

2018 Workshop on Nuclear Technology for Water and Food Security

Host: Nelson Mandela African Institution of Science and Technology, Arusha, Tanzania.

Organized by the two African Centres of Excellence (ACE): Water Infrastructure and Sustainable Energy Futures (WISE-Futures) and Centre for Research, Agricultural Advancement, Teaching Excellence and Sustainability in Food and Nutritional Security (CREATES)



Date: July 23—03 August 2018

Location: NM-AIST Tengeru Campus, Arusha, Tanzania

Targeted Participants: Academicians, policy makers, researchers, medical doctors, and pharmacists

About the two ACES:

WISE-Futures and CREATES are among the twenty-four centres of excellence in the Eastern and Southern African region supported by the World Bank under the ACE II project. WISE-Futures is focusing on three key areas: water security, water resources security, and energy security. CREATES on the other hand is focusing on food security. The details for these two centres of excellences can be found at www.wisefutures.ac.tz and www.creates.ac.tz, respectively.

Key Note Speaker / Instructor:



Prof. Chary Rangacharyulu:

Prof. Rangacharyulu's main research interests: Nuclear and Elementary Particle Physics, Quantum Chaos, Conceptual Foundations of Physics and Physics Education. Nuclear and Elementary Particle Physics: The main interests in this research are unraveling structure and symmetry information in the sub-atomic world. This work is carried out in collaboration with research groups in Darmstadt (Germany), National HighEnergy Physics Laboratory(KEK), Tsukuba (Japan) and Osaka University, Osaka, Japan. The research is hardware and software intensive and the main activities involve developments of radiation detector assemblies and the ancillary electronic arrangements to accomplish the physics goals. The main experimental facilities are the following: a) the three-spectrometer system of the A1 collaboration at the 855 MeV electron accelerator (MAMI) at Mainz, Germany; b) 130 MeV superconducting electron accelerator (S-DALINAC) at Darmstadt; and c) 12-sector superconducting toroidal spectrometer at the 12GeV Proton Synchrotron at KEK and d) AVF cyclotron of Research Centre for Nuclear Physics, Osaka, Japan and d) SlowPOKE research reactor in Saskatoon.

He published nearly 200 research articles in international journals and a text book: Physics of Nuclear Radiations- Concepts, Techniques and Applications (Taylor and Francis, 2014).



Workshop Description:

This two-week short course introduces:

- (1) **FOOD IRRADIATION:** the use of nuclear technology for controlling spoilage and eliminating foodborne pathogens in food. The positive effect of food irradiation is similar to pasteurization. However, the difference between these two techniques is on the source of energy used to kill microbes. The traditional pasteurization uses heat while the food irradiation relies on the energy of ionizing radiation.
- (2) **WATER TREATMENT:** the utilization of nuclear technology in water industry. In water, the focus is on testing the purity with respect to poisonous substances such as mercury and lead; and also removing fluoride and arsenic from water.

CREATES and WISE-Futures provide the facilities and venue. Lunch and teas will be provided for the entire workshop period of two weeks. Furthermore, an ice-breaker dinner will be organized by the centres. There is no registration fee, however, participation is on a competitive basis and female participants from outside Tanzania are highly encouraged to attend. Please register by sending an email to wise.admin@nm-aist.ac.tz with the heading **2018 Nuclear Physics Short Course**. Provide us an attachment motivation letter (how will this course help you in your current work) and your updated 3 – pages CV. Participants must cover their cost, i.e., accommodation, travel, and meals during the entire period of the short course.

