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Another Isomer in 102Rh ?

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It is well known that 102Rh has a ground state with t1/2 = 207.3 days and an isomer at an excitation energy of 140.7 keV with t1/2 = 3.742-years. Following the irradiation of a rhodium chloride target with 35-MeV protons from Lawrence Berkeley National Laboratory's 88-Inch Cyclotron, we chemically separated the rhodium and palladium fractions and then counted them separately using high-purity Ge detectors. In the Rh fraction, we observed a growth over time in the intensities of several gamma-ray lines attributable to the decays of 102Rhg,m. One possible interpretation of these results is that there exists a previously unobserved second isomer in 102Rh. From our measurements, we deduce a half-life of this potential new isomer of approximately 46 hours. Puzzles associated with these observations will be presented.

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