

Abstract Submitted  
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**Alpha-gamma coincidence spectroscopy of  $^{259}\text{Rf}$  using a mixed Cf target** MASATO ASAI, KAZUAKI TSUKADA, YOSHITAKA KASAMATSU, TETSUYA K. SATO, ATSUSHI TOYOSHIMA, YASUO ISHII, RYUTA TAKAHASHI, YUICHIRO NAGAME, TETSURO ISHII, ICHIRO NISHINAKA, Japan Atomic Energy Agency, DAIYA KAJI, KOUJI MORIMOTO, RIKEN, YASUAKI KOJIMA, Hiroshima University — Gamma rays following the  $\alpha$  decay of  $^{259}\text{Rf}$  have been observed for the first time by means of  $\alpha$ - $\gamma$  coincidence spectroscopy.  $^{259}\text{Rf}$  was produced via the  $^{251}\text{Cf}(^{12}\text{C},4\text{n})^{259}\text{Rf}$  reaction at the JAEA tandem accelerator. The target consists of 63%  $^{249}\text{Cf}$ , 12%  $^{250}\text{Cf}$ , and 25%  $^{251}\text{Cf}$  with a thickness of  $420\text{ }\mu\text{g}/\text{cm}^2$ . Reaction products were transported with a He/KCl aerosol jet into a rotating wheel  $\alpha$ - $\gamma$  detection system equipped with two sets of two Si detectors and two Ge detectors. Two  $\gamma$  lines were observed at 97.3 and 146.7 keV in coincidence with the 8770 keV  $\alpha$  transition of  $^{259}\text{Rf}$ . In addition, a few  $\gamma$  events appeared at  $\sim 125$  keV. The energy differences and intensities of these  $\gamma$  transitions, which are very similar to those in the  $\alpha$  decay of  $^{257}\text{No}$ , allow us to assign the  $3/2^+[622]$  configuration to the 146.7 keV level in  $^{255}\text{No}$  as well as to the ground state of  $^{259}\text{Rf}$ . This result indicates that the order of neutron orbitals should be inverted between  $^{255}\text{Fm}$  and  $^{257}\text{No}$  in  $N = 155$  isotones.

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