

# 1st Annual Engineering Conference

Sustainable Innovative Technologies for Development

3rd November 2023  
ISSER Conference Centre, Legon

## PROGRAMME SCHEDULE



Organised by:



**SCHOOL OF  
ENGINEERING SCIENCES**

"Engineering Excellence: Celebrating 20 Years of Innovation, Creativity and Impact"



# Scientific Programme

## Program-at-a-glance

	Main Auditorium	Room 1	Room 2	Room 3
09:00				
	09:00 - 11:00 Opening Ceremony & Keynote			
11:00	11:00 - 13:00 Oral G1 Virtual Presentations	11:00 - 13:00 Oral G2 Sustainable Solutions	11:00 - 13:00 Oral G3 Sustainable Solutions	11:00 - 13:00 Oral G4 Basic Exploratory Research
13:00	POSTER PRESENTATIONS (SES Building)			
13:30	LUNCH BREAK (ISSER Premises)			
14:30	14:30-16:30 Oral G5 Virtual Presentations	14:30-16:30 Oral G6 Sustainable Solutions	14:30-16:30 Oral G7 Sustainable Solutions	14:30-16:30 Oral G8 Basic Exploratory Research
16:30	16:30 - 16:45 Awards Ceremony			
	16:45 - 16:50 Closing Remarks			
17:00	Closing			

## Detailed Schedule

Opening Ceremony		
<b>09:00 - 11:00</b>		<b>Auditorium</b>
08:00 – 09:00	Arrival and Registration with Ghana Dance Ensemble	
09:00 – 09:05	Introductory Remarks <i>Prof. Elsie Effah Kaufmann</i>	<i>Dean, School of Engineering Sciences</i>
09:05 – 09:10	Introduction of Chairperson and Other Dignitaries <i>Prof. Emmanuel Nyankson</i>	<i>Conference Chair</i>
09:10 – 09:15	Chairperson's Remarks	
09:15 – 09:25	Welcome Address/Conference Opening <i>Prof. Boateng Onwona-Agyeman</i>	<i>Provost, CBAS</i>
09:25 – 09:35	Brief Performance by Ghana Dance Ensemble	
09:35 – 10:05	Keynote <i>Prof Robin Clark</i>	<i>Dean of WMG, University of Warwick</i>
10:05 – 10:10	Closing Remarks <i>Pro VC, RID</i>	
10:15 – 10:55	Group Photograph and Refreshment	

Session 1		
<b>11:00 - 13:00</b>	<b>Oral G1: Virtual Presentations</b> Chair: Prof. Emmanuel Nyankson	<b>Auditorium</b>
G1-01	Antimicrobial Aluminum Surfaces for Curbing Healthcare Associated Infections	Henry Agbe
G1-02	Environmental Conditions Monitoring System for Greenhouses in Rural Africa Using LoRa Technology	Jonathan K. Baraka
G1-03	Folic Acid Conjugated Bacterial Cellulose Hydrogels Loaded with Cyclodextrins for the Delivery of Anticancer Drugs	Joseph Asamoah-Asare
G1-04	Recycling and Processing of Eggshells and Bovine Bone into Functional Biomaterials: from Processing to Structure, Cell/Surface Interactions and Bioactivity	S. A. Osafo
G1-05	Design of a Sanitizing System for Enhanced Hygiene and Safety	Anyaele Gabriel
<b>11:00 - 13:00</b>	<b>Oral G2: Sustainable Solutions</b> Chair: Prof. Elvis Tiburu	<b>Room 1</b>
G2-01	Gate Automation Systems Using Access Control Mechanisms	James T.M. Nagai
G2-02	Automated Detection and Labelling of Lanes in Gel Electrophoresis Images	Adwoa Adubea Onomah
G2-03	Chicken Feather Protein Dispersant for Effective Crude Oil Dispersion in the Marine Environment	Yaw Kwakye Adofo
G2-04	Local Fibrous Materials (Sugar Cane & Plantain Stem) for Crude Oil Spillage Remediation in Ghana	Selassie Gbogbo
G2-05	Development of a Digital Hardware Interface System for Analog Energy Meters for Smart Metering and Billing	Edward S. Ashilekpey
G2-06	Design of an Interpretable Deep Learning Model for Prostate Cancer Diagnosis	Emmanuel Akwasi Mensah

<b>11:00 - 13:00</b>	<b>Oral G3: Sustainable Solutions</b> Chair: Dr Isaac Aboagye	<b>Room 2</b>
G3-01	Identification of potential inhibitors against lactate dehydrogenase of <i>Cryptosporidium parvum</i> through a combined in silico approach	Desmond O. Amoah
G3-02	Valorisation of Agricultural Residues for Sustainable Production of Biochar – An Approach for Carbon Sequestration and Environmental Remediation	Collins S. Hevi
G3-03	Using Machine Learning to make Social Media Safe for Kids	Frank Duah
G3-04	Tutors' Use of Cognitive Activation to Support Effective Teaching of Mathematics in the Colleges of Education	Kofi Ashiboe-Mensah
G3-05	Health Kiosk: An IOT Based Community Health Center	Francis Aweenagua
G3-06	Comparison of Actual and Predicted Yield of Lettuce Irrigated with Corn Cob Biochar Filtered Wastewater	Samuel Amoah
<b>11:00 - 13:00</b>	<b>Oral G3: Basic Exploratory Research</b> Chair: Dr Vitus Apalangya	<b>Room 3</b>
G4-01	Lecture Hall and Office Monitoring System Using Access Control	Saeed Abdul-Kadir Napari
G4-02	Investigating the Efficacy of Zeolite-Chitosan Composite and Synthetic Zeolite as Potential Nanocarriers of Chemotherapeutic Drugs to Breast Cancer Cells	Anjali Rathod
G4-03	Natural Product-Based Inhibition of Phospholipase A2 in the Venom of West African Carpet Viper <i>Echis Ocellatus</i>	Bismark K. Sam
G4-04	Design of a Forward Converter for a Residual Number System Based on the Moduli Set	K.O. Boateng

<b>Session 2</b>		
<b>14:30 - 16:30</b>	<b>Oral G5: Virtual Presentations</b> Chair: Prof. Emmanuel Nyankson	<b>Auditorium</b>
G5-01	Investigating the Potential of Chemical and Green Approaches for the Production of Kraft Papers from ( <i>Musa Paradisiaca</i> ) Plantain Peels	Judith Asmah
G5-02	Designing an Automated Pain Relief System	Chrysol Owusua Amoah-Bamfo
G5-03	Designing a Home Management System Using Sensors, Fire Alarms and Monitoring Devices	Kelvin Botchway
G5-04	Identification of Potential Inhibitors of N-Acetylglucosamine-1-Phosphate Transferase in <i>Mycobacterium Tuberculosis</i> Using Molecular Docking Studies	Daniel Adzraku
<b>14:30 - 16:30</b>	<b>Oral G6: Sustainable Solutions</b> Chair: Prof. Elvis Tiburu	<b>Room 1</b>
G6-01	Detection and Monitoring of Energy Theft Using Customer Consumption Patterns and Machine Learning for Electricity Utilities	Ato K. A. Toffah
G6-02	Building Energy-Efficient Wireless Sensors to Monitor Crop Growth and Conserve Energy Using K-Means Algorithm	Sumaila A. Samed
G6-03	Improvement of Sealion Bio-Inspired Optimization Algorithm	Elvis Twumasi
G6-04	Design of a Remote Vital Signs Monitor for Clinical Application	Patrick Amekor
G6-05	Intrusion Detection in Smart Energy Meters Using Machine Learning Techniques	Kenneth Broni
G6-06	Investigating the Hydraulic Retention Time and Cleaning Mechanism for Coconut Biochar Filtration System	Acheampong Sarfo Prince

<b>14:30 - 16:30</b>	<b>Oral G7: Sustainable Solutions</b> Chair: Dr Isaac Aboagye	<b>Room 2</b>
G7-01	Evaluation of Pressure Compensating Drip Emitters Fitted in a Polyvinyl Chloride Pipe	Stephen Ardey Mensah
G7-02	Biochar as a Soil Amendment Tool: Effects on Soil Properties and Yield of Cabbage ( <i>Brassica oleracea</i> L.)	Jochebed Kaki Torgbenu
G7-03	Effects of Organic and Inorganic Fertilizers on Soil Quality and Cabbage ( <i>Brassica oleracea</i> L.) Productivity	Kelvin Wilson Nana Kofi
G7-04	Off Campus Accommodation System for University of Ghana	Foster Anopansuo
G7-05	Design and Evaluation of Diagonal Deep Circulatory Hydroponic System	Richard Adofo Boateng
G7-06	Sleep Apnoea Detection Using Machine Learning in Low-Resource Compute Devices and Peripheral Oxygen Saturation Biosensors	Toufiq Musah
<b>14:30 - 16:30</b>	<b>Oral G8: Basic Exploratory Research</b> Chair: Dr Vitus Apalangya	<b>Room 3</b>
G8-01	Development of Smart Per Capita Energy Meter	Korbla J. Kofi Junior
G8-02	Determining Baseline Thoracic Kyphosis Angle Among Ghanaian Adults Using Radiograph Technique for Clinical Application	Baba Jantu Salifu
G8-03	Development of a Handheld Device for Diagnosis of <i>Candida Albicans</i>	Belinda Grace Aba A
G8-04	Developing a Robust Web-Based Breast Tumour Classifier Using Machine Learning	Samuel Danquah Ankapong
G8-05	Investigating the Effect of Zeolite-Loaded Herbal Mixture on Prostate Cancer Proliferation	Caleb Senyo Ansah

Poster Session		
<b>13:00 - 13:30</b>	<b>School of Engineering Sciences Quadrangle</b>	
P-01	Synthesis of Superhydrophobic Surfaces Using TiO <sub>2</sub> , Halloysite Nanotubes and Low Surface Energy Molecules	
P-02	Synthesis and Characterization of TiO <sub>2</sub> – Plasmonic Thin Films and their Photocatalytic Properties	
P-03	Halloysite Nanotube as a Vehicle for Chemical Dispersant Application	
P-04	Investigating the Effects of Zeolite and Halloysite Nanoclay on Phosphate Bonded Investment Material	
P-05	Utilization of Banana Stem-Derived Activated Carbon for Atrazine Mitigation	
P-06	Electrochemical Performance of Ripe Plantain Peels Activated Carbon for Supercapacitor Electrode Application	
P-07	Design and Fabrication of a Tow Tank at Ashesi University for Hydrodynamic Experiments	
P-08	Developing a Predictive Model for Spatiotemporal Gait Parameters of Healthy Young Ghanaian Adults	

P-09	In Silico Identification of Potential Inhibitors Against High-Risk HPV16 e6 Oncoprotein in Cervical Carcinogenesis
P-10	Design of a Multi-Layered Antibacterial Dressing for Effective Unidirectional Exudate Absorption
P-11	Preparation of Uniform Size and Shape Pt <sub>3</sub> Ni@TiO <sub>2</sub> Core-Shell Electrocatalyst NPs for Stable PEM-Fuel Cell for Sustainable Renewable Energy
P-12	Design and Implementation of LoRaWAN-based Monitoring System for Smart City
P-13	Device for Detecting and Tracking Labour Conditions for Pre-Term Delivery Using Machine Learning
P-14	Design of UV-C Disinfection Robots for Hospitals in Ghana
P-15	Prediction of Agonists for the GLP-1R Using Machine Learning
P-16	Comparative Studies of the Electronic and Optical Properties of Surface Fluorinated Perovskite Layer for Enhanced Solar Cell Performance Using Density Functional Theory (DFT) Approach
P-17	A Pilot Testing of a Biochar Filter for Improving Surface Water Quality for Irrigation
P-18	Utilization of Banana Stem-Derived Activated Carbon for Atrazine Mitigation
P-19	Effects of Dough Fermentation on the Microstructure and Rheological Properties of Ga Kenkey, A Fermented Maize Dumpling
P-20	Optimizing a Nutritious, Low-Carbon Diet for Adult Males and Females Using Locally Available Food Ingredients in Ghana
P-21	Spray Drying of Coconut and Tiger Nut Milk Powder: A Comparative Study of Response Surface Methodology (RSM) and Machine Learning Models
P-22	Pineapple Leaf Fiber Sheets Coated with Carbonated-Hydroxyapatite Particles as a Potential Oxygen Remediation Material
P-23	Development of Electron Density Phantom for Computed Tomography Image Quality Control Procedures
P-24	Optimisation and Quality Characteristics of Canned Beans in Oil
P-25	Home Energy Management, Monitoring, and Control System
P-26	Metallurgical Study and Analysis of Ancient Akan Brass Cast Artefacts
P-27	In Search of Appropriate Processing and Packaging Protocols for Ghanaian Street Foods: The Case of Molded Corn-Peanut Wrap "Saabo"
P-28	Developing a Frugal Design for Contactless Product Dispensers
P-29	Thermal Effects on the Electrical Conductivity of Polyaniline Polymer
P-30	Optimization of Process Variables to Produce Whole Cashew Kernels Using Response Surface Methodology

# sponsors



Reroy Cables Limited



UG-CARNEGIE NEXT GENERATION OF ACADEMICS IN AFRICA



## contributors



**ITCONSORTIUM**  
solutions that work



Titan Biomedical Limited Prof. Elsie Effah Kaufmann Mr Frederick Atta Kumah