

## Missing secondary gamma ray lines in ENDF/B-VIII.0 library

*Wednesday, 20 April 2022 14:00 (45 minutes)*

In the oil field, exploration of the subsurface is essential to answer questions regarding the location, quantity, type, and producibility of hydrocarbons. Well logging provides measurements of the characteristics of rock formations and the fluids in their pore spaces to help identify and evaluate interesting reservoirs. Downhole nuclear measurements focus on formation properties such as natural radioactivity, formation density, and hydrogen content, as well as the identification of the elemental and mineralogical composition of the rock through spectroscopy using secondary gamma rays from capture and inelastic reactions.

While comparing modeling results with experimental ones, we surprisingly discovered discrepancies between them on a significant number of isotopes.

The recent focus on replacing tools based on radioisotopic sources with those based on DT neutron generators opens many opportunities for new measurements but highlights the deficiencies of current cross sections. Those cross sections are not of interest only for the oil and gas exploration but also for space exploration to enhance rock identification.

I will present recent results focusing on some key elements and also the improvement brought on Manganese cross section.

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