

# IN-BEAM SPECTROSCOPY STUDY OF THE PROTON EMITTER $^{151}\text{Lu}$ <sup>1</sup>

C.-H. Yu, J. C. Batchelder<sup>2</sup>, C. R. Bingham<sup>3</sup>, R. Grzywacz<sup>3,5</sup>, K. Rykaczewski, K. S. Toth, Y. Akovali, C. Baktash, A. Galindo-Uribarri, T. N. Ginter<sup>4</sup>, C. J. Gross<sup>2</sup>, M. Karny<sup>5</sup>, S. H. Kim<sup>3</sup>, B. D. MacDonald<sup>6</sup>, S. D. Paul<sup>2</sup>, D. C. Radford, J. Szerypo<sup>7</sup>, and W. Weintraub<sup>3</sup>

Gamma rays decaying from the excited states of the proton-unbound  $^{151}\text{Lu}$  were observed for the first time in an experiment using the  $^{96}\text{Ru}(^{58}\text{Ni}, p2n)^{151}\text{Lu}$  reaction. These  $\gamma$  rays were identified by correlating prompt  $\gamma$  radiations at the target position with  $^{151}\text{Lu}$  proton radioactivities at the focal plane of a recoil mass separator. Systematic data on  $N = 80$  isotones suggest a possible isomeric level at high spin in  $^{151}\text{Lu}$ . Our measurement was unable to observe such an isomer, but provided an upper limit on its half-life. The observed  $\gamma$  rays in  $^{151}\text{Lu}$  can be interpreted in terms of two possible level structures.

---

<sup>1</sup>Abstract of published paper: Phys. Rev. C**58**, R3042 (1998).

<sup>2</sup>Oak Ridge Institute for Science and Education, Oak Ridge, TN 37831.

<sup>3</sup>University of Tennessee, Knoxville, TN 37996.

<sup>4</sup>Vanderbilt University, Nashville, TN 37285.

<sup>5</sup>Warsaw University, Warsaw, Hoza 69, Poland.

<sup>6</sup>Georgia Institute of Technology, Atlanta, GA 30332.

<sup>7</sup>Joint Institute for Heavy Ion Research, Oak Ridge, TN 37831.