to interpret them in terms of the theory of groups, but the analysis of these spectra in the row of different types of clusters and in the row of clusters belonging to one type, but with a different surrounding, allow to refer them according to the principle of "characteristic" property.

Magnetochemical methods occupy a special place among experimental methods of studying the electronic structure of coordination compounds, because it allow the determination of the number of unpaired electrons in the molecule, the value of intramolecular exchange interactions and even in some case, may show the sequence of MO in the compounds concerned. Sometimes magnetochemical methods may be used as analytical and partially structural methods of investigations. However, systematic studies on magnetochemical properties of complex technetium compounds have not been reported. The available results in this field are scanty, they do not contain data on the diamagnetic corrections of technetium, and therefore they are doubtful. In this paper magnetic properties of complex and cluster technetium compounds in different oxidation states were described using the methods of static magnetic susceptibility and ESR-spectroscopy [5].

The present work reports the results of a study of technetium and its compounds using X-ray photoelectron spectroscopy (XPS) [6], this being one of the most effective physico-chemical methods allowing us to solve the problems involved in investigating the electron structure of compounds, their chemical composition and the degrees of oxidation of the elements constituting them. The values of the binding energies, spin-orbit splittings and line widths of inner electrons were measured, as well as the structure of outer electrons of Tc compounds. The experimental results were used to estimate the adequacy of the model theoretical description of characteristics of Tc electron structure, obtained using the XPS method, employed in the published literature. A correlation between the binding energies of the inner electrons and the calculated values of effective charges of the Tc atoms in compounds has been established. The data obtained together with the data from other methods were used in analyzing the features of electronic and molecular structure of Tc acidocomplexes. Particular attention is paid to research into cluster compounds of technetium and compounds with ferricinium cations and fast direct dynamic electron transfer over anion-cation infinite chains in solid phases. These compounds belong to new class of compounds which is intermediate between ionic and coordination compound, on one hand, and metals, on the other hand. Part of these compounds are characterized by unusual low-temperature electron emission and ^{57}Fe spectra which also are described in this review [7].

The review also is concerned with the study of electronic structures of technetium cluster compounds by measuring of chemical shifts in K_α-X-ray spectra. Using the data on elecronegativity and EHT calculations of electronic structures, X-ray photoelectron and K_α-X-ray emission spectra, effective and partial charges of technetium atoms and a number of ligands have been determined [8]. It has been shown that during formation of M-M bonds in cluster technetium compounds a decrease in effective charge of its atoms occurs.

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