



## **Program TOTELA Calculating Basic Cross Sections in Intermediate Energy Region by Using Systematics**

Tokio FUKAHORI and Koji NITA\*

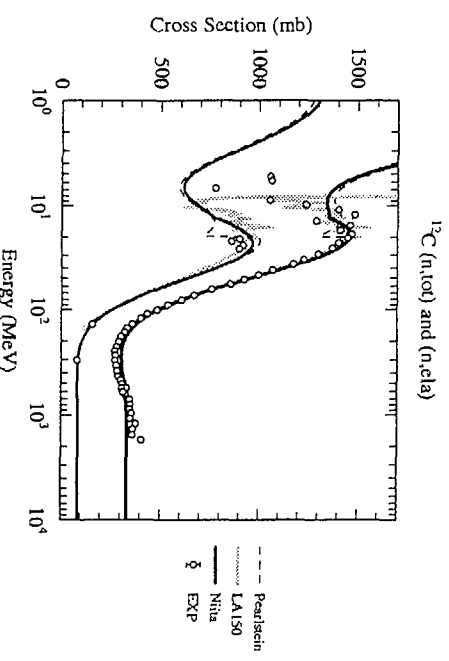
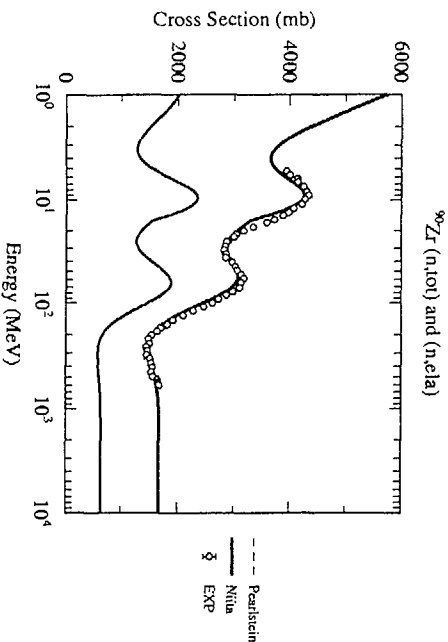
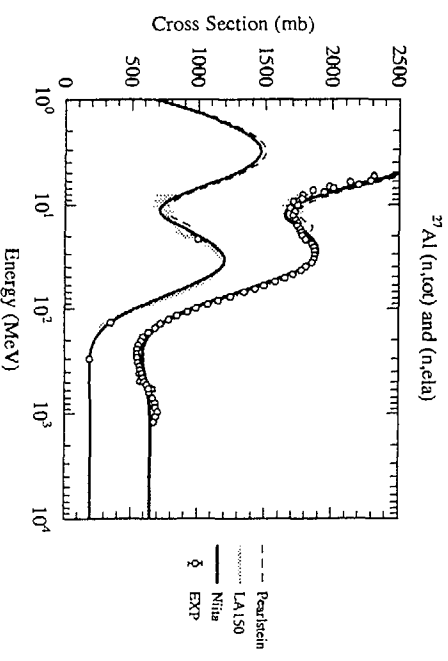
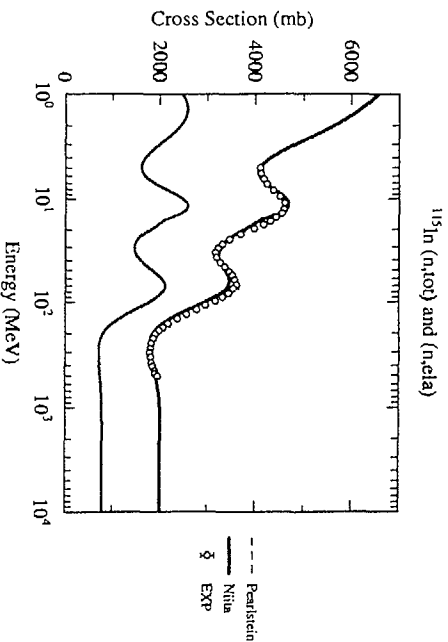
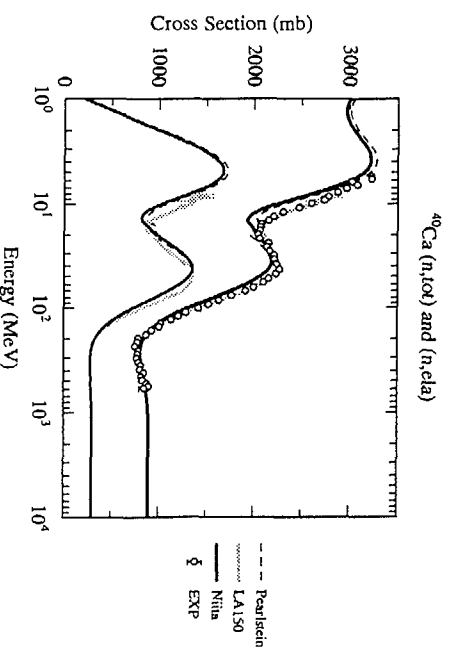
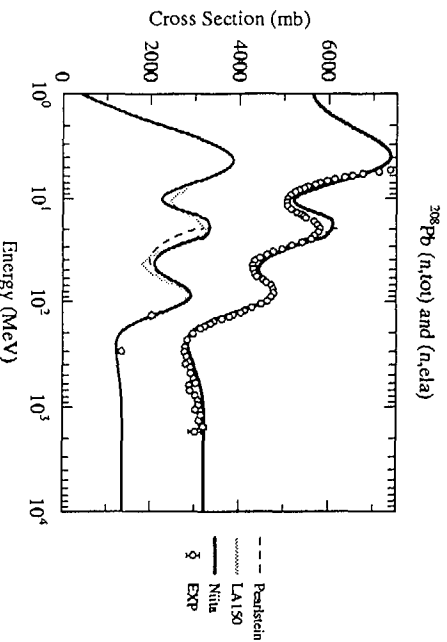
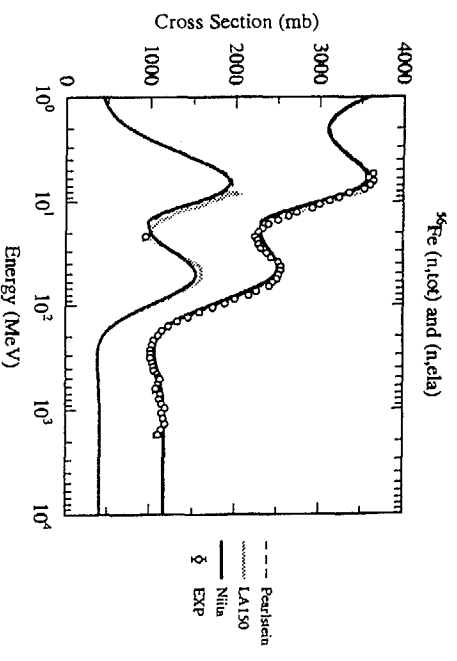
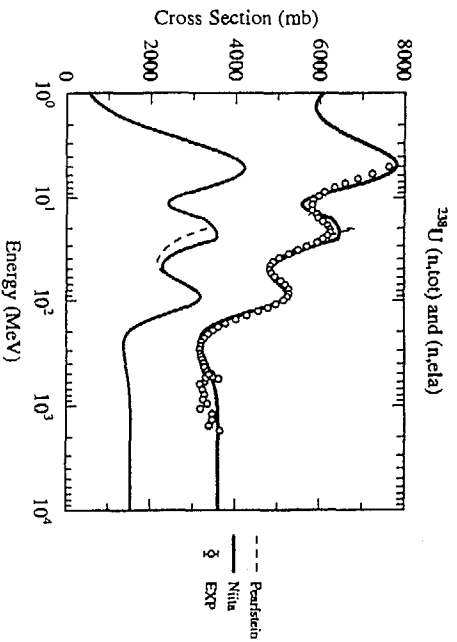
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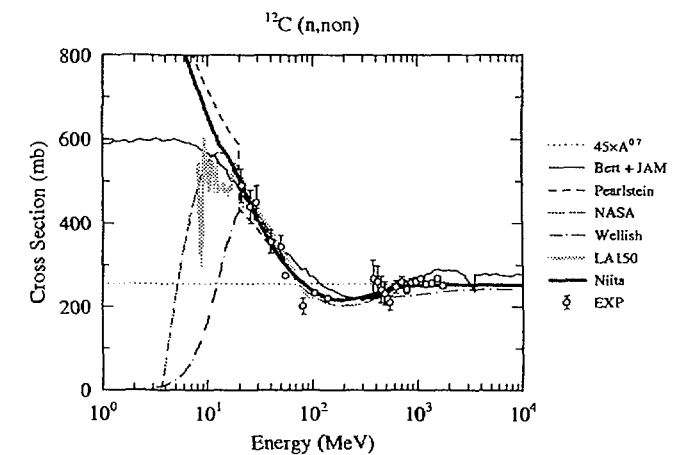
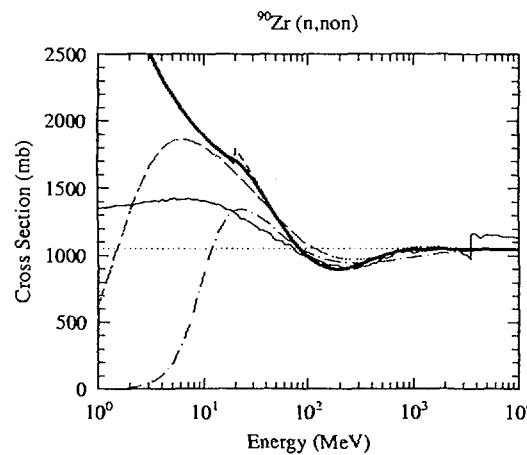
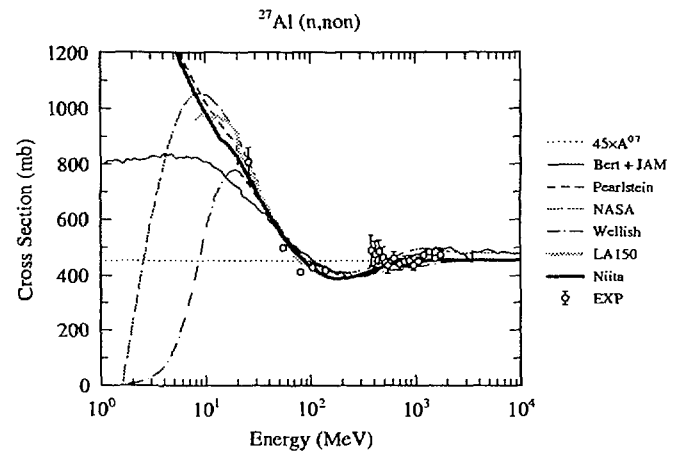
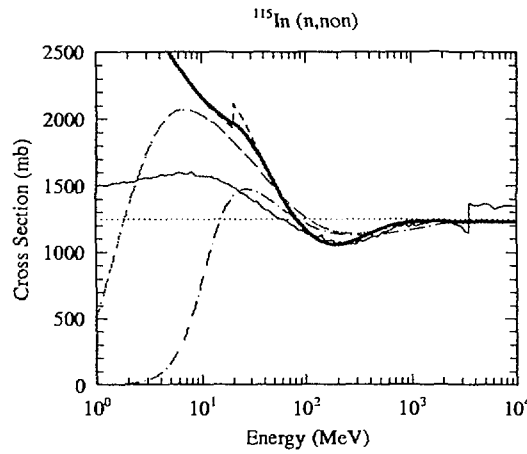
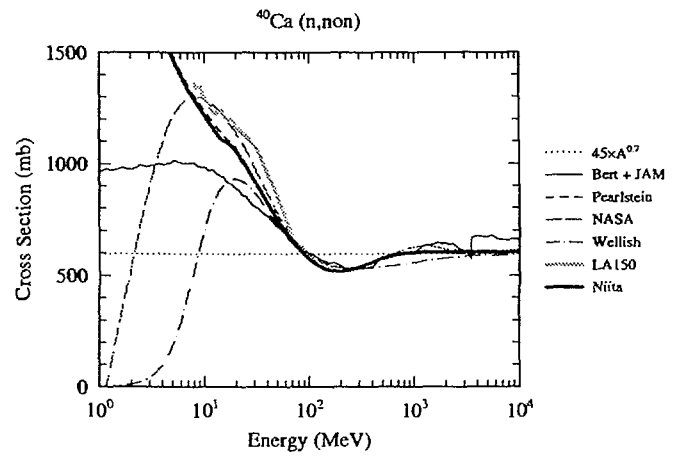
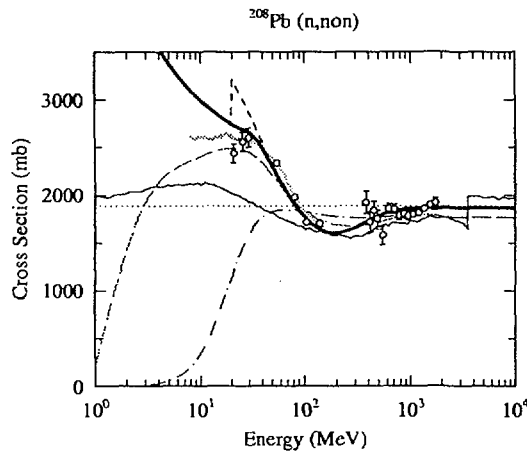
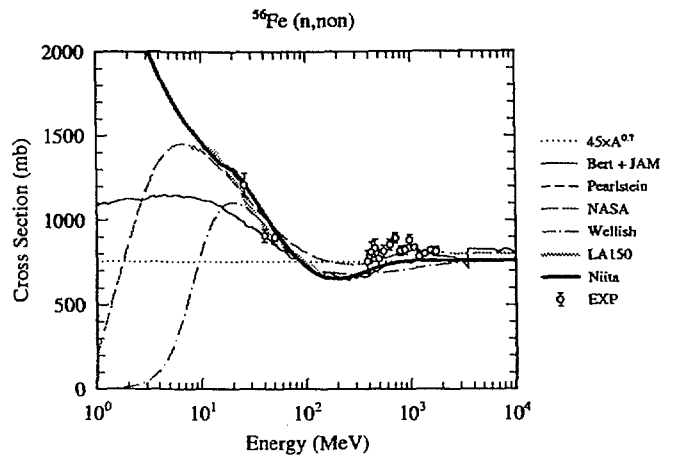
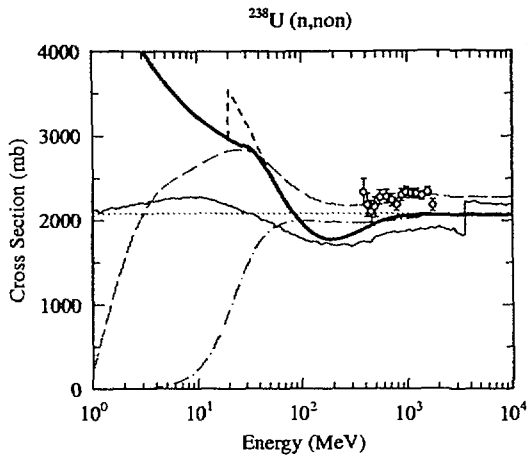
Program TOTELA can calculate neutron- and proton-induced total, elastic scattering and reaction cross sections and angular distribution of elastic scattering in the intermediate energy region from 20 MeV to 3 GeV. The TOTELA adopts the systematics modified from that by Pearlstein [1] to reproduce the experimental data and LA150 evaluation better. The calculated results compared with experimental data and LA150 evaluation are shown in figures in following pages. The TOTELA results can reproduce those data almost well. The TOTELA was developed to fill the lack of experimental data of above quantities in the intermediate energy region and to use for production of JENDL High Energy File. In the case that there is no experimental data of above quantities, the optical model parameters can be fitted by using TOTELA results. From this point of view, it is also useful to compare the optical model calculation by using RIPL with TOTELA results, in order to verify the parameter quality.

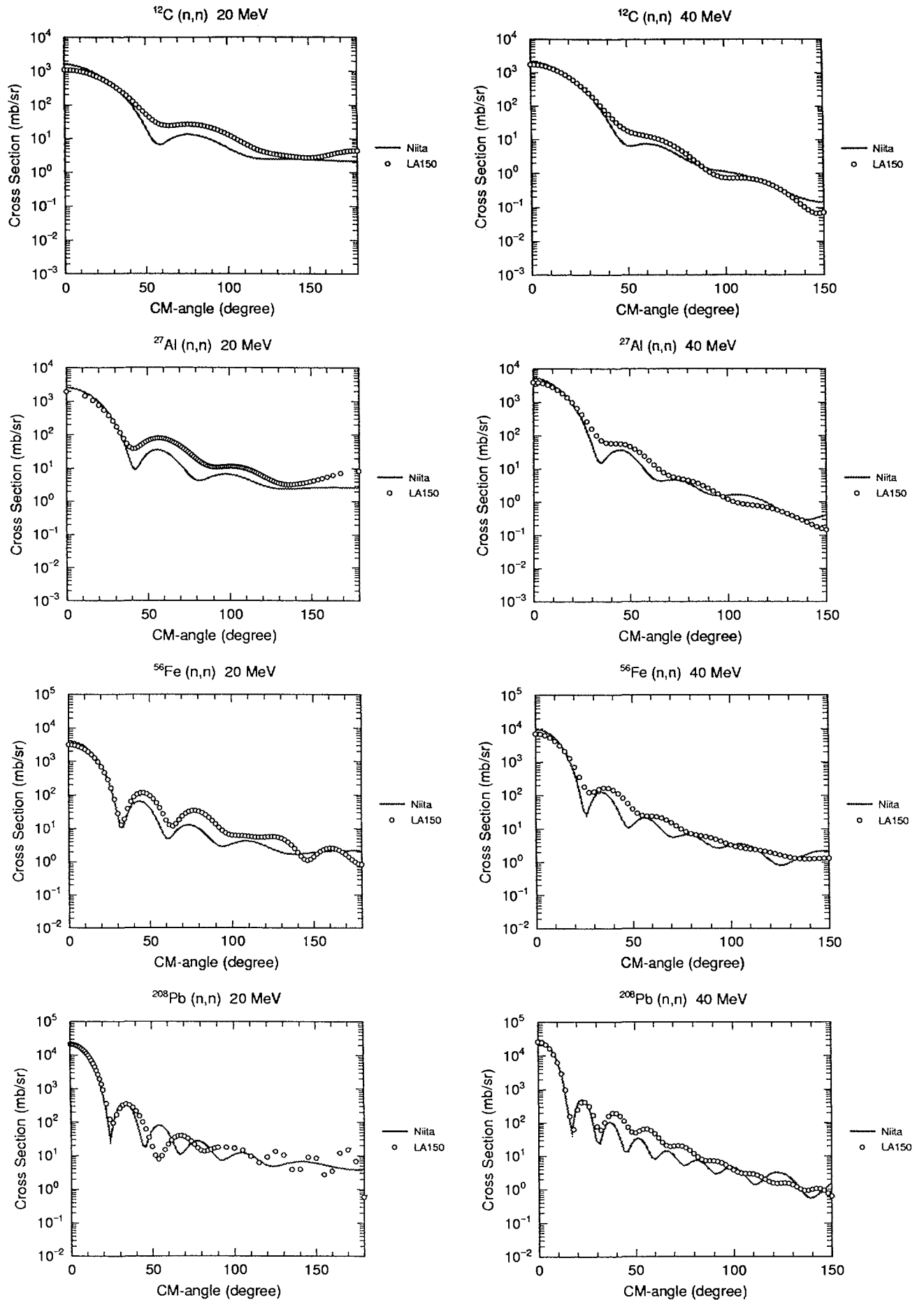
Input data of TOTELA is only atomic and mass numbers of incident particle and target nuclide and input/output file names. The output of TOTELA calculation is in ENDF-6 format used in the intermediate energy nuclear data files. It is easy to modify the main routine by users. Details are written in each subroutine and main routine.

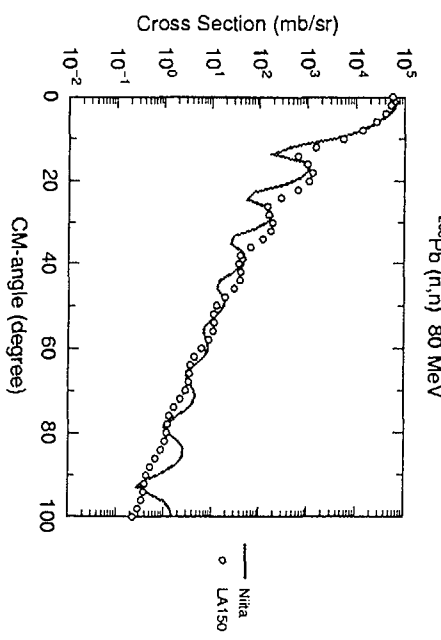
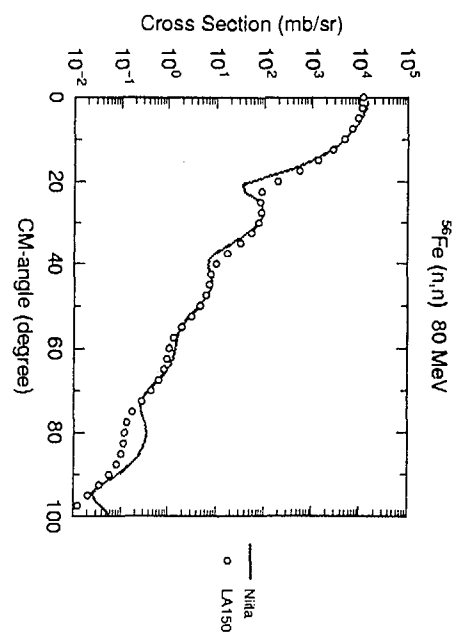
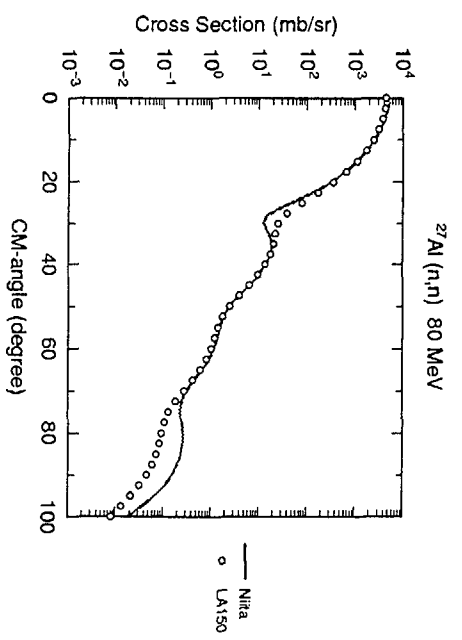
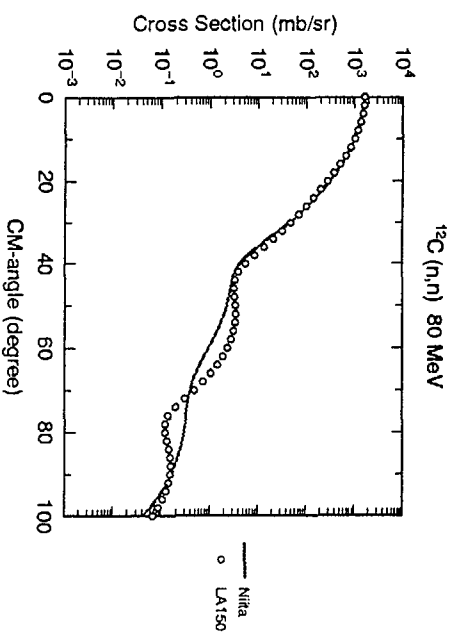
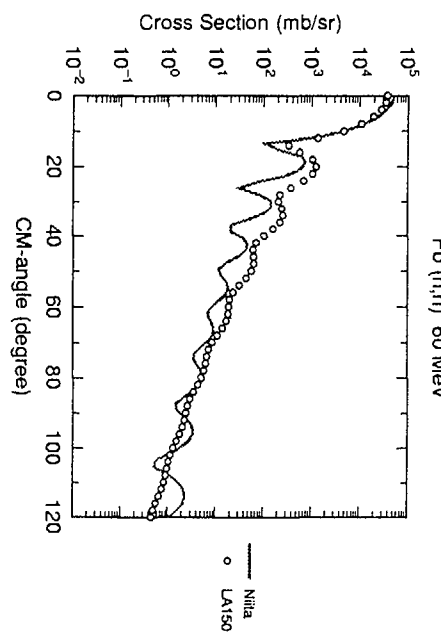
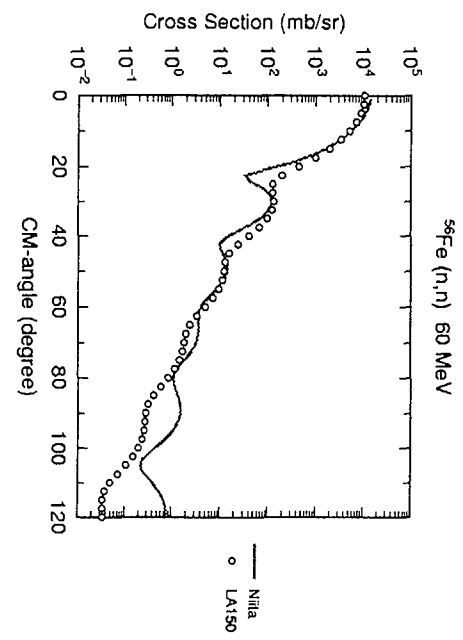
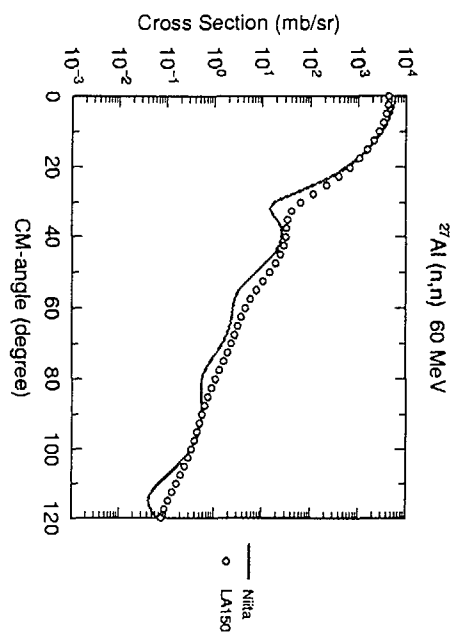
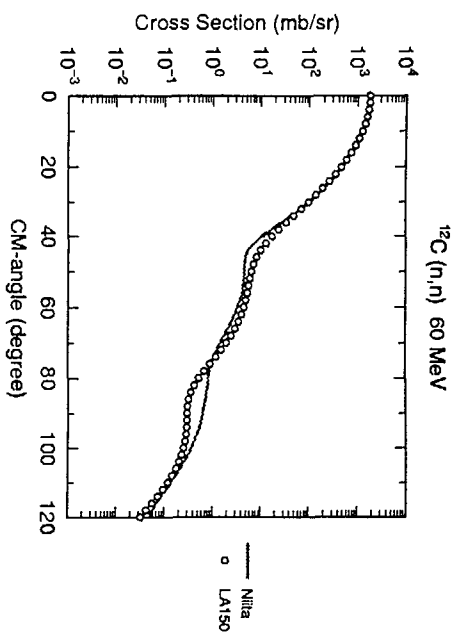
### Reference

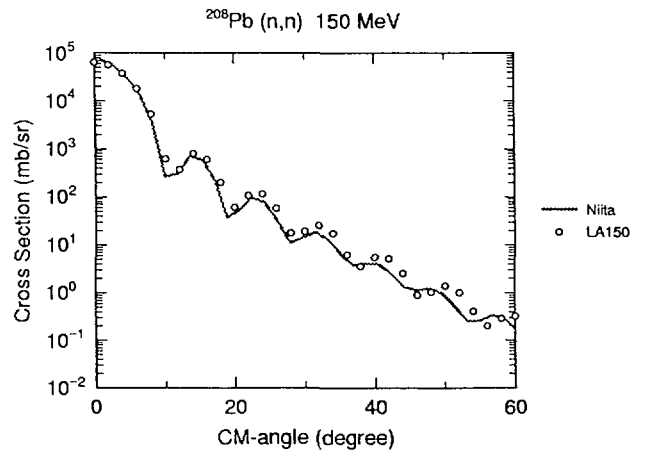
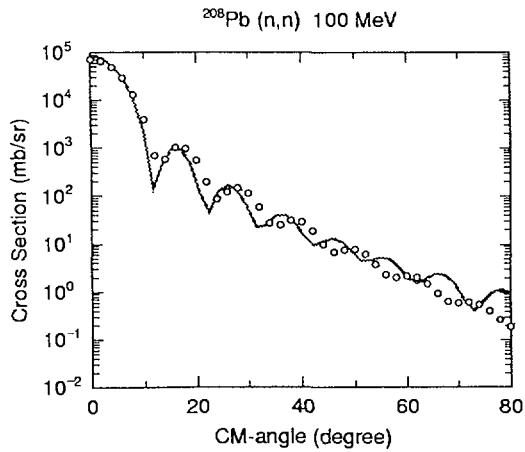
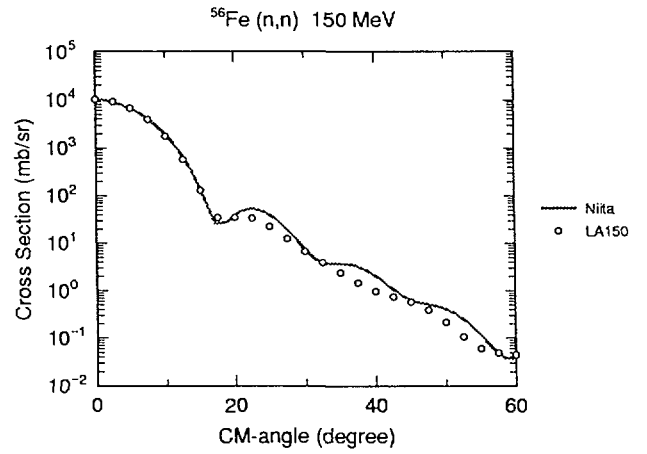
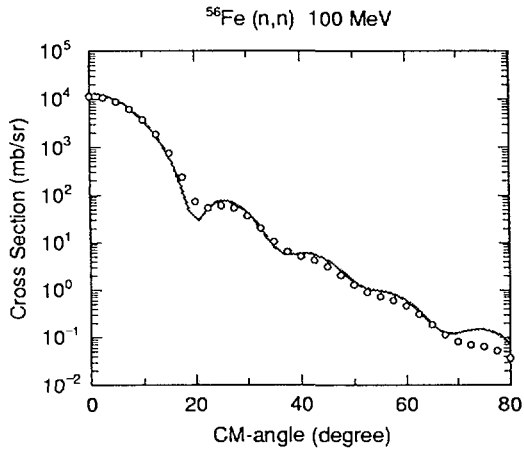
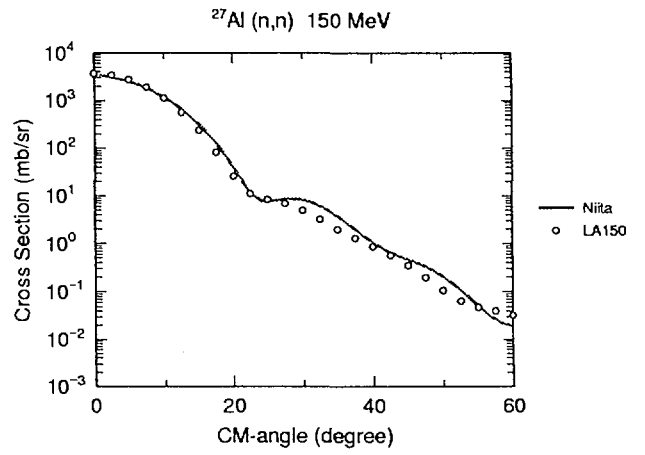
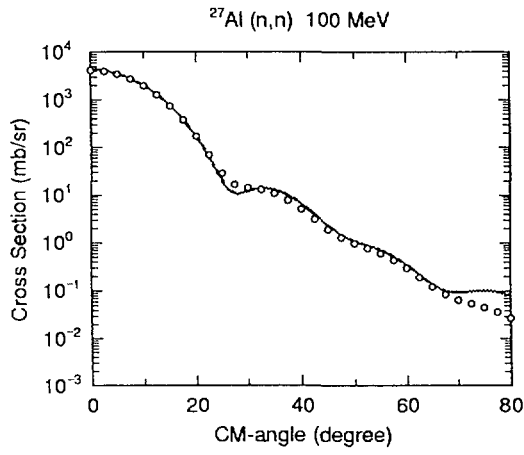
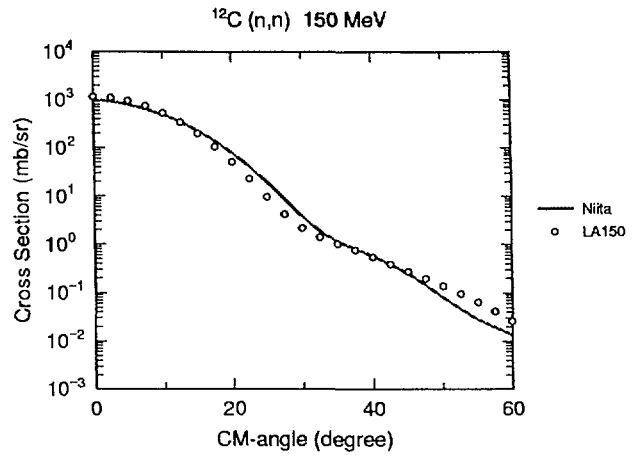
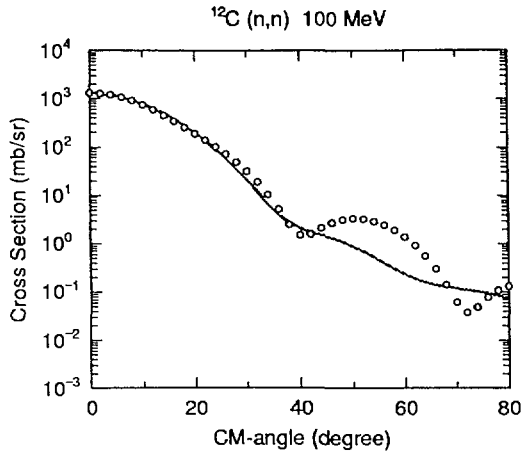
[1] S. Pearlstein: Nucl. Sci. Eng. **95**, 116 (1987).

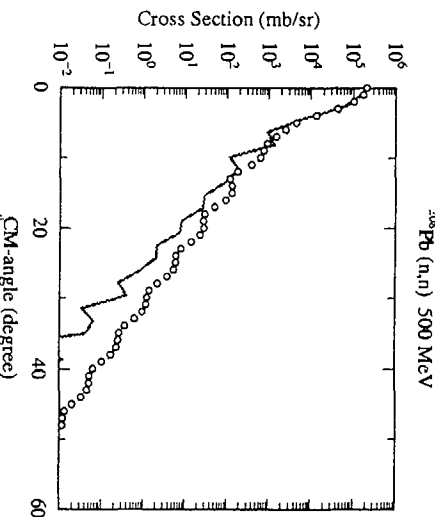
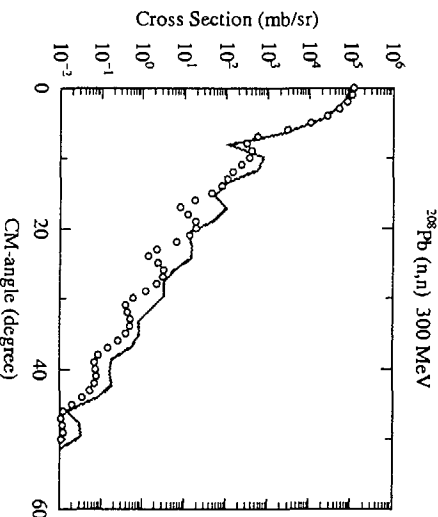
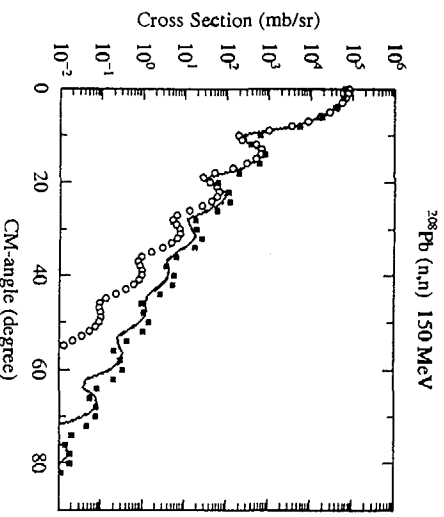
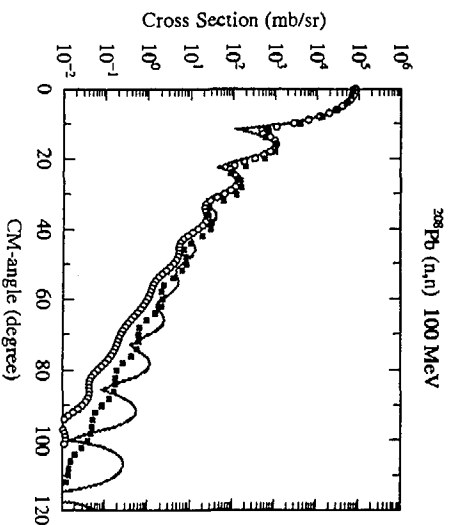
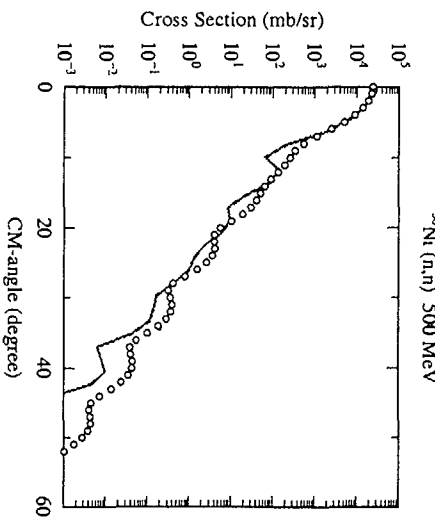
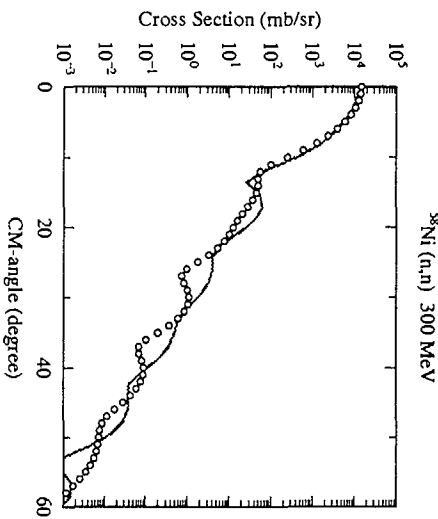
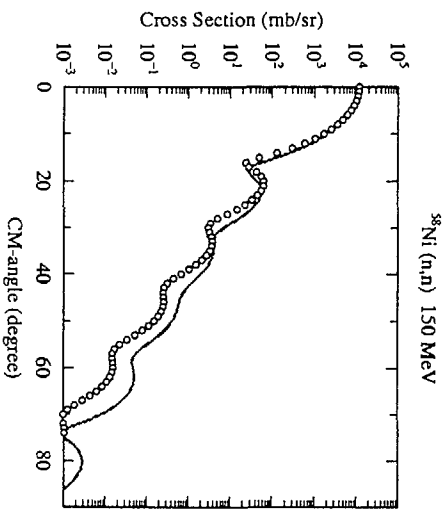
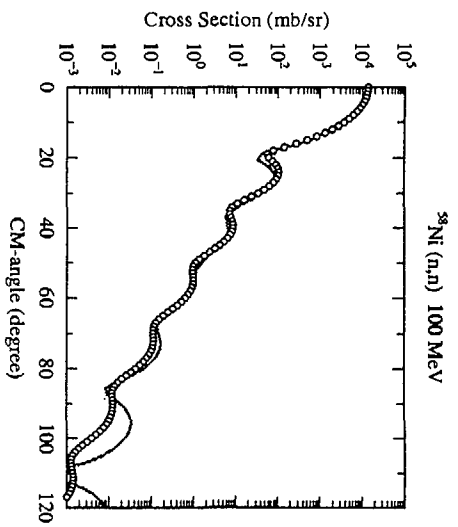


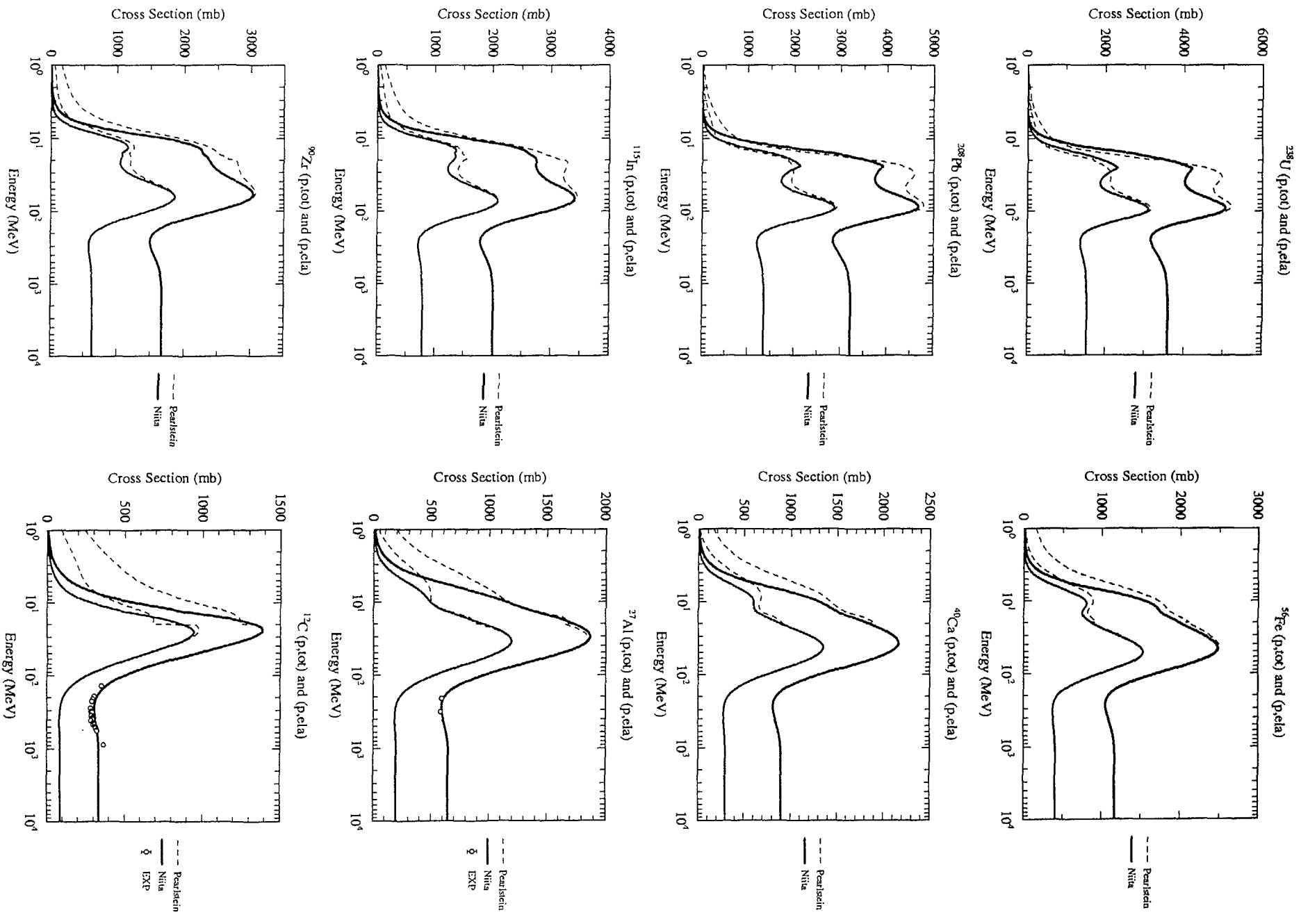




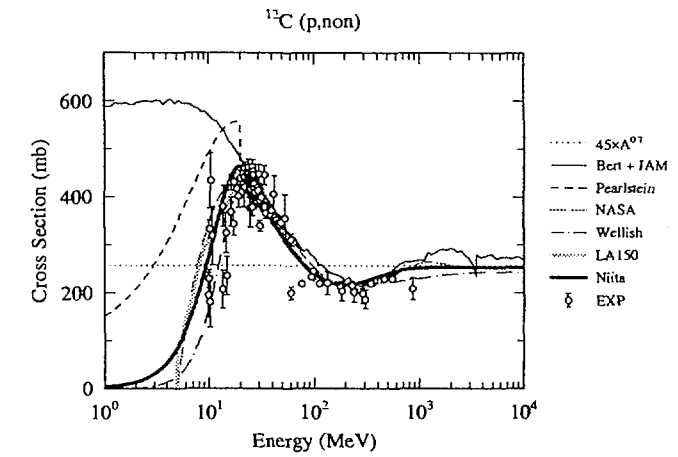
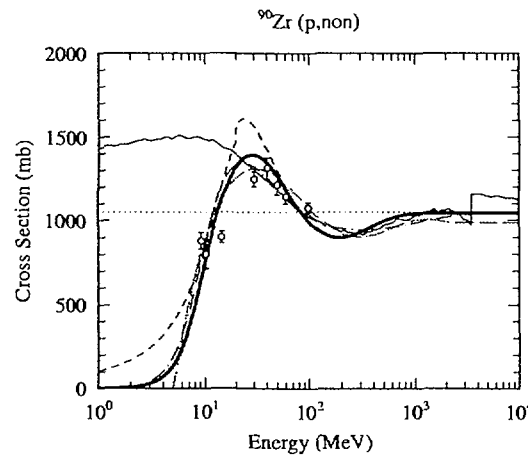
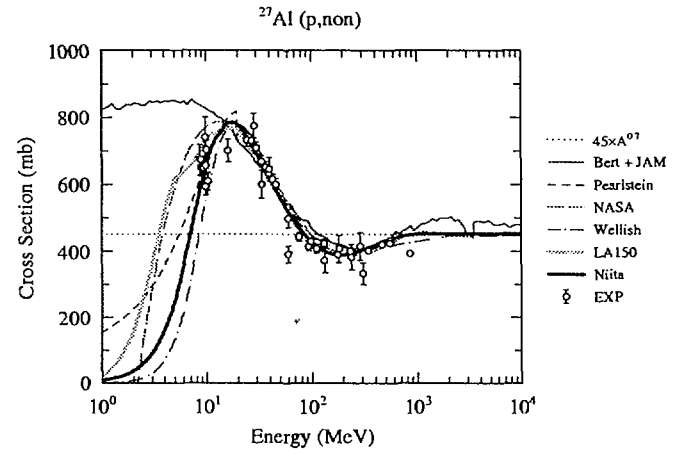
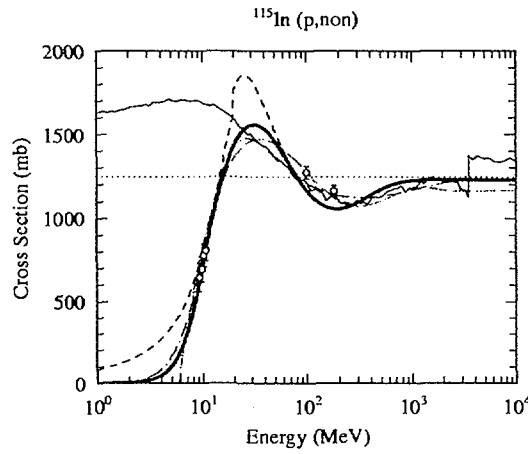
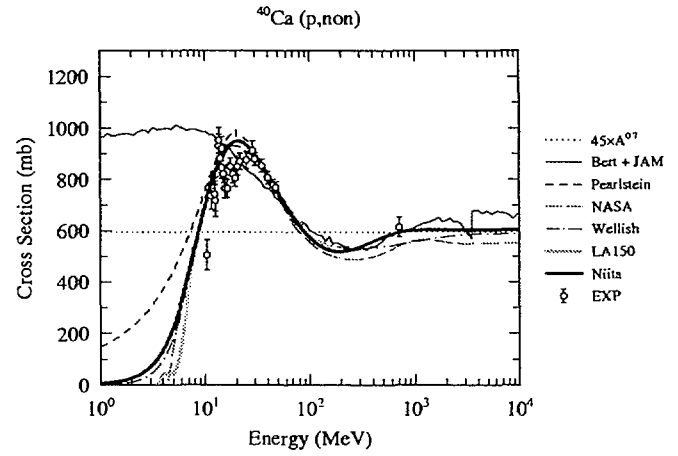
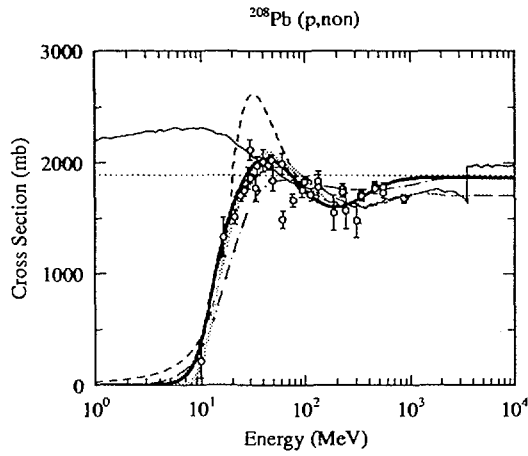
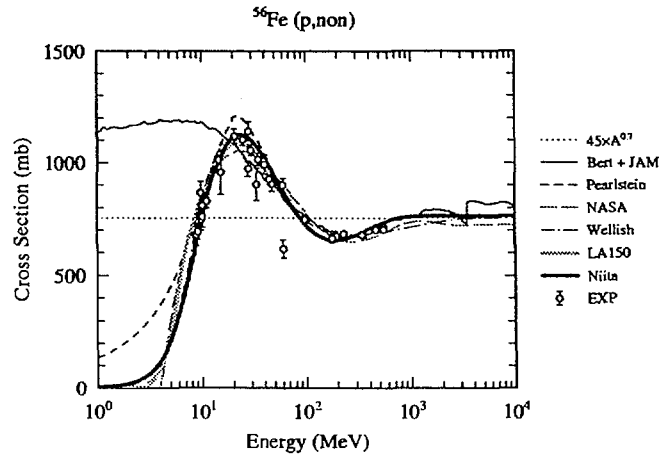
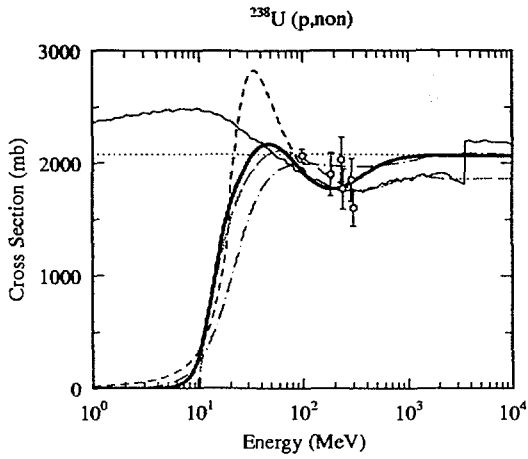


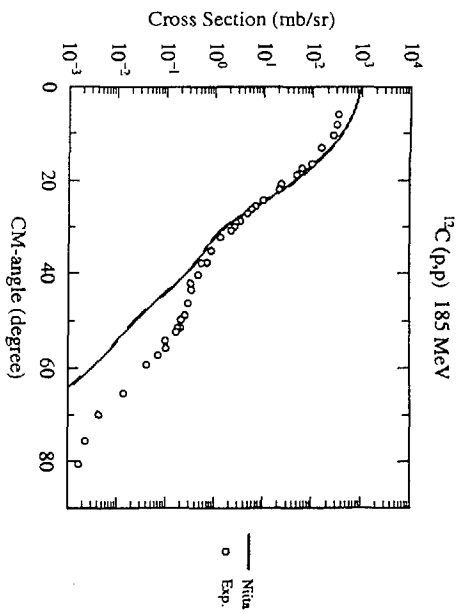




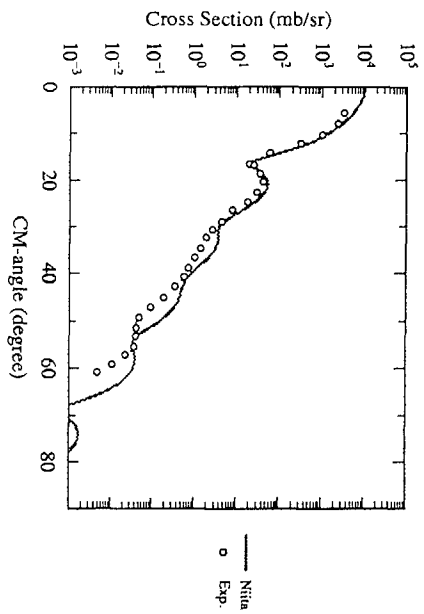




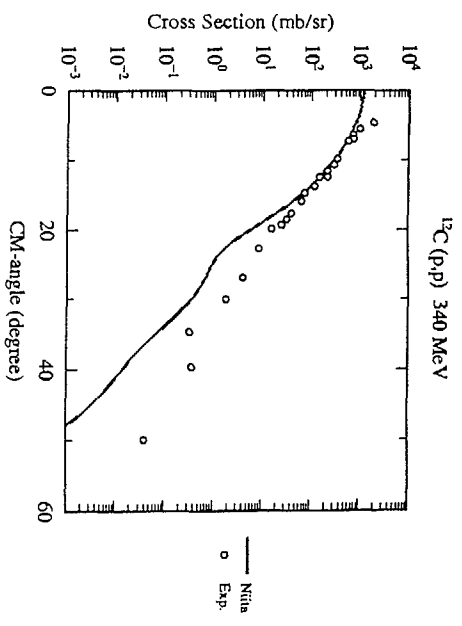
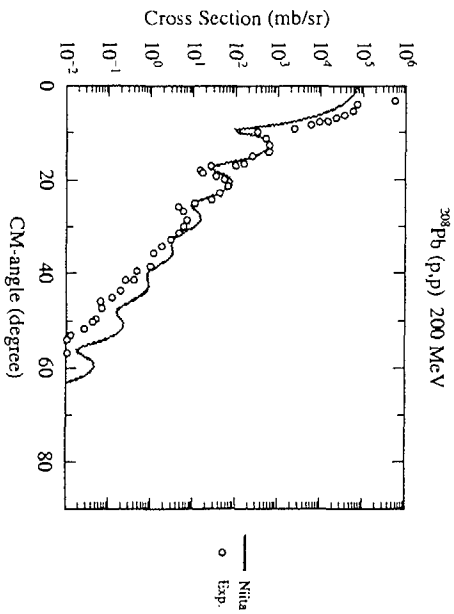
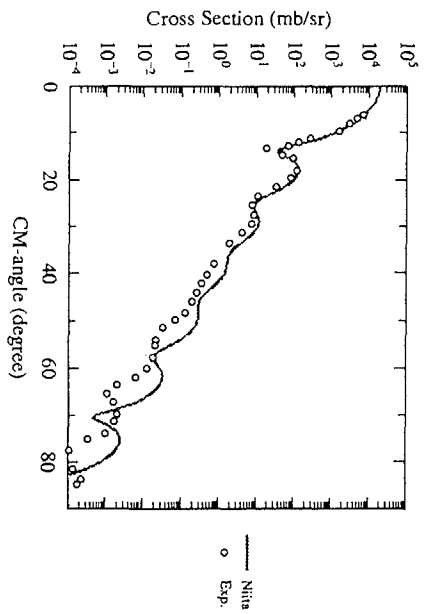




$^{58}\text{Ni}$  (p,p) 178 MeV



$^{90}\text{Zr}$  (p,p) 180 MeV



$^{16}\text{O}$  (p,p) 500 MeV

