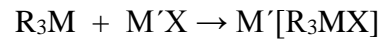
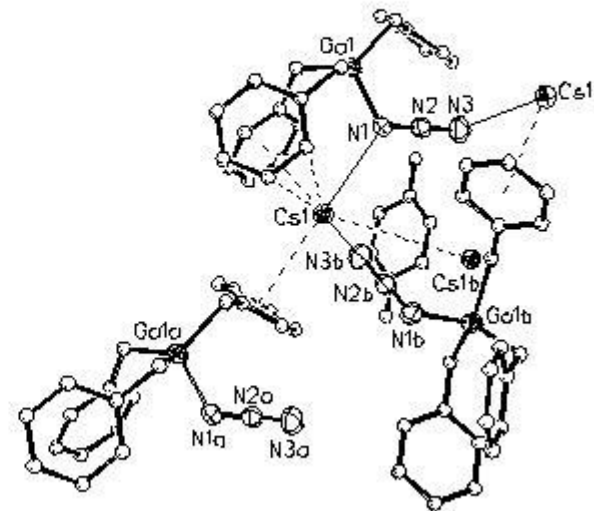
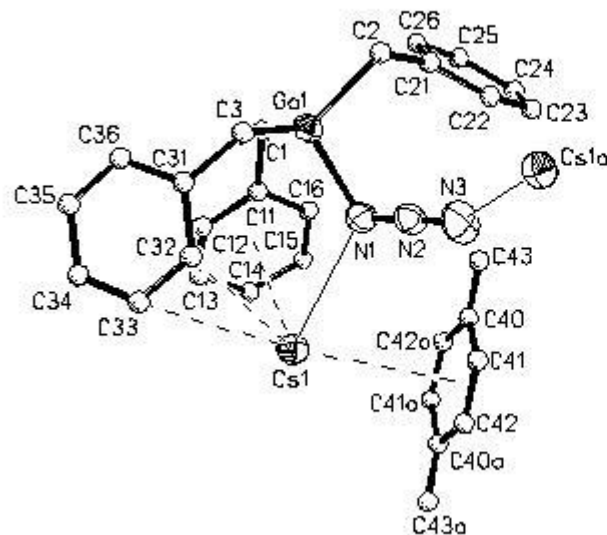


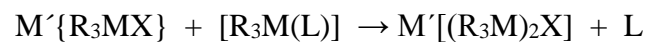
Organopseudohalogenometalates

The reaction of alkali metal pseudohalides $M'X$ with metallanes R_3M of Al, Ga, or In yields Triorganopseudohalogenometalates:



In the reactions with pseudohalides metalates with other ratios metallane : Pseudohalide than 1:1 can be formed. The 1:1 metalate may react with another metallane unit to form a complex $M'[(R_3M)_2X]$. The success of such a reaction is strongly depending on the used solvent, owing to preformed adducts which change the electrophilic and nucleophilic properties:





Especially pseudohalides are known for their function as multidentate ligands. Indeed, the structures of the Triorganopseudohalogenometalates are more complex than the ones with halide ions. As an example figure 1 shows the structure of the azido compound $[Cs\{(PhCH_2)_3GaN_3\}]_n$.

figure 1: coordination sphere of the N_3^- -ligand and the Cs^+ -cations in $[Cs\{(PhCH_2)_3GaN_3\}]_n$

The structure exhibits the common feature of the Organohalogenometalates with organic ligands containing p-electrons, namely the significant electrostatic interactions of the aromatic p-systems with the Cs^+ -cations.

The principle difference can be seen from the comparison of the structures of the hexamethylcyanodigallate compounds $[Cs\{(Me_3Ga)_2CN\}]_n$ (figure 2) and $[Cs(toluen)_2\{(Me_3Ga)_2CN\}]_n$ (figure 3).

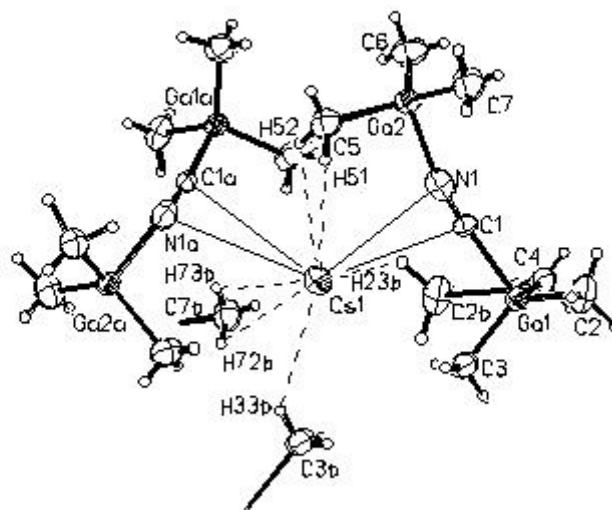


figure 2: coordination sphere of the Cs^+ -cations in $[Cs\{(Me_3Ga)_2CN\}]_n$

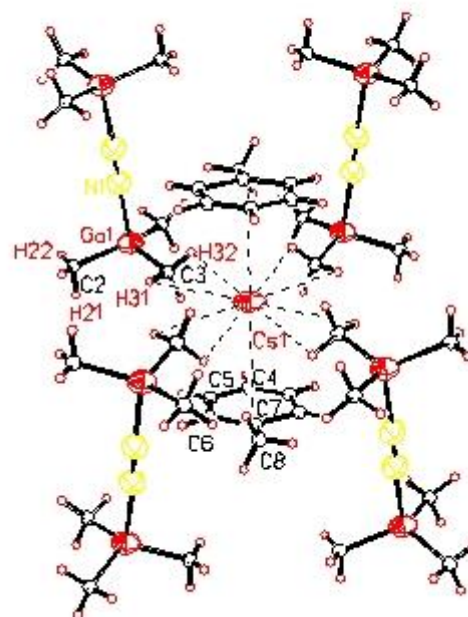


figure 3: coordination sphere of the Cs⁺-cations in [Cs(toluene)₂{(Me₃Ga)₂CN}]_n,
Cs⁺(toluene)₂-sandwich

Literature:

Azidometalates:

Mike R. Kopp, B. Neumüller, *Organometallics* **1997**, *16*, 5623.

Cyanometalates

Mike R. Kopp, B. Neumüller, *Z. Anorg. Allg. Chem.* **1998**, *624*, in press.