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Measurements of Photonuclear Reaction Pathways towards Promising Medical Radioisotopes[1] FUNMILOLA NOIKI, North Carolina Central University, NCCU AND TUNL 1801 FAYETTEVILLE ST., DURHAM, NC 27707 MOHAMMAD W. AHMED BENJAMIN CROWE NOIKI FUNMIL COLLABORATION, DUKE AND TUNL 413 SCIENCE DRIVE, DUKE UNIVERSITY, DURHAM, NC 27708 CALVIN R. HOWELL, KRISHICHAYAN, COLLABORATION — We report on measurements of photo-nuclear cross-sections which lead to the production of isotopes which are of interest in medical diagnosis and treatment sciences. Precise measurements of the cross sections of ^{48}Ti (γ, p), ^{48}Ti (γ, n), ^{48}Ti (γ, pn), ^{48}Ti (γ, 2n), ^{48}Ti (γ, _), ^{197}Au (γ, n) and ^{197}Au (γ, pn) were made at gamma ray energies between 22 -27 MeV. The High Intensity Gamma Ray Source (HIγS) of Triangle Universities Nuclear Laboratory (TUNL), a Compton γ-ray facility employing a high intensity Free-Electron Laser (FEL) produced the gamma ray beams for the study. The activity of the reaction products was measured at TUNL's low-background counting facility using High Purity Germanium detectors (HPGe). Lifetime data were fitted to obtain the isotope yields. Cross-section data are compared to calculations and other known available measurements, such as photo-nuclear cross sections of gold (Au) isotopes. This study reports on the techniques, methods, and results obtained from this measurement.

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