

Session Program

6–10 Jul 2026



SAIP2026

Poster Session 1

University of the Western Cape

Tuesday 7 July

17:20

Poster Session 1

Session | Location: University of the Western Cape, Great Hall

17:20–18:40

Enhanced Titanium Carbide MXene Structure with CuO Quantum Dots as Electrode for Advanced Supercapacitor Application

Speaker

RANTSOTLHE MPHOTO

17:20–18:40

The chemistry of reverse impurity diffusion and food contamination during cooking in three-legged aluminum pots.

Speaker

Ms Mamly Serero

17:20–18:40

Influence of oil palm mesocarp fibre with plaster of Paris and its environmental impacts.

Speaker

Dr Armstrong Anonaba

17:20–18:40

Silver Doped Zinc Oxide Nanoparticles for Enhanced Performance of P3HT:PCBM Photovoltaic Cells

Speaker

Mpilo Dlamini

17:20–18:40

Concentration-dependent effects of caffeine on perovskite catalysts for electrocatalytic and photoelectrocatalytic hydrogen evolution reaction

Speaker

Dieketseng Glara Tsotetsi

17:20–18:40

Influence of TiO₂ Morphology on Electrocatalytic Hydrogen Evolution: A Comparative Study of Spherical and Mesoporous Structures

Speaker

Japhtalinalah Lehutso

17:20–18:40

Thermoelectric properties of Tungsten diselenide (WSe₂), a density functional theory study

Speaker

Dr Moshibudi Ramoshaba

17:20–18:40

Effect of substrate temperature on the structural, morphological, and optical properties of ZnO thin films deposited using the slot-die method

Speaker

Fokotsa Molefe

17:20–18:40

Thermal Annealing and Swift Heavy Ion Effects on the Structural Evolution of Ag- and He-Implanted SiC**Speaker**

Rifumo Chauke

17:20–18:40

The Effect of Helium Implantation on Selenium Migration and Microstructure Evaluation of Silicon Carbide Before and After Annealing at Temperature higher than 1000 °C.**Speaker**

Mr Sifiso Mthlane

17:20–18:40

Influence of the Alkaline Earth Ions (M = Ca²⁺ and Mg²⁺) on the Luminescence Properties of doped M-BaB₈O₁₃: Gd³⁺ Phosphor Materials.**Speaker**

Mr Sabelo Ndlela

17:20–18:40

Temperature-Dependent Transport and Heat Capacity Behaviour of TiCl₃ Medium**Speaker**

Ms Andile Mazibuko

17:20–18:40

Synthesis of Sustainable Biomass-Derived Porous Biochars as Promising Electrode Materials for Supercapacitor Applications**Speaker**

Salahudeen Adamu Gene

17:20–18:40

LPG Sensing of p-type Spinel NiCo₂O₄ Bimetallic Oxide and Co₃O₄/NiCo₂O₄ or NiO/NiCo₂O₄ heterostructures**Speaker**

Boitumelo Tladi

17:20–18:40

Understanding the Electronic Structure and Topological States of Bi₂Se₃ Material: Effects of SOC, van der Waal Interactions, and Hybrid Functional Corrections**Speaker**

Beauty Masolo

17:20–18:40

First-Principles Investigation of Zn Adatom Adsorption on MO₂ (110) Surfaces**Speaker**

Percy Ngobeni

17:20–18:40

Rational Interface Engineering of 1D Earthworm-like Polypyrrole Anchored on 3D Hierarchical BiOI Marigold Flower-like Hybrid Platform for Advanced Energy Storage Applications**Speaker**

Yugesh Singh Thakur

17:20–18:40

CHARACTERIZATION OF LITHIUM LANTHANUM ZIRCONIUM OXIDE (LLZO) FOR STRUCTURE AND PHASE ANALYSIS IN X-RAY DIFFRACTION FOR LI-ION BATTERIES APPLICATION

Speaker
Kyalo N Kiteme

17:20–18:40

Synergistic improvement of Dy and Ag Co-loaded Co₃O₄/In₂O₃ p-n heterojunction for the detection of m-xylene and p-xylene vapour

Speaker
Lindokuhle Mabizela

17:20–18:40

Schottky Barrier Modulation in Pd Sensitized Co₃O₄/NiTiO₃ Heterojunctions for Trace Level NO_x Gas Sensing

Speaker
Zamaswazi Tshabalala

17:20–18:40

Adsorption properties of GaN monolayer doped with Ru and Rh for CH₂O detection

Speaker
Dr Malesela Walter Makgoba

17:20–18:40

Temporal shaping of supercontinuum pulses for improved axial resolution in optical coherence tomography

Speaker
Eugene Fouche

17:20–18:40

Molecular dynamics study of temperature effects on Au and Pb nano-materials

Speaker
Malili Matshaba

17:20–18:40

Revealing quantum entanglement signatures with OAM states

Speaker
Ms Pashlene Naidoo

17:20–18:40

Sputtering effect of CaF₂ on Si and graphite substrates

Speaker
Dr Jean Jules Mboukam

17:20–18:40

Structural, morphological, and optical properties of Pr³⁺-doped La₂ZnTiO₆ nanophosphors prepared via the sol-gel method

Speaker
Delicacy Ntshalintshali

17:20–18:40

Computational simulation of noble metals (Pd, Ir, and Os) as surface catalysts in metal air batteries

Speaker
bornwise mugwena

17:20–18:40

Effect of Cu, Fe and Mn impurities on the bulk and surface structures of ZnS mineral

Speaker
Thato Manyama

17:20–18:40

Effect of pH on the adsorption behavior of xanthate, dithiocarbamate and s-triazine collectors on palladoarsenide (100) surface: A DFT-D3 investigation**Speaker**

Dr Bradley Nemutudi

17:20–18:40

Performance Evaluation of Radiation-Induced Defects in Nanocrystalline Diamond Using Density Functional Theory**Speaker**

Mr Kelvin Matamela

17:20–18:40

An Integrated Predictive Framework for Metastable Beta-Titanium Alloys in Orthopaedic Applications**Speaker**

Lerato Raganya

17:20–18:40

Atomistic Simulation of Thermodynamic, Phase, and Melting Stability in Pyrite-Type Nanomaterials**Speaker**

Mofuti Mehlahe

17:20–18:40

A computational and experimental study on galena (100) surface and xanthate and dithiocarbamate collectors adsorptions**Speaker**

Cannimhambho Chewa

17:20–18:40

Temperature Dependence Studies of Fe₁-XPtXAl Alloy**Speaker**

Christy Graced

17:20–18:40

ZnGa₂O₄ microrods for optoelectronic applications: Linking structure and optical properties**Speaker**

Thabang Theka

17:20–18:40

X-ray computed tomography analysis of porosity and cracks in laser-powder bed fusion of NiTi using deep-learning**Speaker**

Tebogo Ledwaba

17:20–18:40

Hall Effect Insights into Charge Transport in Printed Silicon Nanoparticle Networks Prepared from High-Energy Milled Silicon**Speaker**

Mvuyisi Mbabane

17:20–18:40

IoT Systems for Air Quality Measurements: Low-Cost Sensor Networks Using LTE/4G and LoRa Communications

Speaker

Mr Tshepang Pule

17:20–18:40

Electrical Characterisation and Quality Assurance of ATLAS TileCal LVPS Bricks Using a Single-Board Test Bench**Speaker**

Lungisani Phakathi

17:20–18:40

ELECTRICAL and STABILITY IN InP-BASED SOLAR CELLS VIA Ag NANOWIRE/PMMA and VO₂**Speaker**

Mr Caleb Hlebel

17:20–18:40

Study of electronic and magnetic properties of double perovskites La₂NiRuO₆**Speaker**

Mr IRENEE BRICE MOUADJE MOUADJE

17:20–18:40

Comprehensive Review of Hydrogen Storage Technologies for Green Energy Systems**Speaker**

Roy Mlambo

17:20–18:40

Development and Optimization of an Automated Gamma-Ray Spectrometry System Radionuclide Identification and Quantification**Speaker**

Vuako Maluleke

17:20–18:40

Detection of Wildfire Smoke Plumes using Machine Learning Systems**Speaker**

Mr Mbongeni Mncube

17:20–18:40

Machine Learning-Based Prediction of Tool Wear and Remaining Useful Life Using Multisensor Data Fusion**Speaker**

SAM MKHWEBANE

17:20–18:40

Analysis of Inter-Fraction Setup Errors and Organ Motion Using Daily kV-CBCT in VMAT for Prostate Cancer**Speaker**

Mr Kgomotso Lefenya

17:20–18:40

Fatigue-induced microstructural evolution of plasma-sprayed hydroxyapatite coatings in simulated body fluid**Speaker**

Tshepo Ntsoane

17:20–18:40

Exploring structural configuration of monolayer tin disulfide

Speaker
Craig Bekeur

17:20–18:40

Influence of Mn and Co Doping on the Recrystallisation Behaviour of Nanospherical LiNiO_2 : An Atomistic Study

Speaker
Mamonamane Mphahlele

17:20–18:40

Determination of Energy Bandgap of ZnS Nanoparticles Using UV-Vis Data and Tauc Plot.

Speaker
Mr Keamogetswe Motiang

17:20–18:40

LPG sensing performance of ceria nanostructured materials prepared by the urea-assisted hydrothermal method

Speaker
Aaron Malape

17:20–18:40

Effect of Fe, Cu, and Co Doping on Zn_2SnO_4 Photoanodes for Improved Dye Sensitized Solar Cells Performance

Speaker
Modjadji Rebecca Letsoalo

17:20–18:40

Exploring newly synthesized metal halide organic-inorganic hybrids for optoelectronic and photovoltaic properties

Speaker
Tondani Mahuluhulu

17:20–18:40

A comparative analysis of SPR signals in BSA-induced non-specific binding

Speaker
sipho Chauke

17:20–18:40

Defect-Engineered Cr_2O_3 -based sensor for Selective detection of LPG

Speaker
Ms RAMOKONE CHRISTINA MALINDISA

17:20–18:40

Super-Diffusion as a Crash Precursor: Insights from Detector Track Reconstruction

Speaker
Vuako Maluleke

17:20–18:40

Structural and Magnetic Properties of Nanostructured $\text{Cu}_x\text{Mn}_{1-x}\text{Fe}_2\text{O}_4$ ($0 \leq x \leq 0.8$) Synthesized via a Glycol-Thermal Route

Speaker
Prince Phathizwe Majozi

17:20–18:40

Effects of growth atmosphere and post-annealing temperature on $\text{Y}_2\text{SiO}_5:\text{Ce}^{3+}$ co-doped Nd^{3+} thin films prepared by pulsed laser deposition

Speaker
Pulane Moleme

17:20–18:40

Development and Validation of Tile Pre-Processor Sub-Modules for the ATLAS Tile Calorimeter Phase-II Upgrade at the HL-LHC

Speaker
Mpho Gololo

17:20–18:40

From Biowaste to Energy: Eggshell Membrane-Derived Activated Carbon for Sustainable Solar Cell Applications

Speaker
Ms Evonne Tshepiso Molekoa Tshepiso

17:20–18:40

Structural, Optical, and Gas Sensing Characteristics of Rare Earth-Doped CuO/ZrO₂ Heterostructures for NO₂ Detection

Speaker
Mr Lekgolo Maebana

17:20–18:40

Turing instability and pattern formation in a confined reaction diffusion field

Speaker
Edward Nkadameng

17:20–18:40

DFT Study of Interface Properties Between RHEAs and Carbon Nanotubes (CNTs)

Speaker
Mudimeli Vusani Mangalani

17:20–18:40

Monitoring air quality in South Africa using smart indoor air quality systems.

Speaker
Donald Ngobeni

17:20–18:40

Optimization of Nitrogen in Transition Metal Oxynitrides for Fuel Cell Applications

Speaker
Nicholas Onkoba

17:20–18:40

Variability of palladium distribution in chromitite and pegmatoid layers at the Eastern limb of the Bushveld Igneous Complex and related value recovery processing challenges.

Speaker
Marcus Nkhumeleni

17:20–18:40

Influence of anatase, rutile, and anatase-rutile crystalline phases of TiO₂ on electrocatalytic hydrogen evolution reaction under acidic electrolyte.

Speaker
Qiniso Nkomo

17:20–18:40

Synergistic properties and sensing performance of In₂O₃-based binary and ternary heterostructures for acetone detection

Speaker
Katlego Morulane

17:20–18:40

Enhanced Gas Sensing Performance of MXene-Based Materials Through Structural and Optical Engineering

Speaker
BOIKETLO THAMAGA

17:20–18:40

Thermodynamic, structural, mechanical and electronic effects of fluorine doping in LiNiO₂: A cluster expansion study

Speaker
Mmeshi Hiine

17:20–18:40

DFT Study of Interface Stability in TiB₂-Reinforced NbMoTaW High-Entropy Alloy

Speaker
Tshifhiwa Ranwaha

17:20–18:40

Structural Pore Network Modelling of Carbonate Rocks from 2D SEM Images

Speaker
Chidiebere Ekwomadu

17:20–18:40

Exploring Sodium-Doped Li₂MnO₃@Li_{0.69}MnO₂ Core-Shell Cathodes for Enhanced Structural Stability

Speaker
Mukhethwa Netshiovhani

17:20–18:40

DFT Investigation of Hydrogen Interaction in Refractory High-Entropy Alloys

Speaker
Motlatso Phooko

17:20–18:40

Enhanced biohydrogen production efficiency in dark fermentation: the role of nitrogen doped graphene oxide with sugarcane bagasse

Speaker
SAMWEL OPIYO

17:20–18:40

Modelling Rotational Dynamics in Fluorescence Correlation Spectroscopy under Polarised Excitation

Speaker
Matthew Marlor

17:20–18:40

First-Principles Investigation of Graphene/W-Doped VO₂ for Thermochromic Smart Windows

Speaker
Lutendo Phuthu

17:20–18:40

Ab initio Investigation of the Structural Stability and Mechanical Properties of Janus monolayer MSC (M=Zr, Hf, Ti) in the 1H Phase

Speakers

Dr Edwin Mapasha, Owen Alfreds

17:20–18:40

Probing the physical and optical properties doped cobalt oxide (Co₃O₄) nanoparticles with Molybdenum (Mo) for gas sensing applications in the agricultural sector**Speakers**

Mahlatse komape, Dr Thomas Malwela

17:20–18:40

Integrated multimodal microscopy with Holographic Optical Tweezers**Speaker**

Le Roi Du Plessis

17:20–18:40

Optimization of bismuth doped strontium borate for application in fibre optics**Speaker**

Caitlin van Wyk

17:20–18:40

Comparative Proton EBS and Alpha-RBS Analysis of SiC co-implanted with Sr and H at Room Temperature, 350 °C, and Annealed at 1000 °C**Speaker**

Mr Khulekani Manqele

17:20–18:40

Controlling randomness: Experimentally simulated scattering with digital holograms**Speaker**

Kelsey Everts

17:20–18:40

Neutron Transmutation Doping (NTD) Process Optimization.**Speaker**

Tshepiso Thompson Rauwane

17:20–18:40

Study of Nuclear Reactions Induced by Weakly Bound Projectiles**Speaker**

Mr Happy Vilakazi

17:20–18:40

Plasmonic effect on the photoluminescence of Eu ions doped CaF₂ nanomaterials**Speaker**

Mubarak Yagoub

17:20–18:40

Atomistic insights into the temperature effects on the structural and dynamic properties of cobaltite (CoAsS): A molecular dynamics study**Speaker**

Segoarihle Ntobeng

17:20–18:40

X-ray–Based Characterization of Fossilized Bone and Wood: Insights from XRF and XRD**Speaker**

Fortune Nndwamato

17:20–18:40

Activation of the p53 pathway in combination with photon irradiation for treatment of high grade brain tumour cells

Speaker
Musa Maluleka

17:20–18:40 **Diffuse reflectance of dip-coated films of barium sulphate in polystyrene**

Speaker
Mr Johannes Hermanus Spies

17:20–18:40

Investigation of X-rays and Gamma ray Shielding Properties of Heavy Metal Oxide Glass Materials

Speaker
Nosihle Msabala

17:20–18:40

Spectroscopy and selective Ionisation of TbF₃ and LaF₃: Towards efficient isolation of Tb-149 and Ac-225 for medical applications.

Speaker
Thakgalo Mangena

17:20–18:40

Structural Properties of Gd₄Fe₂O₉ Intermetallic Compounds

Speaker
Redrisse Djoumessi Fobasso

17:20–18:40

Estimation of potential wind energy in Port Edward using the Weibull parameter method

Speaker
Luleka Menzi

17:20–18:40

Characterisation of Temperature-Sensitive FBG Sensors for Extreme Environments

Speakers
Timothy Brooks, Abdool Sattar Cassim

17:20–18:40

Shaping light with a deformable mirror

Speaker
Nikisha Baboolal

17:20–18:40

Computational Fluid Dynamics and Validation of a Double-Roof Sawtooth Greenhouse

Speaker
Mr Tshepiso Mogajana

17:20–18:40

The study of ZnO nanostructures for gas sensing applications

Speaker
NHLAKANIPHO WISEMAN KHOZA

17:20–18:40

Fabrication of Metal-Supported Zirconium-Based Bifunctional Heterogeneous Catalysts for Potential Application in Biofuel Production

Speaker
Ms Abongile Gingqi

17:20–18:40

Computational Fluid Dynamics Modelling of an Intensified Biomass Pyrolysis Reactor for Sustainable Hydrogen Production

Speaker

Marisana Masha

17:20–18:40

Computational study of violarite (NiFe₂S₄) surface stabilities**Speaker**

Ms Nontobeko Nondumiso Zavala

17:20–18:40

Gas sensing properties of annealed and unannealed CoWO₄ for air quality monitoring**Speaker**

Thokozani Mpanza

17:20–18:40

Structural and Optical Properties of R₂Ti₂O₇ (R = Dy and Sm) Pyrochlore Oxides.**Speaker**

Saheed Omotosho Yissah

17:20–18:40

Enhancement of Luminescence and Thermal Sensitivity of YVO₄:Bi³⁺ Nanophosphors Facilitated by Ag/Pd Noble Metal Decoration**Speaker**

Lesole Ramolise

17:20–18:40

The gas-sensing properties of n-type and p-type metal fluorides on volatile organic compounds (VOCs) for agricultural management applications.**Speaker**

DINEO MOLEBATSI

17:20–18:40

Deep levels in as-grown and electron irradiated undoped n-GaAs grown by MOVPE using TEGa and TBAs**Speaker**

Ms ANDI ISNI PUJIRANA

17:20–18:40

A Novel Ti₃C₂T_x MXene–BiNiOCl Composite for Enhanced Electrochemical Performance in Supercapacitor Applications.**Speaker**

Mr Tsholo Talane

17:20–18:40

Optimisation of Natural Radionuclide (Th, K and U) Measurements through Comparison of Field Gamma Spectrometry and ICP-MS Analysis**Speaker**

Mr Thapelo Mafabatho

17:20–18:40

Least-Squares Optimisation and GIS-Based Spatial Mapping of UAV-Derived Gamma-Ray Spectrometric Data for Naturally Occurring Radionuclides (⁴⁰K, ²³²Th, ²³⁸U) at Sparkle Bay**Speaker**

Modicai Samukelo Mndebele

17:20–18:40

Analysis of Deep-Level Defects within a Commercial Silicon Bipolar Junction Transistor After Electron Irradiation

Speaker

Mr Kaveer Nagessar

17:20–18:40

Computational and experimental investigation of pH effect on xanthate and dithiocarbamate collectors on pyrite minerals**Speaker**

Carol Tlhabolola

17:20–18:40

Ni-Doped $\text{Li}_{1+x}\text{M}_2\text{O}_4$ (M=Mn, Co) Nanoporous Materials for Lithium-ion Battery Cathodes**Speaker**

Beauty Shibiri

17:20–18:40

Symmetry Site Engineering in $\text{SrGd}_2\text{O}_4\text{:Dy}^{3+}$ Phosphors for Tunable and High-Quality White Light Emission**Speaker**

Dr sandeep eswaran panchu

17:20–18:40

Jet Response and Resolution Studies of the ATLAS TileCal Upgrade Geometry for HL-LHC Conditions**Speaker**

Edward Nkadameng

17:20–18:40

Characterizing Radiation Backgrounds for the PAUL Lab Site in the Huguenot Tunnel**Speaker**

Ntuthuzelo Nqeketo

17:20–18:40

Exploring Birefringence Effects in Polarization-Based Quantitative Phase Imaging**Speaker**

Calvin Groenewald

17:20–18:40

General Applications of High-Energy Physics Methods to Financial Systems and Distributed Sensor Networks**Speaker**

Mr Tshepang Pule

18:40