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THE INFLUENCE OF BULKY SUBSTITUENTS IN FLUORINE CHEMISTRY

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The preparation of Cp^*TaF_4 ($Cp^* = C_5Me_5$), Cp^*NbF_4 and $CpNbF_4$ is reported. On the basis of an X-ray structural analysis it is shown that Cp^*TaF_4 forms a dimer in the solid state. Fluorine compounds containing Cp^* groups are easily soluble in organic solvents. The fluorine atoms in Cp^*TaF_4 may be replaced by other substituents. In contrast to TaF_5 or NbF_5, WF_6 can be used directly to generate tungsten containing heterocycles. The new ligand $Me_2S(NPPh_2NSiMe_3)_2$, prepared from $Me_2S(NPPh_2)_2$ and Me_3SiN_3, reacts with WF_6 to form the heterocycle $Me_2S(NPPh_2N)_2WF_4$. The X-ray single-crystal structure analysis exhibits a puckered eight-membered ring with alternating short and long bond lengths.

Furthermore we have investigated the chemistry of 1,3,5-tris(trifluoromethyl)benzene and 1-dimethylamino-3,5-bis(trifluoromethyl)benzene as bulky ligands in compounds of main group and transition elements. It will be shown that new compounds containing elements in low co-ordination numbers can be isolated.