

ELECTRON CAPTURE AFTER-EFFECTS IN COMPLEXES OF ^{111}In AND ^{152}Eu INVESTIGATED BY PERTURBED ANGULAR CORRELATION

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One of the key components of radiopharmaceuticals for Targeting Imaging and Therapy is a stable bifunctional chelating system with radionuclide attached. After-effects of the radioactive decay can cause a release of radionuclide from the complex with a chelating agent [1]. Perturbed angular correlation (PAC) of γ -rays is one of the few effective techniques to study local environment of the nucleus in liquids with very small concentration of the probe up to 10^{-12} M [2, 3].

Herein, two radionuclides ^{111}In ($T_{1/2} = 2.8$ d) with following parameters: intermediate half-life $t_{1/2} = 85$ ns, nuclear spin $I = +5/2$, cascade 171–245 keV and ^{152}Eu (13.5 y) with parameters: $t_{1/2} = 1.4$ ns, $I = 2$ and cascade 1408–122 keV complexed with diethylenetriaminepentaacetic acid (DTPA) are investigated by PAC.

The after-effects of electron capture decay which lead to complex disintegration are studied using nuclei mentioned above. Potential mechanism of post-decay processes for f-elements is presented.

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