

$^1\text{H}(^{17}\text{C},\text{p}'\gamma)$ 2005E107

Type	Author	Citation	History	Literature Cutoff Date
Full Evaluation	J. H. Kelley, G. C. Sheu	ENSDF		01-May-2017

Beam= ^{17}C , target=liquid H_2 .

[2005E107](#):

XUNDL set compiled by J. Roediger and B. Singh (McMaster) July 2005.

A $\approx 100\%$ pure beam of 43.3 MeV/nucleon ^{17}C , produced by fragmentation of 110 MeV/nucleon ^{22}Ne ions on a ^9Be target at the RIKEN/RIPS facility, impinging on a liquid H_2 target. Incident particles were identified using standard ΔE , and time-of-flight (tof) techniques.

The target was surrounded by the 158 NaI(Tl) scintillator DALI2 array. A 48×48 mm 2 ΔE - ΔE -E-Veto Si detector telescope was placed 80 cm downstream of the target ($\theta < 1.7^\circ$). $E\gamma$, $I\gamma$, $\gamma\gamma$, and particle- γ coin were measured.

[2005Ka26](#): The authors searched for evidence of an isomeric state with $E_x < 300$ keV and $T_{1/2} < 500$ ns, as predicted by shell model calculations.

A cocktail beam, including ^{19}C and ^{17}C , was produced by fragmenting a ^{22}Ne beam on a ^9Be target at RIKEN. Beam particles were identified from analysis of ΔE , time-of-flight and beam rigidity. The beam impinged on a liquid hydrogen target that was surrounded by NaI γ -ray detectors; results for prompt transitions are reported in ([2005E107](#)). After the target, the beam was stopped in a ΔE - ΔE - ΔE -E telescope that was surrounded by thin plastic scintillators (for identification of β decay events) and an array of segmented HPGe clover detectors that were intended to observed delayed de-excitations from isomeric states populated in the reaction. Several transitions related to β -decay of daughters and granddaughters were identified. No definitive evidence in support of an isomeric state was found.

 ^{17}C Levels

E(level)	J^π [†]	Comments
0.0	$3/2^+$	Possible configuration=mixture of $[\nu d_{5/2}^3]_{3/2}$ and $\nu s_{1/2} \otimes [\nu d_{5/2}^2]_{3/2}$.
331 6	$(5/2^+)$	Possible configuration= $d_{5/2}$; $\beta_2=0.52$ $\bar{4}$, deduced from integrated experimental cross section for this level from $0^\circ-1.7^\circ$ and an assumed J^π of $5/2^+$. Cross sections: 33 mb $\bar{4}$ in ($^{19}\text{C}, 2n^{17}\text{C}$) reaction, 13.8 mb $\bar{15}$ in (p,p').

[†] Tentative assignments to excited states based upon systematics of transition strengths combined with considerations of g.s. configuration.

 $\gamma(^{17}\text{C})$

E_γ [†]	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π
331 6	100	331	$(5/2^+)$	0.0	$3/2^+$

[†] 210 and 331 γ -ray peaks observed prominently in $^1\text{H}(^{19}\text{C}, ^{17}\text{C}\gamma)^3\text{H}$ reaction, while only the 311 transition is strong in the $^1\text{H}(^{17}\text{C}, ^{17}\text{C}'\gamma)$ reaction spectrum. Quoted uncertainties stem from statistical error and Doppler correction.

 $^1\text{H}(^{17}\text{C},\text{P}'\gamma)$ 2005EI07Level SchemeIntensities: Relative I_γ 