

1 January – 28 February 2017



Faculty of Science,
Chancellor College

Inside this issue:

Editorial	1
Deputy Dean Snr. Fellow in India	1
New Faculty Leadership	2
MaGSTEM, & Dean of Research	3
Publications	4
New PhDs	4

FACULTY OF SCIENCE BIMONTHLY BULLETIN

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EDITORIAL

We welcome our readerships to the first Issue of Vol. 6 of this bulletin. During the first two months, the Faculty has seen new leaders commencing their 2-year terms; the new Faculty building comprising office spaces for Dean, Deputy Dean and Secretary, as well as Faculty Boardroom, and Laboratories— moved towards completion; a number of staff members had research visits and attended conferences abroad. The Faculty also continued to provide leadership in college affairs as demonstrated by the appointment of two of its senior members into college-wide leadership positions.

During the period, the Faculty also continued with its career guidance to secondary school students particularly girls through Radio programme and through school visits by members of MaGSTEM (Malawi girls in Science, Technology, Engineering and Mathematics)— an initiative of a group of young female faculty members. To cap it all, the Faculty human resource capacity was boosted by completion of PhDs and return of two of its members. These and other issues await your reading in this Issue. I trust that you will enjoy it!

*Dr. Levis Eneya,
Dean of Faculty of Science*



Pic of the new Deans Office and the HEST Science Lab Under Construction

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The Deputy Dean Receives CV Raman Senior Fellowship in India



The Deputy Dean of Science, Dr. Chomora Mikeka receiving a memento as a recipient of the 1930 Physics Nobel Prize winner, CV Raman of the Raman Effect, presented here by the Director of Motilal Nheru National Institute of Technology (MNNIT), Allahabad, India, Prof. Rajeev Tripathi. Apply at: <http://www.indoafriacvrf.in/>

During the period 23rd January to 26th February, 2017 Dr. Chomora Mikeka, Deputy Dean Science engaged in **a) research** and **b) travel** as a senior fellow of the CV Raman Fellowship for African Research Scientists.

He was placed in the Communications Lab of the Electronics and Communication Engineering Department at MNNIT, Allahabad in India. His host was Prof. Rajeev Tripathi, supported by Dr. Yogendra Kumar Prajapati and Dr. Arun Prakash.

With his background in antennas, he was introduced to an antenna simulation software called AN-SOFT HFSS (High Frequency Structure Simulator) with multiple state-of-the-art high-frequency electromagnetic solvers which he used to design a mirror F image dual feeding structure antenna with reconfigurable operating frequency band tunable in 0.53 GHz (TVWS/DTV), 2.4 GHz (Bluetooth), 2.6 GHz (4G/LTE) and 5.2

GHz (Wi-Fi). He also gave lectures to Master and PhD students in Electronics and Communication Engineering Dept.

Regarding travel, the most exciting was Agra City, where he visited one of the seven wonders of the world; the Monument of Love dubbed Taj Mahal in the picture below.



New Members Join Faculty Leadership Team (1 Jan., 2017—31 Dec., 2018)



Dr. Levis Eneya
Dean



Dr. Chomora Mikeka
Deputy Dean (DD)



Dr. Victoria Ndolo
Senator

NAREC



Dr. Jimmy J. Namangale
Director



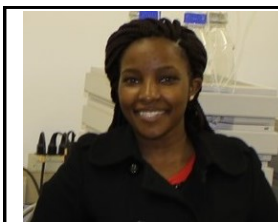
Dr. Bosco Rusuwa
HoD Biology



Dr. Marlene Chikuni
DHoD Biology



Dr. Maurice Monjerezi
HoD Chemistry



Ms. Chikondi Shaba
DHoD Chemistry



Dr. Evance Mwachunga
HoD Geography



Dr. Zuze Dulanya
DHoD Geography



Dr. Owen Nkhoma
HoD Human Ecology



Ms. Loveness Musiyapo
DHoD Human Ecology



Dr. Patrick Ali
HoD Mathematical Sciences



Mr. Elias Mwakilama
DHoD Mathematical Sci.



Dr. Stanley Mlatho
HoD Physics



Mr. Patrick Mzaza
DHoD Physics



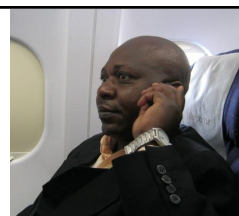
Dr. Tiwonge Manda
HoD Computer Sciences



Dr. Kondwani G. Munthali
DHoD Computer Sciences



Dr. Dalitso Kafumbata
Coordinator MES



Dr. Ephraim Vunain
Deputy Coordinator MES

To contact any of the above by their official Email address; read their name e.g. if the name is Joe Doe, then their Email address is jdoo@cc.ac.mw

Faculty of Science holds Career Guidance on Y-FM and Through School Visits by MaGSTEM



MaGSTEM team conducting a team building activity on career paths with students at Mulanje Boma CDSS, Jan 2017.

The Malawi Girls in Science, Technology, Engineering, and Mathematics (MaGSTEM) was founded early 2016 with the aim of motivating and inspiring girls to pursue education in the STEM fields and although it primarily targets the girl child, boys have not been left out. MaGSTEM is coordinated by Ms. Fiskani Kondowe, Ms. Susan Barnaba, Ms. Halima Twabi, Ms. Chikondi Shaba, Ms. Jessie Khaki and Ms. Eggrey Kambewa, and also includes Chanco and Poly students as members.

Since its inception, the MaGSTEM Team has visited both primary and secondary schools including Providence, Mulanje, Kabadwa, Chiradzulu Secondary Schools amongst others. The most recent outreach program was to Tutchira and Mulanje Boma CDSS in Mulanje district. Team building activities, motivational and career talks, and innovation and creativity activities were conducted during the visit. A Science quiz was also administered to the students. The best students (2 boys and 2 girls) in forms 1 to 4 were awarded with different prizes comprising mathematical instruments sets, notebooks and calculators.

The MaGSTEM initiative is highly recommended by senior leadership in the Faculty of Science and in sync with MaGSTEM, Faculty leadership led by the Deputy Dean of Science including Dean of Education (Dr. Symon Chiziwa), through Y-FM (recorded), held career guidance and higher education (HE) tactical approaches to pass through the Malawi National Council for Higher Education (NCHE) selection process.

Calling on kind sponsors, donors and corporates to support MaGSTEM and those other new initiatives to issue from the Faculty of Science including industry tailored Research Groups, Community Engagement Teams (CETs) and Government Policy Support Think Tanks (PST²) using natural sciences as the tool.

To donate, kindly use the account details below and at the end of every quarter, donors shall be acknowledged publicly on campus in the face of media. Thank you for your support.

Support will be paid through National Bank of Malawi current account at Zomba Branch: Account Name: Chanco – Faculty of Science, Account Number: 1094308, Reference: ‘Your Name, Company, Corporation, NGO, or Treasury.’

Dr. Mangani Katundu gets Appointed as Dean of Research



Dr. Mangani Chilala Katundu

Dean of Research, Chancellor College

Dr. Mangani Chilala Katundu has been appointed the first Dean of Research for Chancellor College for a four year term with effect from 1st February 2017. In his presentation to Chancellor College management, Dr. Katundu said that he would like to ensure that Chancellor College becomes a beacon of excellence in research through increased access to research grants, better management of records regarding research activities, increased publications and dissemination of research activities.

Among other things, Dr. Katundu plans to establish a Research Support Centre (RSC) and Chancellor College Research Ethics Committee (CHAREC). Through these offices, he hopes that Academic Staff and students will easily access resources and information on potential research grants and successful project management. He also plans to create an interface between researchers at Chancellor College, the public and potential collaborators so that the intellectual and economic interests of Chancellor College are safeguarded to the benefit of both researchers and the college.

The Faculty of Science is delighted to have one of its resourceful and dedicated researchers ascend to this important position. We wish him well as he continues to shine in his new position.

Publications

Mireku, K. K., Kassam, D. , **Changadeya, W.**, Attipoe, F. Y. K. and Adinortey, C. A. Assessment of genetic variations of Nile Tilapia (*Oreochromis niloticus* L.) in the Volta Lake of Ghana using microsatellite markers., **African Journal of Biotechnology**, Vol. (16)(7), pp 312 –321

Summary

A study was conducted to investigate genetic diversity and population structure among populations of Nile tilapia *Oreochromis niloticus* (Cichlidae) in the Volta Lake of Ghana using microsatellite markers. Gene diversity based on locus ranged between 0.1638 and 0.8673 whilst the genetic differentiation between populations (F_{ST}) was 0.074 indicating moderate differentiation between the populations. However, there was very high genetic variation (93%) within individuals. Nei's distance between the populations ranged between 0.011 and 0.133, whilst estimated overall gene flow

(Nm) and Shannon Information Index were 8.265 and 0.822 respectively. The 10 populations studied formed two main clusters with the longest pairwise Nei's genetic distance of 0.133 between the Dzemeni and Kete-Krachi populations.

**FoS,
Incentives
For Journal
Publications**

The Faculty of Science Management is on a marathon to identify and resource funds that could be used to incentivize top notch research which would precipitate into concrete peer reviewed journal articles like the one in above. Faculty members are therefore encouraged this year to publish. The Faculty shall announce the mechanisms for the incentives when due process of resource identification, receipt and conditions for the same are seamlessly agreed upon by the partners (donors and FoS). We wish you well in 2017.

New PhDs Returning to the Faculty of Science, Chancellor College



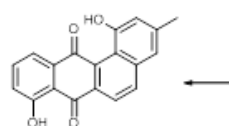
Pic: Dr. Mwawi Nyirenda-Kayuni: Maths Dept.

Doctoral Thesis Title: *A Combinatorial Approach for Frequency Hopping Schemes*

From: Royal Holloway, University of London

In her Doctoral thesis, Mwawi proposed an efficient and secure frequency hopping (FH) scheme. She considered the use of pseudo-randomness in an FH scheme based on Latin squares and how it affects the resistance of an FH scheme against a jammer. She concluded that in order to have a guarantee of transmission, as well as withstand a jammer for a long time, FH schemes should minimize group-wise mutual interference and possess some form of pseudo-randomness. In her preliminary investigations, she considered FH schemes which are optimal in the well-known Lempel Greenberger or Peng-Fang bounds. **Her work finds useful applications in wireless communications.**

In his Doctoral thesis, Kennedy reported for the first time, novel methodology for the synthesis of angucycline antibiotic natural products. In particular, for the synthesis of 1,8-dihydroxy-3-methyltetraphene-7,12-dione, commonly known as tetrangulol. He also reported on the synthesis of 1,10,12-trimethoxy-8-methylbenzo[c]phenanthridine in his quest to synthesise phenanthroviridone, a nitrogen containing natural antibiotic, from an intermediate product in the synthesis of tetrangulol. Some of the key reactions he dealt with include the Suzuki-Miyaura coupling reaction and Corey-Fuchs reaction. Dr. Kennedy Ngwira labored to produce the Angucycline antibiotic below.



Natural Angucycline Antibiotic



Pic: Dr. Kennedy Ngwira: Chemistry Dept.

Doctoral Thesis Title: *Development of Novel Methodology for the Synthesis of the Angucycline Tetrangulol, Benzo[c]phenanthridines and Benzonaphthopyranones*

From: University of the Witwatersrand