Abstract Submitted
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High-precision gamma-ray spectroscopy of 61Cu, an emerging medical isotope used in positron emission tomography[1] N. NELSON, P. ELLISON, R. NICKLES, Univ of Wisconsin, Madison, E. MCCUTCHAN, A. SONZOGNI, S. SMITH, Brookhaven National Laboratory, J. GREENE, M. CARPENTER, S. ZHU, Argonne National Laboratory, C. LISTER, K. MORAN, Univ of Massachusetts, Lowell — ^{61}Cu ($t_{1/2}$ = 3.339h) is an important medical isotope used in positron emission tomography (PET) tumor hypoxia imaging scans; however, its beta-plus decay and the subsequent gamma decay of ^{61}Ni has not been studied in over 30 years. Therefore, high quality decay data of ^{61}Cu is desired to determine the overall dose delivered to a patient. In this study, ^{61}Cu was produced at the University of Wisconsin - Madison cyclotron and then assayed using the Gammasphere array at Argonne National Laboratory. Consisting of 70 Compton-suppressed high-purity germanium (HPGe) detectors, Gammasphere provides precise decay data that exceeds that of previous ^{61}Cu studies. γ-ray singles and coincident data were recorded and then analyzed using Radware gf3m software. Through γ-γ coincidence techniques, new γ-ray transitions were identified and high precision determination of γ-ray intensities were made. These modifications and additions to the current decay scheme will be presented, and their impact on the resulting does estimates will be discussed.

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