

SES19-2019-000204

Abstract for an Invited Paper
for the SES19 Meeting of
the American Physical Society

Cross section measurements of photonuclear reaction pathways towards promising medical radioisotopes
FNU KRISHICHAYAN, Duke University

Radioisotopes play important roles in numerous areas ranging from medical treatments to national security and basic research. Some examples include investigations of structures and reactions involving atomic nuclei, Mossbauer spectroscopy, radio- thermoelectric generation, nuclear device detection, and the mitigation of nuclear proliferation. The high specific activity beta emitters such as ^{47}Sc , ^{67}Cu , ^{77}As , and ^{186}Re are of extreme interest to the community as they have ideal nuclear properties for medical applications.

The present ongoing work is dedicated to develop methodologies for the determination of photonuclear cross sections over multiple energies in a single irradiation and simultaneously determine the feasibility of production of these in-demand radioisotopes using electron linear accelerator. By using activation techniques, cross sectional data is being obtained for these radioisotopes. The present talk will be focused on the technology development for medical radioisotope production using monoenergetic photon beams provided by the HIGS facility at TUNL.

Work supported in part by the U.S. DOE Isotope Program