

THE INVESTIGATION OF e_0 -ELECTRON YIELDS
FROM THE SURFACE OF VARIOUS TARGETS
UNDER BOMBARDMENT BY α -PARTICLES
FROM ^{226}Ra DECAY

*V.T. Kupryashkin, L.P. Sidorenko, O.I. Feoktistov,
I.P. Shapovalova*

Institute for Nuclear Research,
Nat. Acad. Sci. of Ukraine
(47, Nauky Prosp., Kyiv 03028, Ukraine)

S u m m a r y

The dependences of the yields of near-zero-energy electrons (e_0 -electrons) on the energy of α -particles are measured for targets with various Z irradiated by α -particles from the ^{226}Ra decay. The yields of e_0 -electrons for various targets are found to change within the limits of 15%. The small growth of the yield of fast electrons e_f is observed when Z increases. The ratios of e_0 -electron yields for various α -particle energies E_α in ^{226}Ra are well described by the dependence $Y_{e_0}(E_\alpha) \sim E_\alpha^{-1/2}$. The theoretical analysis of the experimentally obtained e_0 -electron yields with the use of a quantum-mechanical treatment of the sudden atomic excitation by an α -particle allows us to evaluate the energy of the transition from a bound state to the continuum at the level approximately equal to 70 eV which is comparable with the known energies of low-energy Auger electrons in gold (69.8 eV) and aluminum (63.2 eV).