

Abstract Submitted  
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**Cross section**  
**measurements for  $\gamma$ -rays emitted in  $^{103}\text{Rh}(n, xnyppz\alpha\gamma)$  reactions** N. FO-  
TIADES, M. DEVLIN, R.O. NELSON, T. KAWANO, LANL — Although rhodium  
is a useful radiochemical diagnostic of integrated neutron fluence, no thorough study  
of the  $\gamma$  rays emitted in fast neutron-induced reactions on the one-and-only stable  
rhodium isotope has been performed. Absolute partial cross sections for production  
of discrete  $\gamma$ -rays using  $^{103}\text{Rh}(n, xnyppz\alpha\gamma)$  reactions with  $x \leq 7$  and  $y, z \leq 1$  in a to-  
tal of 15 reaction channels were measured in the present work. The data were taken  
using the GEANIE spectrometer comprised of 26 high-purity Ge detectors with 20  
BGO escape-suppression shields. The broad-spectrum pulsed neutron beam of the  
Los Alamos Neutron Science Center's (LANSCE) WNR facility provided neutrons  
in the energy range from 0.2 to 300 MeV. The time-of-flight technique was used to  
determine the incident neutron energies. Partial  $\gamma$ -ray cross sections have been mea-  
sured for a total of 140 transitions and for neutron energies  $0.8 \text{ MeV} < E_n < 300 \text{ MeV}$ .  
An estimate of the population of isomers in the  $(n, n')$ ,  $(n, 2n)$  and  $(n, 3n)$  channels  
was attempted. Theoretical calculations up to  $E_n = 20 \text{ MeV}$  from the GNASH  
reaction model are compared to the experimental results.

Ronald Nelson  
LANL

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