^{57}Fe(n,pγ) E=3-21 MeV:? 1983Be10

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. R. Bhat	NDS 85, 415 (1998)	24-Sep-1998

Target $J^\pi=1/2^-$. In a study of secondary gammas from neutrons on iron, an 1061.3γ associated with (n,n$'\gamma$) was observed. However, the excitation function continued to increase for E(n)>3 MeV, inconsistent with an 1198-137 transition in ^{57}Fe, indicating the presence of a second γ. Contamination from ^{207}Pb or other iron isotopes was ruled out. Companion gammas from the (n,γ), (n,n$'\gamma$), and (n,$\alpha\gamma$) were not observed, leaving the (n,pγ) reaction. The 1061γ could not be placed in the known level scheme of ^{57}Mn. Therefore, 1983Be10 suggest a new state at 1061 keV. σ(1061γ)≥66 mb *13* for E(n)=13.2 to 16.3 MeV is in reasonable agreement with several activation measurements, although in disagreement with the data of 1972Si31. See ^{57}Fe inelastic scattering: gammas for details.

^{57}Mn Levels

E(level)	J^π[†]
0[†]	5/2$^-$
850.07[†] *23*	3/2$^-$
1061.3? *4*	1/2$^-$,3/2$^-$,5/2$^-$
2741.7? *14*	

[†] From Adopted Levels.

γ(^{57}Mn)

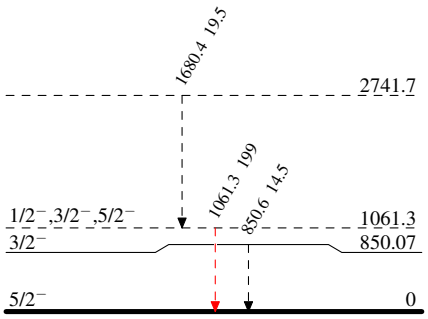
E$_\gamma$	σ_γ[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
850.6[‡]	14.5 *46*	850.07	3/2$^-$	0	5/2$^-$	
1061.3[‡] *4*	199 *10*	1061.3?	1/2$^-$,3/2$^-$,5/2$^-$	0	5/2$^-$	A 1062.1γ was also tentatively assigned in ^{62}Ni(p,Xγ).
1680.4[‡] *14*	19.5 *65*	2741.7?		1061.3?	1/2$^-$,3/2$^-$,5/2$^-$	Observed definitely between E(n)=6.09 and 13.2 MeV and possibly between E(n)=5.05 and 6.09 MeV. The threshold of ≈5 to 6 MeV is consistent with a 2742-1061 transition in ^{57}Mn.

[†] In mb for E(n)=7.50− 8.89 MeV bin.
[‡] Placement of transition in the level scheme is uncertain.

^{57}Fe(n,pγ) E=3-21 MeV:? 1983Be10

Level Scheme

Intensities: Type not specified



$^{57}_{25}Mn_{32}$