Session Program

16–19 Dec 2024

12th International Conference of the African Materials Research Society (AMRS)

ENERGY

Monday 16 December

11:10

ENERGY: PARALLEL

Session | **Convener:** Gian-Marco Rignanese

11:10–11:30

Making a Materials Difference to Green Energy Solutions via Computer-Accelerated Design and Optimization

Speaker
Nelson Yaw Dzade

11:30–11:50

Theory and simulations of oxide photocatalysts

Speaker
Nicola Seriani

11:50–12:10

Composite nano-systems for energy harvesting

Speaker
Prof. Alberto Vomiero

12:10–12:25

X-ray Absorption, Diffraction, and Mossbauer Spectroscopy of Fuel Cell and Water Electrolysis Catalysts

Speaker
Matthew Sweers

12:25–12:40

Unveiling the Electrochemical performance of graphene derived from rice husk Doped Graphite electrode for supercapacitor

Speaker
Prof. VICTOR SUNDAY AIGBODION

12:40–12:55

Assessing the Performance and Stability of Nitrocyclocondensation Reactions on Silicon Electrodes for CO2 Reduction

Speaker
Mr Andre Orr

12:55

14:00

ENERGY: PARALLEL

Session | **Convener:** Gian-Marco Rignanese

14:00–14:20

Revolutionizing COFs: From Molecular Engineering to Scalable Photoelectrochemical Water Splitting

Speaker
Xinying Liu

14:20–14:35

An investigation into transition metals single atom catalyst for Hydrogen production via Ammonia decomposition - A DFT study

Speaker
Ms Nomcebo P. Motsa

14:35–14:50

Enhanced photoelectrochromic performance of WO3 through Pt/C doping for self-powered smart window application

Speaker
Ms Jacinta Okwako

14:50–15:05 **Electrolyte Dependent Proton Insertion Coupled Electron Transfer in Tungsten Oxides**

Speaker
Saeed Saeed

15:05–15:20

Promoting Cu-Catalyzed CO2 electroreduction to multi-carbon products by tuning the activity of water

Speaker
Hao Nick Zhang

15:20–15:35 **Investigating the Ge1-xMnxTe Phase Space and the Impact on Thermoelectric Transport**

Speaker
grace rome

15:35–15:55 **Plasmonic Heterogeneous Photocatalysts Free of Noble Metals**

Speaker
Jerome Claverie

15:55

16:20

ENERGY: PARALLEL

Session

16:20–16:35 **Solar energy and hydrogen for sustainable development**

Speaker
Kingsley Obodo

16:35–16:50

Electrochemical modeling of Solvated Mixed-Transition-Metal Oxides and Oxyhydroxides for Hydrogen Production

Speaker
Cierra Chandler

16:50–17:05

Enhanced Optoelectronic Properties of Low-Dimensional Antimony-Based Perovskites through Interfacial Defect Passivation with a Sulfonium-Based Material.

Speaker
Mr Brian Owuor

17:05–17:20 **MXene Current Collectors for Recyclable Batteries with Improved Performance**

Speaker
Sokhna Dieng

17:20

Tuesday 17 December

11:10

ENERGY: PARALLEL

Session

11:10–11:30 **Towards Sustainable Perovskite Photovoltaics: Drivers, Challenges, and Opportunities**

Speaker
Matthew Davies

11:30–11:45
Phenanthrenequinone, a Non-Volatile Solid Additive, Enhances Morphological Stability in Non-Fullerene Acceptor-Based Organic Solar Cells

Speaker
Soukyoon Kim

11:45–12:00 **On The Thermodynamics of Light**

Speaker
Tomi Baikie

12:00–12:15
FIRST-PRINCIPLES APPROACH TO FINITE ELEMENT SIMULATION OF FLEXIBLE PHOTOVOLTAICS

Speaker
Dr Joseph Asare

12:15–12:30 **Application-Directed MXene Functionalization for Green Electrochemical Applications**

Speaker
Sixbert Muhoza

12:30–12:45
Low-temperature-processed SnO2 quantum dots as charge transport layer for efficient perovskite solar cells

Speaker
Dr Abraha Gidey

12:45–13:00 **Quantum dots as a mechanism to suppress charge recombination in Polymer Solar cell**

Speaker
Prof. Genene Mola

13:00

14:00

ENERGY: PARALLEL

Session

14:00–14:20
Resolving environment and climatic issues through Nanoscience Research and development: Focusing on Perovskite Solar Cells

Speaker
Prof. Fabian Ezema

14:20–14:40 **Perovskite solar cells and supercapacitors: materials challenges and advances**

Speaker
Carlos Graeff

14:40–14:55
ELECTRON TRANSPORT LAYER OPTIMIZATION OF [(([CH]_3 [NH]_3)]_2 [CL]_2 [CL]_2-BASED PEROVSKITE SOLAR CELLS VIA DEVICE SIMULATION

Speaker
Sebastian Waita

14:55–15:10 **Bandgap Engineering of SrZrS3 for Photovoltaic Applications**

Speaker
Henry Eya

15:10–15:25 **On the turnkey prediction of infrared, Raman and phonons from first-principles**

Speaker
Lorenzo Bastonero

15:25–15:40
First-Principles Investigation of Structural, Mechanical, Electronic, and Thermal Properties of Half-Heusler Alloy ZrPtSn

Speaker
Prof. Julius Mwabora

15:40–15:55 **CuO /TiO2 nano-composite photo-anode for dye sensitized solar cell**

Speaker
Hdeel Alamin

15:55

Wednesday 18 December

09:50

ENERGY: PARALLEL

Session

09:50–10:10 **Electrolyte design strategies for next generation batteries**

Speaker
Chibueze Amanchukwu

10:10–10:30

Modelling interfaces and grain boundaries in fuel cells and batteries for improving their performances

Speaker
Prof. Kulbir Ghuman

10:30–10:50

Advancements in Solid-State Electrolyte Synthesis for Next-Generation Lithium Metal Batteries: Lessons Learned and Emerging Opportunities

Speaker
Zachary Hood

10:50–11:05

Understanding Degradation Mechanisms in Automotive LiFePO4 Batteries to Inform Circular Economies

Speaker
Katrina Ramirez-Meyers

11:05

11:30

ENERGY: PARALLEL

Session

11:30–11:50 **Additive Manufacturing for Flexible Energy Storage Devices**

Speaker
Hyacinthe Randriamahazaka

11:50–12:05 **High-performance magnesium-liquid sulfur battery**

Speaker
Prof. Eric Detsi

12:05–12:20

Fundamental study on the electronic properties of LiCoO2 battery cathode in ion-gated transistor configuration

Speaker
Melchiade Manirakiza

12:20–12:35 **Energy Storage in Ti3C2Tx MXene in a Wide Temperature Range**

Speaker
Ruocun Wang

12:35–12:50 **Novel solid-state Mg-ion battery electrolyte from molten salt/polymer mixtures**

Speaker
Roxana Family

12:50

14:00

ENERGY: PARALLEL

Session

14:00–14:20 **Novel Materials Chemistry for Applications in Energy Storage and Conversion**

Speaker
Nicola Pinna

14:20–14:40 **Tracking Ion Intercalation into Layered Ti3C2 MXene Films**

Speaker
Prof. Nadine Kabengi

14:40–15:00 **Thermodynamic and Kinetic Modeling of Electrified Solid–Liquid Interfaces**

Speaker
Ismaila Dabo

15:00–15:15 **Characterization of the Solid Electrolyte Interphase with Cryogenic Ion and Electron Microscopy**

Speaker
Eric Stach

15:15