



2019 WORKSHOP ON NUCLEAR TECHNOLOGY FOR WATER AND FOOD SECURITY

Host: Nelson Mandela African Institution of Science and Technology (NM-AIST), Arusha, Tanzania. **ORGANIZED** by African Centres of Excellence (ACE): Water Infrastructure and Sustainable Energy Futures (WISE-Futures).

DATE: July 22nd July—02nd August 2019.

LOCATION: NM-AIST Tengeru Campus, Arusha, Tanzania.

TARGETED PARTICIPANTS: Academicians, policy makers, researchers, medical doctors, and pharmacists.

About the ACE:

WISE-Futures is 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. More detail about center can be found at www.wisefutures.ac.tz .

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 High Energy 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) Slow POKE 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.

WISE-Futures will provide the facilities and venue. Lunch and tea 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 before 15th July 2019 with the heading **2019 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.