

The tetrameric cubane-like complexes $[\text{Tc}(\text{CO})_3\text{Hal}]_4$ are most widely studied. The chloride and bromide derivatives have cubic structure (space group *I-43m*) [9] with crystallographic T_d symmetry of their molecules. The increase in Tc-Hal bond lengths for iodide complex results in the change of the crystal structure [10].

$[\text{Tc}(\text{CO})_3\text{I}]_4$

Crystal data: monoclinic, space group *C2/c*, $a = 18.125(12)$, $b = 9.741(6)$, $c = 16.577(9)$ Å, $\beta = 118.50(4)^\circ$, $R = 0.069$.

The average interatomic distances are: Tc-I 2.846(3), T-C 1.91(4) and C-O 1.14(4) Å. In contrast with chloride and bromide tetrameric complexes, where the orientation of all molecules in the body-centered cell is the same, $[\text{Tc}(\text{CO})_3\text{I}]_4$ molecules in its crystal structure have two different orientations.

The structure of the mixed complex $[\text{Tc}_4(\text{CO})_{12}\text{F}_3(\text{OH})]$ gives the example of the third structural type in the space group *Pnma* [11].

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