

Symposium on Nuclear Data 2020

Ag102 12.9 m	Ag103 65.7 m	Ag104 69.2m	Ag105 41.29 d	S ymposium on	Ag107 51.839 %	Ag108 2.37 m	Ag109 48.161 %	Ag110 24.6 s	Ag111 7.45 d	Ag112 2.135 h
Pd101 8.47 h	Pd102 1.02 %	Pd103 16.991 d	Pd104 11.14 %	Pd105 22.33 %	N uclear	Pd107 8.3e+4 y	Pd108 26.46 %	Pd109 15.700(26)	Pd110 11.72 %	Pd111 23.4 m
Rh100 20.8 h	Rh101 3.3 y	Rh102 2.72 s	Rh103 100 %	Rh104 42.3 s	Rh105 35.38 h	D ata	2020 Nov.	Rh108 9.0 m	Rh109 99 s	Rh110 3.3 s

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Type: **Poster Presentation**

Theoretical analysis of the fission process by ^{258}Md

Thursday, 26 November 2020 16:51 (1h 59m)

It has been shown that fission has multiple modes, characterized by mass asymmetric fission and mass symmetric fission[1]. In neutron-rich heavy element region, it is argued that several fission modes coexist, with a significant change of their yields in accordance with the number of neutrons contained in the fissioning nucleus. A typical example is found in the isotope dependence of fission for fermium isotopes.

For Fm, the dominant mode transitions from the asymmetric splitting for ^{257}Fm to the symmetric for ^{258}Fm [2]. This transition was interpreted as due to the lowering of the fission barrier for symmetric fission, and the becoming energy advantage fission path of symmetric fission then asymmetric fission.

It's important to know of the potential energy surface structure and nuclear's deformation process to understand fission mechanism in neutron-rich heavy element region[3].

^{258}Md , which is the target of this work, is located near the boundary line where the transition from mass asymmetric fission to mass symmetric fission is expected to occur, and in recent years, the Japan Atomic Energy Agency has obtained the world's first fission data. As a result of data analysis, it shown that the mode of mass symmetric fission (superlong-mode) and the mode of asymmetric fission (standard-mode) coexist.

In this work, we compared the calculation using the fluctuation dissipation model(Langevin calculation)[4] with the experimental data, and considered the characteristics of the fission mode shown by the experimental data.

Reference

- [1] U. Brosa, S. Grossmann, and A. Muller, Phys. Rep. 197,167 (1990).
- [2] D.C. Hoffman et al., Phys. Rev. C, 21, 1980 (637)
- [3] Y. Miyamoto et al., Phys. Rev. C, 99, 051601(R) (2019).
- [4] S. Tanaka, Y. Aritomo, Y. Miyamoto, K. Hirose, and K. Nishio PRC 100, 064605 (2019).

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