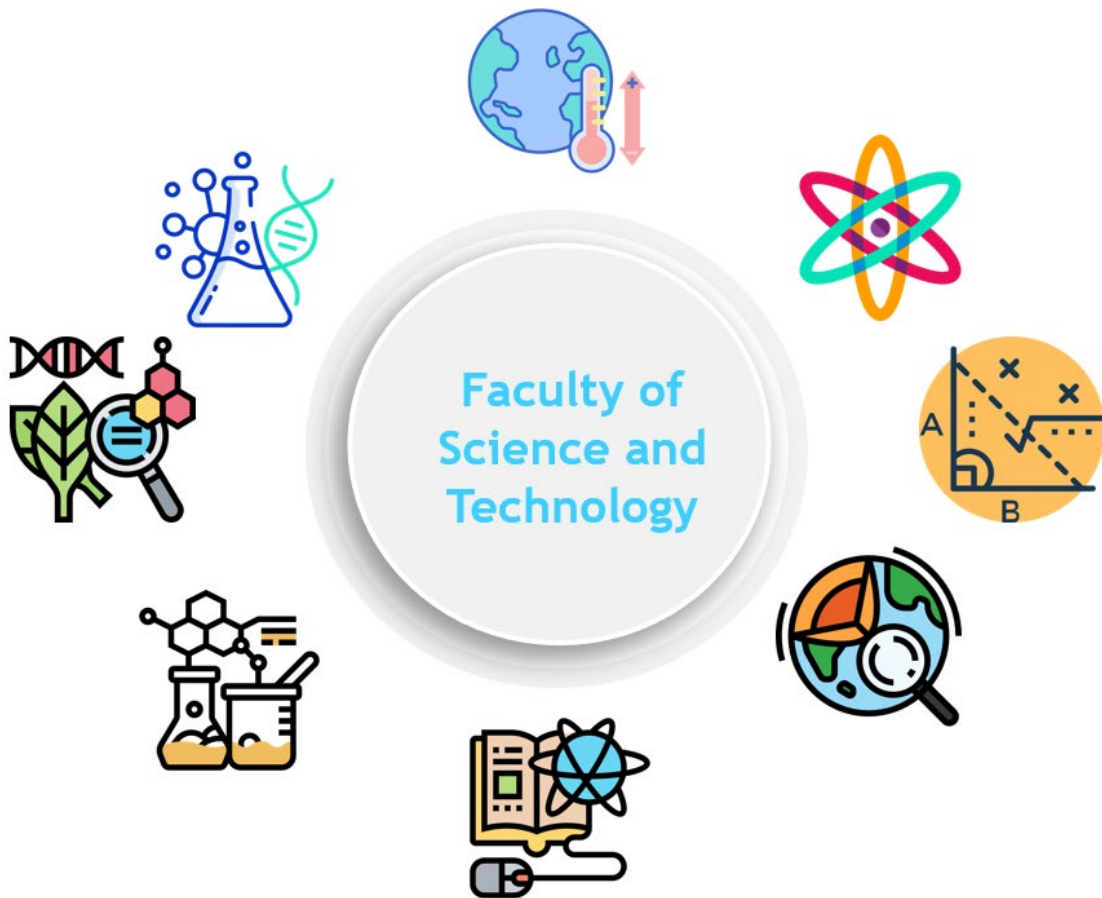


Programme

5th Annual Conference of the Faculty of Science and Technology,
University of Nairobi, Kenya

26 – 28th October 2022

Emerging Research and Technology for Sustainable Development in Society



Faculty of Science and Technology, University of Nairobi, Nairobi, Kenya

<https://sciencetechnology.uonbi.ac.ke/>

Programme

Day 1: Wednesday 26th October 2022

Opening Ceremony

Chair: Prof. Daniel Olago

Time	Speaker
09:00 – 09:45	Dr. Solomon Derese, Faculty of Science and Technology RSW 2022 Chair Prof. Francis Mulaa, Associate Dean, Faculty of Science and Technology Prof. Leonidah Kerubo, Dean, Faculty of Science and Technology Prof. Justus M. Munyoki, Director of Research, University of Nairobi Prof. Margaret J. Hutchinson, Associate Vice-Chancellor (RIE), University of Nairobi Prof. Stephen Kiama, Vice Chancellor, University of Nairobi Prof. Ivivi J. Mwaniki, Vote of thanks Dr. Joseph N. Mutemi, FST RSW Co-Chair –Gives Programme Overview

Session 1

Session chair: Prof. John Onyari

Time	Speaker/Title of presentation
09:45 – 10:15	Keynote Address I Francis Mutua Water for Sustainable Development in Changing Environments
10:15 – 10:45	Keynote Address II Abiy Yenesew , T. Deyou, I. Kiganda, M. Heydenreich, A. Koch, C.M. Bosire, J. Kabaru, A. Ndakala, S. Derese, J.O. Midiwo, M. Erdélyi Rotenoids from <i>Millettia</i> Species – Structure, Stereochemistry and Biological Activity
10:30 – 11:00	Plenary Lecture 1 Richard Oriko Owor, Kibrom Gebreheiwot Bedane, Solomon Derese , Sebastian Zühlke, Albert Ndakala, Michael Spiteller Anti-inflammatory flavonoids from <i>Tephrosia</i> species
11:00 - 11:20	Invited Lecture 1 Njogu M. Kimani In Silico Ligand and Structure Based Strategies in Anti-inflammatory Drug Discovery

- 11:20 – 11:40 **Short Lecture 1**
Dominic O. Ochwang'i, Charles N. Kimwele, Jemimah A. Oduma, Catherine Kaingu Peter K. Gathumbi , Thomas Efferth, Stephen G. Kiama
[Enhanced Universal Health Care Through Integration of Herbal Medicine in Kenya](#)
- 11:40 - 12:00 **Invited Lecture 2**
Daniel Umereweneza, Théoneste Muhizi, Théoneste Kamizikunze
[Mycotoxins and food preservation using essential oils extracted from plants grown in Rwanda](#)
- 12:00 – 12:20 **Short Lecture 2**
Daniel Njau, Accadius Lunayo and Johansen Odour
[A Substitute Presumptive Test for Screening of Semen using Sodium-p-Nitrophenyl Phosphate \(NaPNPP\)](#)
- 12:20 – 12:40 **Student Presentation 1**
Roselyne Aleyo, John M. Wagacha, Nelson O. Amugune, Patrick Wachira, Charles N. Waturu
[Antimicrobial activity of *Serratia marcescens* endosymbionts of rhabditis nematodes against selected bacterial pathogens](#)
- 12:40 – 13:10 Q and A

Session 2

Session chair: Dr. Geoffrey Bosire

- 14:00 - 14:30 **Keynote Address II**
John Mack, Balaji Babu, Rodah Soy, Nthabeleng Molupe, Somila Dingiswayo, Tebello Nyokong
[Group 13-15 Coordinated Porphyrinoids as Photosensitizers for Photodynamic Anticancer and Antimicrobial Chemotherapy](#)
- 14:30 – 14:50 **Invited Lecture 3**
Michael Rogo Opatá and Andreas Dreuw
[Embelin's versatile photochemistry makes it a potent photosensitizer for photodynamic therapy](#)
- 14:50 – 15:10 **Invited Lecture 4**
Maureen Kithekaa, Jibo Zhangb, Yan Yaob, Puja Goyala
[Towards the applicability of density functional tight binding to charge transport in quinones in solution and in the solid state](#)
- 15:10 – 15:30 **Invited Lecture 5**
Chetana Deoghare
[Copolymers with Pendant “N-arylimide” Groups via Atom Transfer Radical Polymerization: Synthesis, Characterization, and Kinetic Study](#)
- 15:30 – 16:00 Q and A

Session 3

Session Chair: Prof. Duke Orata

- 16:00 - 16:15 **Student Presentation 2**
Njoroge S.W., Michira I.N., Abong'o D.A., Guto P.M.
Determination of potential BPA exposure to polycarbonate plastic users using diazotization coupling and potentiometric techniques
- 16:15 – 16:30 **Student Presentation 3**
Wallace Karanja Kinyanjui, John O. Onyatta, Peterson M. Guto and Immaculate N. Michira
Development of a Differential Normal Pulse Voltammetric Method with a Plain Glassy Carbon Electrode for Determination of Phosphate in Water
- 16:30 – 16:50 **Short lecture 3**
Kiplangat Rop, Damaris Mbui, George N. Karuku, Immaculate Michira, Njagi Njomo
Characterization of Water Hyacinth Cellulose-G-Poly(Ammonium Acrylate-Co-Acrylic Acid)/Nano-Hydroxyapatite Polymer Hydrogel Composite for Potential Agricultural Application
- 16:50 – 17:05 **Student Presentation 4**
E. O. Apunda; B. E. Ndunda; F. M. Mwazighe; R. Kimilu, P. Ochola
Evaluation of Fuel Potential of Bagasse and Bagasse Pellets from Western Kenya for Thermochemical Processing into Clean Sustainable Transport Fuel
- 17:05 – 17:15 **Student Presentation 5**
Edith A. Lumumba, Faridah H. Were, John O. Onyatta Anne M. Riederer, Sarah Benki-Nugent, Catherine J. Karr
Blood Lead Levels of Mother-Child Pairs Residing in Informal Settlements in Nairobi County, Kenya
- 17:15 – 17:45 Q and A

Day 2: Thursday 27th October 2022

Session 4: Prof. Daniel Olgao

- 09:00 – 09:30 **Plenary Lecture 2**
Patricia W. Gitari
[The Role of Academia and Research in CBRN Risk Mitigation](#)
- 09:30 – 10:00 **Plenary Lecture 3**
J. N. Mutemi
[Africa in climate change crisis and the pathway to mitigation and adaptation](#)
- 10:00 – 10:20 **Plenary Lecture 4**
Vincent O. Madadi, Charles Mirikau, Godfrey Wafula and Shem O. Wandiga
[Delineating Anthropogenic Chemical Composition in Atmospheric Deposition in Africa, Potential Threats, and Effects of Human Activities](#)
- 10:20 – 10:40 **Short Lecture 4**
Josphat K. Mulwa and Edwin N. Dindi
[The Comprehensive Nuclear Test-Ban Treaty \(CTBT\): Country Benefits and Opportunities for Staff, Students and The General Public](#)
- 10:40 – 10:55 **Student Presentation 6**
Mohamed Hussein Omar, Njagi Njomo, Amir O. Yusuf, Immaculate Michira
[Clay-Biochar Nanocomposite Material for Removal of Cadmium from Water](#)
- 10:55 – 11:20 Q and A

Session 5

Prof. Francis Nyongesa

- 11:20 – 11:35 **Student Presentation 7**
Mutia L. and G. O. Okeng'o
[Implementation of quantum key distribution for highly secure quantum information processing](#)
- 11:35 – 11:50 **Student Presentation 8**
Shirley Aoko and Geoffrey O. Okeng'o
[On bosonic quantum error correction in quantum computing](#)
- 11:50 – 12:05 **Student Presentation 9**
Karoki Anthony Mugambi and Geoffrey Okeng'o
[Design and implementation of modern quantum repeaters for future quantum communication technology and teleportation](#)
- 12:05 – 12:20 **Student Presentation 10**
J.J Okonda, H. K. Angeyo, A. Dehayem-Kamadjeu and A. E. Rogena
[Diagnostic Analysis and Modeling of Trace Biometals as cancer biomarkers in Urinary Tract Cancers by Machine Learning Based X-Ray Fluorescence and Scatter Spectrometry](#)

- 12:20 – 12:35 **Student Presentation 11**
Dorothy Museo Mwanzia, Geoffrey. O. Okeng’o, Soumen Mondal, Sneh Lata and John B. Awuor
[Understanding the Atmospheric Properties of Young Low-Mass Stars and Brown Dwarfs in Galactic Star-Forming Regions](#)
- 12:35 – 12:50 **Student Presentation 12**
Brian O. Owuor, Francis W. Nyongesa, Bernard O. Aduda, Alex A. Ogacho, Gerrit Boschloo and Fuxiang Ji
[Dopant-Free Polymeric Hole Transport Materials for Improved Performance of All-Inorganic Perovskite Inspired Solar Cells](#)
- 12:50 – 13:20 Q and A

Session 6

Session chair: Dr. Andrew Kahonge

- 14:00 - 14:20 **Invited Lecture 6**
Elizabeth M. Muli, Elisha T.O Opiyo, Robert O. Oboko
[Juakali Artisans’ Perception of the Usefulness of Agent-Based Personalized Learning System Features in Promoting Self-Directed Learning](#)
- 14:20 – 14:35 **Student Presentation 13**
Sharon M. Munyao and Andrew M. Kahonge
[A Blockchain-Based Drug Traceability Solution: A Case of Drug Counterfeiting in the Pharmaceutical Industry](#)
- 14:35 – 14:45 Q and A

Session 7

Session Chair: Dr. Catherine Lukhoba

- 14:45 – 15:00 **Student Presentation 14**
Derrick Joanes Omollo, Virginia Wang’ondur, Michael N. Githaiga, Daniel Gorman and James Kairo
[The Contribution of Subtidal Seagrass Meadows to the Total Carbon Stocks of Gazi Bay, Kenya](#)
- 15:00 – 15:15 **Student Presentation 15**
Washington Odhiambo Paul, Maina J. Wagacha, James W. Muthomi, Moses Nyongesa
[Population and Diversity of Aphids in Farmer Preferred Shangi Potato Variety in Two Agro-Ecological Zones in Nyeri County](#)
- 15:15 – 15:30 **Student Presentation 16**
Njoroge Peninah Waithira, Florence A. Oyieke, Wolfgang Richard Mukabana, Monicah W. Maichomo
[Assessing the Oviposition Success of *Rhipicephalus appendiculatus* Ticks Fed on Cattle Immunized with *T. Parva Marikebuni* Vaccine and the Viability of Eggs Oviposited](#)

- 15:30 – 15:45 **Student Presentation 17**
Zipporah Gitau, Erastus Mulinge, Eberhard Zeyhle, Jackson Mpario, Tabitha Irungu, Joyce Nyambura, Japhet Magambo, Malika Kachani, David O. Odongo
[Prevalence and Associated Risk Factors of Intestinal Parasitic Infections in Oloisukut Conservancy Community, Narok County, Kenya](#)
- 15:45 – 16:00 **Student Presentation 18**
Patrick Kuria Ndungu, John M. Wagacha, James W. Muthomi and Paul Waithaka
[Population of *Ralstonia Solanacearum* in Farmer Preferred Shangi Potato Variety Under Field Conditions in Two Agro-Ecological Zones in Nyeri County, Kenya](#)
- 16:00 – 16:15 **Student Presentation 19**
Victor O.Omondi, Geoffrey. O. Bosire, John M. Onyari, and Merid N. Getahun
[The Applicability of HS-SPME-GC/MS Technique in Metabolomic Research](#)
- 16:15 – 16:30 **Student Presentation 20**
Solomon I. Chogo, John M. Onyari, Geoffrey O. Bosire, H. Michael G. Lattorff
[Composition Influenced *in vitro* Antibacterial Activity of Honey's on Bee Associated and Non-Bee Associated \(Environmental\) Bacteria](#)
- 16:30 – 16:45 **Student Presentation 21**
Dibli B. Otieno; Geoffrey O. Bosire; John M. Onyari; Julius M. Mwabora
[Comparative analysis of 3D-printed polylactic acid and acrylonitrile butadiene styrene: Experimental and Materials-Studio-based theoretical studies](#)
- 16:45 – 17:00 **Student Presentation 22**
Mwanthi A M., Mutemi J N, Dyer E, James R, Opijah F J, Webb T, Mutua F, Washington R, Senior C, Segele Z and Artan G
[Representation of Land-Atmosphere Coupling Processes over Africa in Phase 6 of the Coupled Model Intercomparison Project](#)
- 17:00 – 17:20 **Short Lecture 5**
Kevin Raymond Oluoch, Patrick Wafula Okanya, Rajni Hatti-Kaul, Bo Mattiasson and Francis Jakim Mulaa
[Isolation, Screening and Characterization of Protease, Pectinase and Amylase Producing Bacteria Isolated from a Kenyan Soda Lake](#)
- 17:20 – 18:00 Q and A

Day 3: Friday 28th October 2022

Session 8

Session Chair: Dr. Solomon Derese

- 09:00 – 09:45 **Webinar I**
Part of the Celebration of the “[Open Access Week](#)”
Joy Owango, Training Centre in Communication ([TCC Africa](#))
[Using Open Access Resources to Improve Research Output and Increase Visibility for Early Career Researchers](#)
- 09:45 – 10:00 Q and A

Session 9

Session chair: Prof Christopher Oludhe

- 10:00 - 10:20 **Short Lecture 6**
J. N. Mutemi
[Climate Change 2022: Impacts, Adaptation and Vulnerability and how avert a catastrophe within next few decades to 2060s in Africa](#)
- 10:20 – 10:40 **Short Lecture 7**
[Franklin Joseph Opijah](#), Hussen Seid Endris; Herbert Omondi Misiani; Jully Odhiambo Ouma; Betty Namulunda Barasa
[Simulated Impact of Stratospheric Aerosol Intervention on Climate Over Eastern Africa](#)
- 10:40 - 11:00 **Short Lecture 8**
[Jane M. Mutune](#), Peter A. Minang, Lalisa Duguma and Priscilla Wainaina
[Can On-Farm Wood Meet Global Wood Supply and Save Tropical Forests? A Systematic Review](#)
- 11:00 - 11:20 **Short lecture 9**
[S. Rwigy](#), G. Ouma, D. Ong’ech, C. Ouma, P. Kaguara, B. Wangumba, F. Oloo, L. Olang’
[Towards evidence based policies on sustainable water availability in Turkana County](#)
- 11:20 – 11:35 **Student Presentation 22**
[B. Oussoumana](#), J N. Mutemi, B. Mutai, J. Muthama
[Impacts of Weather on Aviation Delays and Diversions at Jomo Kenyatta International Airport, Kenya](#)
- 11:35 – 11:55 **Short Lecture 10**
[Kianji Gladys](#), Justus Barongo and Eliud Mathu
[An updated seismicity map of Kenya: Seismicity patterns reveal new seismic source zones](#)
- 11:55 – 12:10 **Student Presentation 24**
[Mutai, B. K.](#), Barette, R., Mutemi, N. J., Gitau, W. and E. N. Bosire
[Utility of NWCSAF Products for Operational Nowcasting, Research and Training in High Impact Weather Over Eastern Africa](#)

- 12:10 – 12:25 **Student Presentation 25**
Kirui Karen Cherono, J.N Mutemi, F.J Opijah
Validity of Observational Datasets and Mathematical Approaches in Supporting Operational Weather Forecasting and Research in East Africa
- 12:25 – 12:40 **Student Presentation 26**
Kessy, W. P., Mutemi, J.N. and Opijah, F.J.
Using NWP to simulate and understand the dynamics of Tropical Cyclones over Southwestern Indian Ocean and how to forecast these storms better for the information uptake in protection of lives and Property
- 12:40 – 13:10 Q and A

Session 10: Webinar

Session chair: Dr. Solomon Derese

- 14:00 – 14:45 **Webinar II**
Daneshree Moodley, Customer Success Manager at Elsevier
Getting Started with Your Research Journey: How Elsevier can Help?
- 14:45 – 15:00 Q and A

Session 11

Session chair: Dr. Franklin Opijah

- 15:00 – 15:20 **Short Lecture 11**
Alfred Opere
Nexus between Climate Change, Disaster Risks and Urban Resilience
- 15:20 – 15:35 **Student Presentation 27**
Yvonne Maingey; Maggie Opondo; Daniel Olago; Gilbert Ouma
The Impacts of Increasing Water Scarcity and the Potential for Water-related Conflict in Lamu, Kenya
- 15:35 – 15:50 **Student Presentation 28**
Obiewa James Oduor, Kariuki David Kinuthia, and Wachira-Mbui Damaris Nduta
Assessment of Water Quality in the Sosiani River Using Water Quality Indexing Parameters
- 15:50 – 16:10 **Student Presentation 29**
John K. Njenga and Isaac C. Kipchirchir
Cointegration Analysis of Public Debt in Kenya
- 16:10 – 16:25 **Student Presentation 30**
Mildred M. Aduma, Gilbert Ouma, Mohammed Y. Said, Gordon O. Wayumba, Lucy W. Njino
Potential Impacts of Current and Future Temperature Changes on Selected Large Herbivores in the Savanna Ecosystem of Kenya
- 16:25 – 16:40 **Student Presentation 31**
Mwaura Nahashon Mbugua, Beth Ndunda and Leonidah K. Omosa
Antioxidant Properties of Dragon Fruits from *Hylocereus Undatus* and *Hylocereus Polyrhizus*

- 16:40 – 16:55 **Student Presentation 32**
Annah M. Ondieki, Zephania Birech, Kenneth A. Kaduki & Peter W. Mwangi
[Fabrication of Surface-Enhanced Raman Spectroscopy Substrates Using Silver Nanoparticles Produced by Laser Ablation in Liquids](#)
- 16:55– 17:15 Q and A

Session 12
Flash Presentation for Poster Presenters (Five Minutes five (5) slides Presentation)
Session Chair: Dr. J. N. Mutemi

- 17:15 – 17:10 **Poster 1**
P. Kagwara, S. Rwigy, G. Ouma, C. Ogolla, D. On’gech, M. Mugo, B. Wangumba
[Assessment of the Effects of Rainfall Variability on Livelihoods in Turkana County under a Changing Climate](#)
- 17:10 – 17:15 **Poster 3**
Phoebe Ogada, Joseph Mutemi, Andrea Taylor , Karen Kirui and Franklin Opijah
[Key Outcomes of The GCRF African Swift Project in East and West Africa](#)
- 17:15 – 17:20 **Poster 4**
Clinton Ouma, Stephen Rwigy, Gilbert Ouma and Luke Olang’
[Effects of rainfall variability on water availability in the dry lands of Northern Kenya under a changing climate](#)
- 17:20 – 17:30 Q and A
- 17:30 – 18:00 Closing Ceremony