^{9}Be(^{124}Xe,X) 2016Ce02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 145, 25 (2017)	1-Jul-2017

Based on XUNDL, Compiled by B. Singh (McMaster); May 8, 2016.

2016Ce02: ^{99}Sn nuclide produced and identified at RIBF-RIKEN facility in ^{9}Be(^{124}Xe,X) reaction at E=345 MeV/nucleon with an average beam intensity of 30 pnA. Identification of ^{99}Sn was made by determining atomic Z and mass-to-charge ratio A/Q, where Q=charge state of the ions. The selectivity of ions was based on magnetic rigidity, time-of-flight and energy loss using BigRIPS separator and zero degree spectrometer ZDS. The separated nuclei were implanted in a wide range silicon-strip stopper array for ion and β particle detection WAS3ABi, consisting of three highly-segmented 1 mm thick double-sided silicon detectors, a stack of ten segmented 1 mm thick single-sided silicon strip detectors. The γ rays were detected by EURICA array of 84 HPGe detectors surrounding the WAS3ABi system. In addition an array of 18 $LaBr_3$(Ce) detectors was used for γ detection in fast-timing measurements.

^{99}Sn Levels

E(level)	$T_{1/2}$	Comments
0	>760 ns	%ε+%β^+=?; %εp=? Expected decay mode assigned by the evaluator. About 30 events assigned to ^{99}Sn by 2016Ce02, which are assumed by the evaluator to correspond to the g.s. activity of ^{99}Sn. Measured production σ=0.042 pb *8* (2016Ce02). $T_{1/2}$: lower limit of half-life assigned by evaluator from time-of-flight of 760 ns (2016Ce02) through the BigRIPS fragment separator and ZDS spectrometer. Since ^{99}Sn is expected to be a bound nucleus from S(p)=1.89 MeV, S(2p)=2.78 MeV (theory, 1997Mo25), actual half-life is expected to be much longer, e.g. theoretical $T_{1/2}$=41.8 ms (1997Mo25).