



SCIENTIFIC PROGRAMME

TUESDAY 3 DECEMBER - MORNING

7.30-8.30

REGISTRATION

(Modlec Building)

8.30-9.00



WELCOME AND OPENING

Conference Announcements and Address

Prof. Jaco Olivier, MSSA President
Prof. Koos Terblans, Local Organiser (UFS)



Venue: Modlec A2

9.00-10.00

41st JOHN MATTHEWS MEMORIAL LECTURE

Venue: Modlec A2

STEM-DPC Imaging of What is in Between The Atomic Nuclei

Prof. Dr. Jörg K. N. Lindner

Chair: Prof. Jaco Olivier

Session sponsored by:



10.00-10.30

COFFEE BREAK

SESSION 1	Materials Science Venue: Modlec A2 <i>Chair: Dr Arno Janse van Vuuren</i>	Life Science Venue: Modlec A1 <i>Chair: Dr Antoinette Lensink</i>
10.30-10.50	CHARACTERISATION OF STEEL MARTENSITE USING ELECTRON BACKSCATTERED DIFFRACTION S. Allies	AUTOPHAGY AND MITOCHONDRIAL QUALITY CONTROL ARE KEY PARAMETERS IN THE CELLULAR PATHOLOGY OF ALZHEIMER'S DISEASE B. Loos
10.50-11.10	EFFECT OF WELDING ON SECONDARY PHASES IN SERVICE-EXPOSED 12%Cr TMF STEEL G. Marx	MODELING SCHIZOPHRENIA ENDOPHENOTYPES IN <i>Drosophila melanogaster</i> : EFFECTS OF KETAMINE ON NEUROINFLAMMATORY AND NEURODEGENERATIVE RESPONSES A. Bello
11.10-11.30	DISLOCATION DENSITY MEASUREMENT IN AISI316L STAINLESS STEEL USING ELECTRON CHANNELING CONTRAST IMAGING (ECCI) L.C.M. Pullen	<i>Nigella sativa</i> OIL MITIGATES THALAMIC AND SUBICULAR DYSFUNCTION IN PENTYLENETETRAZOLE-INDUCED EPILEPTOGENESIS IN BALB/C MICE A. Bello
11.30-11.50	MICROSTRUCTURE AND TENSILE PROPERTY EVOLUTION IN TEMPERED Ti-6Al-4VxH MARTENSITE V.N. Vilane	PROBING AUTOPHAGY: COMPARING PLASMIDS, TECHNIQUES AND THE QUEST FOR AN AUTOMATED CLEM ALGORITHM N. Vahrmeijer
11.50-12.10	MICROSTRUCTURE-BASED CREEP LIFE ASSESSMENT OF 1CrMoV TURBINE ROTORS AFTER PROLONGED SERVICE H.S. Nyembe	A NOVEL METASYSTEMS CLASSIFIER FOR PLATELET FRAGILITY AND MORPHOLOGY ANALYSIS C. Venter
12.10-12.30	CHROMIUM INFLUENCE ON ZrO ₂ LAYER TO PREVENT HYDROGEN PICK UP S. Ngongo	THE EX VIVO EFFECTS OF <i>Bitis arietans</i> AND <i>Naja mossambica</i> VENOM ON BLOOD COAGULOPATHY C. Megaw
12.30-13.40	LUNCH Venue: Modlec Building	

TUESDAY 3 DECEMBER - AFTERNOON

SESSION 2	Materials Science Venue: Modlec A2 <i>Chair: Prof. Rodney Genga</i>	Life Science Venue: Modlec A1 <i>Chair: Prof. Martina Crole</i>
13.40-14.00	<p align="center">CORRELATION BETWEEN HOMOGENISATION PARAMETERS AND PROPERTY EVOLUTION OF AA3104 CBS AFTER HOT FINISH ROLLING</p> <p align="center">K.E. Lebakeng</p>	<p align="center">MORPHOLOGICAL CHANGES INDUCED BY THE IMIDACLOPRID, USING A RAT LEYDIG CELL LINE (LC-540)</p> <p align="center">M.I.A. Ibrahim</p>
14.00-14.20	<p align="center">PRINTABILITY AND PROPERTIES OF WC-12Co/Mo CEMENTED CARBIDE USING DIRECT INK WRITING</p> <p align="center">N.P. Mphasha</p>	<p align="center">IMMUNOHISTOCHEMISTRY EVALUATION OF SATELLITE CELL ACTIVATION STATUS IN EXERCISED AND CONTRALATERAL UNEXERCISED MUSCLE</p> <p align="center">M. Cowley</p>
14.20-14.40	<p align="center">ENERGY CONSUMPTION OF NbC BASED INSERTS DURING FACE MILLING OF AUTOMOTIVE GCI</p> <p align="center">M.S. Rabothata</p>	<p align="center">Life Science POSTER SESSION</p> <p align="center"><i>Venue: Modlec Foyer</i></p> <p align="center"><i>Chair: Prof. Ben Loos</i></p>
14.40-15.00	<p align="center">CIRCULAR MANUFACTURING OF Fe AND DUPLEX STEEL-BONDED WC HARDMETALS FOR AEROSPACE-GRADE AA7010-T7651 FACE-MILLING</p> <p align="center">R. Genga</p>	<p align="center">INVESTIGATION OF THE EFFECT OF PEG-AuNPs ON COLORECTAL CANCER CELL LINE.</p> <p align="center">D. Basson</p>
		<p align="center">HISTOLOGICAL EFFECTS OF CTCE-9908 AND L-KYNURENINE ON MELANOMA METASTASIS IN A XENOGRAFT MOUSE MODEL</p> <p align="center">M. Olfson</p>
		<p align="center">HIPPOCAMPAL VULNERABILITIES IN MATERNAL BRAINS: EFFECTS OF INTRAUTERINE GROWTH RESTRICTION IN ADULT FEMALE MICE</p> <p align="center">A. Bello</p>
		<p align="center">BACK TO BASICS WHEN MOLECULAR SEQUENCES ARE NOT IN PLACE, YET</p> <p align="center">L.L. van As</p>
15.00-15.20	<p align="center">COFFEE BREAK</p>	

SESSION 3 15:20-17:20	Materials Science POSTER SESSION Venue: Modlec Foyer Chair: Ms Charity Maepa	
	<p>PLASMONIC EFFECT OF GOLD NANOPARTICLES ON NaYF₄:Er,Yb UP-CONVERTING PHOSPHOR</p> <p>T. M. Abdalkreem</p>	<p>STRUCTURAL CORRELATION TOWARDS HIGH-SENSITIVE SENSOR BASED ON In₂O₃-Co₃O₄ INTEGRATED WITH N-TYPE-SMOs FOR ACETONE DETECTION</p> <p>K.L. Morulane</p>
	<p>SYNERGISTIC ENHANCEMENT OF CO₂-EPOXIDE CYCLOADDITION: A STABLE Ti₃C₂TX@ML-ZIF 9 (MXENE @ MOF) COMPOSITE CATALYST</p> <p>Y.W. Abraha</p>	<p>INFLUENCE OF SYNTHESIS METHOD ON MICROSTRUCTURE AND LUMINESCENCE OF La₂Zr₂O₇: Bi, Tb PYROCHLORE PHOSPHORS</p> <p>B.V. Naveen Kumar</p>
	<p>MICROWAVE-SYNTHESIZED Zn₂SnO₄ NANOSTRUCTURES: EXPLORING THE EFFECT OF ANNEALING ON MORPHOLOGICAL AND STRUCTURAL PROPERTIES</p> <p>G.M. Choeu</p>	<p>ZEOLITE-ENCAPSULATED SINGLE Pt ATOMS FOR HYDROCRACKING</p> <p>T. Ntlebi</p>
	<p>TEM AND XRD INVESTIGATION INTO THE STABILITY OF STRONTIUM-DOPED CsPbI₃ PREPARED UNDER ATMOSPHERIC CONDITIONS</p> <p>M.M. Duvenhage</p>	<p>CHARACTERISATION OF Ti-6Ta-1.5Zr-0.2Ru-5Cu PRINTED BY LASER POWDER BED FUSION</p> <p>N.S. Phala</p>
	<p>PHASE TRANSFORMATION FROM α-Bi₂O₃ TO β-Bi₂O₃ FOR ENHANCED PHOTOCATALYTIC DEGRADATION OF RHODAMINE B</p> <p>J. Divya</p>	<p>EVOLUTION OF MICROSTRUCTURE AND UPCONVERSION LUMINESCENCE OF Tm,Yb-DOPED YF₃ DURING ANNEALING TO FORM Y₂O₃</p> <p>P.J. Radebe</p>
	<p>THICKNESS ANALYSIS OF Al_xGa_{1-x}As EPILAYERS BY INFRARED SPECTROSCOPY AND SEM</p> <p>M.E. Lee</p>	<p>INSIGHTS INTO THE MORPHOLOGY-PERFORMANCE RELATIONSHIP TOWARDS LPG SENSITIVITY OF Co₃O₄/rGO GAS SENSORS LOADED WITH SILVER NANOPARTICLES</p> <p>B.C. Tladi</p>
	<p>THE SURFACE PROPERTIES OF PULSED LASER-DEPOSITED Y₂O₃: Ho³⁺, Yb³⁺ THIN FILMS</p> <p>V. Makumbane</p>	<p>PREPARATION OF SrVO₃ THIN FILMS USING SPIN COATING</p> <p>E. Lee</p>

	<p>THE MORPHOLOGY AND TEMPERATURE-DEPENDENT LUMINESCENCE OF $\text{Ca}_4(\text{PO}_4)_2\text{O}$ CO-DOPED Ce^{3+} AND Eu^{2+} PHOSPHORS</p> <p>K.B. Morebodi</p>	<p>PHASE EVOLUTION AND SURFACE MORPHOLOGY IN COPPER-INDIUM THIN FILMS: STABILITY OF CO-EVAPORATED FILMS</p> <p>L.E. Makoloane</p>
	<p>CHARACTERISATION OF TiZrN IRRADIATED WITH SWIFT HEAVY IONS OF FISSION FRAGMENT ENERGIES</p> <p>L.Z. Mrwetyana</p>	<p>THE STRUCTURAL AND MORPHOLOGICAL STUDY OF MASK-ASSISTED DEPOSITION OF ZnO/Au MICRO-TOWERS</p> <p>D.T. Mashilo</p>
	<p>EFFECT OF ANNEALING TEMPERATURE ON BARIUM ZIRCONATE (BaZrO_3) PEROVSKITES NANOPARTICLES PREPARED BY SOL-GEL METHOD</p> <p>Q. Nkomo</p>	<p>STUDIES ON THERMAL PROPERTIES OF SPARK PLASMA SINTERED Ti-48Al-2Cr-2Nb ALLOY</p> <p>M.R. Mphahlele</p>
	<p>SYNTHESIS AND CHARACTERISATION OF ZIRCONIUM SILICIDE LAYERS ON ZIRCONIUM ALLOY FOR NUCLEAR REACTOR APPLICATION</p> <p>S. Ngongo</p>	<p>ALLOYING INTERMETALLIC AuIn_2 AND AuGa_2 WITH VARIOUS MACRO AND MICRO ALLOYING ELEMENTS</p> <p>A. Hefer</p>
17:20	End of poster session	
17:45	Busses depart for Student Evening	
18.30	 <p>Student Evening Venue: Planetarium, Naval Hill</p> <p>Sponsored by MSSA</p> 	

WEDNESDAY 4 DECEMBER - MORNING

7.30-8.30

REGISTRATION
(Modlec Building)

08.30-09.00

Opening & Announcements

9.00-10.00

34th BORIS BALINSKY LECTURE

Venue: Modlec A2

Microscopy Meanders: Highways and Backroads to High-Resolution Imaging in Life Sciences

Prof. Lydia-Marie Joubert

Chair: Prof. Rob Knutsen

10.00-10.30

COFFEE BREAK

SESSION 4	Materials Science Venue: Modlec A2 Chair: Prof. Mike Lee	Life Science Venue: Modlec A1 Chair: Dr James Wesley-Smith
10.30-10.50	INVESTIGATION OF 1D BaTiO ₃ /Cd _{0.5} Zn _{0.5} S HETEROSTRUCTURE FOR PIEZO-PHOTOCATALYTIC REMOVAL ORGANIC POLLUTANTS T.T. Mohlala	Keynote Address INCREASING THE THERMOSTABILITY OF A CYANIDE-CONVERTING NITRILASE T. Sewell
10.50-11.10	ESTABLISHING THE CO-EXISTENCE OF METAL OXIDES IN NANOSTRUCTURED COBALT OXIDE- BASED GAS SENSORS R. Makole	
11.10-11.30	IMPACT OF USING CAPPING LIGANDS ON THE EMULSION-LARP SYNTHESIS OF CESIUM LEAD BROMIDE NANOCRYSTALS G.B. Nair	AN AGE-OLD MYSTERY: THE SPIKE ON THE LION'S (<i>Panthera leo</i>) TAIL M. Crole
11.30-11.50	COMPETITIVE ADSORPTION OF CADMIUM AND MERCURY FROM WATER BY AgNP-NATURAL RUBBER/POLYVINYL ALCOHOL NANOFIBRE COMPOSITE L.B. Osei	TAXONOMIC ANALYSIS OF CALANOID COPEPODS IN SOUTH AFRICAN LENTIC ECOSYSTEMS USING SCANNING ELECTRON MICROSCOPY A.X. Kruger
11.50-12.10	ENCAPSULATION OF Eu-Si QDs IN ZEOLITIC IMIDAZOLE FRAMEWORK-8 (ZIF-8) FOR PHOTOLUMINESCENCE TUNING S.J. Panchu	MICROMORPHOLOGY AND ANATOMY OF <i>Tabernaemontana ventricosa</i> (FOREST TOAD TREE) FLORAL COMPONENTS C.M. Naidoo
12.10-12.30	SURFACE MODIFICATION AND CATHODOLUMINESCENCE DEGRADATION OF Y ₂ O ₃ :Dy ³⁺ , Sm ³⁺ THIN FILM S. Nagarasanakote Jayaramu	POLLINATOR REWARDS IN <i>Nemesia</i> (SCROPHULARIACEAE) H. Grobler
12.30-13.40	LUNCH Venue: Modlec Building	

WEDNESDAY 4 DECEMBER - AFTERNOON

SESSION 5	Materials Science Venue: Modlec A2 <i>Chair: Prof. Rob Knutsen</i>	
13.40-14.00	STUDYING RECRYSTALLISATION DYNAMICS OF SWIFT HEAVY ION TRACKS IN YIG M.M. Badenhorst	
14.00-14.20	THE MICROSTRUCTURAL RESPONSE OF POLYCRYSTALLINE Si ₃ N ₄ WITH VARYING Al-IMPURITY CONCENTRATIONS TO SWIFT HEAVY IONS. A. Janse van Vuuren	
14.20-14.40	TEM ANALYSIS OF THE TETRAGONAL PHASE FRACTION FORMATION IN MONOCLINIC ZIRCONIA AT INTERMEDIATE SHI FLUENCES M.E. Lee	
14.40-15.00	REAL-TIME OBSERVATION OF MOLECULAR DYNAMICS AND CHEMICAL REACTIONS IN STEM R.R. Zamani	
15.00–15.30	COFFEE BREAK	

<p>15.30 -17.30</p>	<div style="display: flex; justify-content: space-between; align-items: center;">  <div style="text-align: center;"> <p>MSSA - ANNUAL GENERAL MEETING</p> <p>Venue: Modlec A2</p> </div>  </div>
<p>17.45</p>	<p style="text-align: center;">Busses depart for Braai evening</p>
<p>18.30 for 19:00</p>	<div style="display: flex; justify-content: space-between; align-items: center;">  <div style="text-align: center;"> <p>Braai Evening</p> <p>Venue: De Oude Kraal Estate</p> <p>Sponsored by MSSA</p> </div>  </div>

THURSDAY 5 DECEMBER – MORNING

8.30-9.00	REGISTRATION (Modlec Building)
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SESSION 6	Materials Science Venue: Modlec A2 <i>Chair: Dr Mart-Mari Duvenhage</i>	Extraordinary Life Science Symposium Venue: Modlec A1 <i>Chair: Dr James Wesley-Smith</i>
09.00-09.20	3D RGO HYBRID EVAPORATOR FOR EFFICIENT SOLAR DESALINATION W.J. Lawrence	CLEM: BRINGING TOGETHER MOLECULAR IDENTITY AND ULTRASTRUCTURAL CONTEXT – HOPES, FEARS AND EARLY BEGINNINGS N. Vahrmeijer
09:20–09:40	ASSESSMENT OF CREEP CAVITATION IN SERVICE-EXPOSED 12%Cr TMF STEEL N.W. Mfuma	
09:40–10:00	IDENTIFICATION OF COPPER AND COBALT-BEARING MINERALS IN COPPER SLAG T.Z. Papo	CONFOCAL MICROSCOPY AND RELATED FLUORESCENCE TECHNIQUES: SHOWCASING ONE MICROSCOPE'S IMPACT ON RESEARCH OUTPUT OVER MORE THAN A DECADE L. Engelbrecht
10.00-10.20	COFFEE BREAK	

SESSION 7	Materials Science Venue: Modlec A2 <i>Chair: Prof. Richard Harris</i>	Extraordinary Life Science Symposium Venue: Modlec A1 <i>Chair: Dr James Wesley-Smith</i>
10.20–10:40	COBALT-BASED PEROVSKITE OXIDE CATALYSTS FOR THE PREFERENTIAL OXIDATION OF CARBON MONOXIDE FOR HYDROGEN FUEL CELLS N. Ndila	EXPANDING PERSPECTIVES IN MALARIA RESEARCH: USING EXPANSION MICROSCOPY TO UNCOVER DRUG MODE OF ACTION H. Langeveld
10.40–11:00	RECOVERY OF IRON FROM ROAST-LEACH TITANOMAGNETITE FERROVANADIUM RESIDUE M. Nevondo	TAKING THE CRY OUT OF CRYO: WORKFLOWS AND INSTRUMENTATION TO ENHANCE CRYOGENIC ELECTRON MICROSCOPY Prof. L.M. Joubert
11.00–11:20	CONTRAST OPTIMIZATION AIDED BY MACHINE LEARNING APPLIED TO VIRTUAL 4D-STEM IMAGES D.G. Stroppa	TWO DIMENSIONS INTO THREE – HOW <i>ANYONE</i> CAN USE ARTIFICIAL INTELLIGENCE AND MOLECULAR MECHANICS IN CRYO-EM T. Sewell
11:20–11:40	MEASURING GEOMETRICALLY NECESSARY DISLOCATIONS IN THE SEM USING EBSD: TRUE OR FALSE? R. Knutsen	VOLUME EM: AVAILABLE TO ALL E. Venter
11:40–12:00	INVESTIGATING EFFECTS OF INTER-PASS TIME DURING HOT FINISH ROLLING ON THE TEXTURE EVOLUTION OF AA3104 CBS N.A. Chaole	Closing Remarks and Discussion
12:00–12:20	MORPHOLOGICAL AND PHASE STABILITY OF Cr-SiC COMPOSITES FOR HIGH-TEMPERATURE APPLICATIONS C. Maepa	Closing Remarks
12:20–12:40	Closing Remarks	Closing Remarks and Discussion
12.40-13.40	LUNCH Venue: Modlec Building	

17:45	Buses depart for Gala Dinner
18.30 for 19:00	<p data-bbox="555 414 1232 459" style="text-align: center;">GALA DINNER & AWARDS CEREMONY</p> <p data-bbox="651 465 1136 497" style="text-align: center;">Venue: Summerwood Country Estate</p> <p data-bbox="721 542 1066 573" style="text-align: center;">Dress Code: Smart/Formal</p> <p data-bbox="762 618 1024 685" style="text-align: center;">Sponsored by Angstrom Scientific</p> <div data-bbox="293 495 504 698" style="display: inline-block; text-align: center;"> ÅNGSTROM</div> <div data-bbox="1283 495 1493 698" style="display: inline-block; text-align: center;"> ÅNGSTROM</div>