$^{13}C(^{17}O,^{17}O)$ 2014Al11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. G. Sheu, J. H. Kelley, J. Purcell	ENSDF	5-Aug-2021

1978Ch03: The angular distributions of the elastic scattering $^{13}C(^{17}O,^{17}O)$ were measured at E_{cm}=12.6-14.0 MeV. An ^{17}O beam from the E(n) Tandem Van de Graaff accelerator of the Weizmann Institute bombarded a 94.6% enriched ^{13}C target with thickness 50 or 100 $\mu g/cm^2$. The reaction products were detected and identified by ΔE-E telescopes with 5% resolution and FWHM=450 keV. The cross sections were measured and the optical-model parameters of $^{17}O+^{13}C$ were deduced.

1982He07: $^{13}C(^{17}O,^{17}O)$, E=54-140 MeV; measured $\sigma(\theta)$.

Includes $^{13}C(^{17}O,^{17}O')$.

2014Al11: XUNDL dataset compiled by TUNL, 2014.

The authors carried out measurements of $^{12}C+^{18}O$ and $^{13}C+^{17}O$ elastic and inelastic scattering. The primary aim was to obtain optical model input that was necessary to deduce Asymptotic Normalization Constants for the $^{13}C(^{17}O,^{18}O)$ measurement that was published in (2014Al05).

A beam of 204 MeV ^{17}O ions from the Texas A&M Cyclotron impinged on a 100 $\mu g/cm^2$ ^{13}C target (enriched to 99%) that was placed in the scattering chamber of the MDM spectrometer. The scattered recoils were detected at θ_{lab}=4° to 25° with a scattering angle resolution of $\Delta\theta \approx 0.31°$ and a focal plane position resolution better than 1 mm. Low-lying resonances were analyzed and optical model and deformation parameters were deduced.

Theory:

1991Bo12: $^{13}C(^{17}O,^{17}O),(^{17}O,^{17}O')$, E(cm)=18.29 MeV; analyzed $\sigma(\theta)$, σ(E). Coupled-channels model.

2018Ay04: $^{13}C(^{17}O,^{17}O)$, E<340 MeV; analyzed available data. ^{17}O; calculated $\sigma(\theta)$; deduced two different density distributions of oxygen isotopes.

1997Ki22: $A(^{17}O,^{17}O)$, E=660-720 MeV/nucleon; calculated reaction σ. Glauber model spherical, deformed Hartree-Fock, comparisons to data. ^{17}O; calculated rms radii related features, mass quadrupole moments, density contours for some nuclei. Hartree-Fock model, SGII force, comparison with experiment.

^{17}O Levels

E(level)	J^{π}	Comments
0	$5/2^+$	
3843	$5/2^-$	β_2=0.66 *3* (2014Al11) 4p-3h configuration (2014Al11).
6356	$1/2^+$	β_2=0.19 *1* (2014Al11) 3p-2h configuration (2014Al11).