A study of the conversion electron spectra yields different information on the electron band structure than that contained in X-ray electron spectra. The difference is due to the fact that the conversion process is strongly localized near the excited nucleus, whereas the photoeffect does not have this property. However, the XPS spectrum of metallic technetium exhibits the same general features as the CES spectrum. Certain differences between these spectra, in particular, different distribution of spectral intensities, are due to the fact that relative cross-sections for s, p, d, and f electron densities are not the same at photoemission and conversion. For samples with the ^{99m}Tc impurity atoms into platinum and gold, the XPS spectra demonsrate the electron structure of the matrix metal only. It happens because of a small amount of technetium atoms into sources and a low sensitivity of the XPS method. The CES spectra of the Tc-99m impurity atoms into platinum and gold depend on the content of technetium into samples.

The experimental results were analyzed together with data of the available theoretical calculations [3, 5 – 6]. Conceptions of the atom electronegativity and the additive scheme as well as the hybridization idea were taken into account for the interpretation of results. The theoretical electronic structure and CES spectra were calculated within the framework of cluster approximation by relativistic X_α-scattered wave method for metallic technetium [3] and technetium into platinum matrix [6]. Metallic technetium was modelled by clusters with structural formulas $TcTc_{12}$, $TcTc_{12}Tc_6$ and $TcTc_{12}Tc_6Tc_{24}$, and technetium into platinum matrix was modelled by clusters $TcPt_{12}$, $TcPt_{12}Pt_6$ and $TcPt_{12}Pt_6Pt_{24}$. In these clusters the central atom is surrounded by one (further — cluster I), two (cluster II) and three (cluster III) nearest coordination spheres, respectively. For metallic technetium, the theoretical electonic structure and CES spectrum were calculated by using relativistic band structure calculation applying the relativistic linear muffin-tin orbital method too [5]. A good qualitative agreement has been revealed overall between the calculated (for cluster III) [3] and experimental results for metallic technetium. When passing from cluster I to cluster II and then to cluster III, the agreement is improved.