles leave for KMIA/ORTIA? and Pretoria**

List of Posters

Analysis system for characterization of simple, low-cost microfluidic components **[5]**
Suzanne Hugo
Materials Science and Manufacturing, CSIR, South Africa

Thermal and flicker noise reduction for short-channel CMOS detectors [12]
Johan Venter
University of Pretoria, South Africa

Optical properties of PLA/Clay composites for micro-electro-mechanical systems applications [16]
Hastings Cele
Material Science and Manufacturing, CSIR, South Africa

Typical optical layout of a direct vision periscope for submarines [22]
Andre Coetzer
Cassidian Optronics, South Africa

Employing a microbolometer as a low pressure sensor [24]
Johan Schoeman
Carl and Emily Fuchs Institute for Microelectronics (CEFIM), University of Pretoria, South Africa.

An instrumentation amplifier based readout circuit for a dual element microbolometer infrared detector [26]
Oan de Waal
Carl and Emily Fuchs Institute for Microelectronics (CEFIM), University of Pretoria, South Africa.

Design issues of a low cost lock-in amplifier readout circuit for an infrared detector [27]
Johan Schoeman
Carl and Emily Fuchs Institute for Microelectronics (CEFIM), University of Pretoria, South Africa.

10-circuit microfluidic system for scaled up production of enzyme microspheres [28]
Jerry Chen
Materials Science and Manufacturing, CSIR, South Africa

Detail process instruction for the manufacturing of cold shields for electro-optical devices [30]
Gerrit Myburg
Detek, Denel Dynamics, South Africa

Analysis of CMOS hot carrier light sources using back-end-of-line light directing structures for improved light extraction efficiency [35]
Anthony Bulling
Carl and Emily Fuchs Institute for Microelectronics, University of Pretoria, South Africa