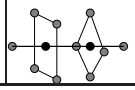
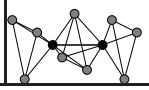
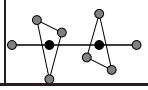
## 8. Übergangsmetalle (Forts.)

| Nebengr. | IV | V | VI | VII | VIII | | |
|---|---|---|---|---|---|---|---|
| Valenz-e$^-$ | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**Neutralmoleküle**

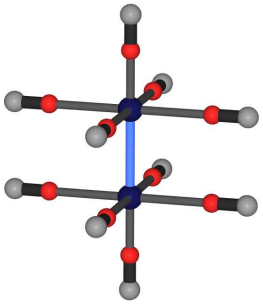
| einkernig | | | | | | | |
|---|---|---|---|---|---|---|---|
| Verbindung | | $V(CO)_6$ | $Cr(CO)_6$<br>$Mo(CO)_6$<br>$W(CO)_6$ | - | $Fe(CO)_5$<br>$Ru(CO)_5$<br>$Os(CO)_5$ | -<br>-<br>- | $Ni(CO)_4$ |
| Struktur | | okta-edrisch | okta-edrisch | | trigonal-bipyramidal | | tetra-edrisch |
| Eigenschaft | | kristallin paramagn. | kristallin | | flüssig | | flüssig |

| zweikernig | | | | | | | |
|---|---|---|---|---|---|---|---|
| Verbindung | | | | $Mn_2(CO)_{10}$<br>$Tc_2(CO)_{10}$<br>$Re_2(CO)_{10}$ | $Fe_2(CO)_9$<br>$Ru_2(CO)_9$<br>$Os_2(CO)_9$ | $Co_2(CO)_8$<br>-<br>- | |
| Struktur | | | |  |  |  | |

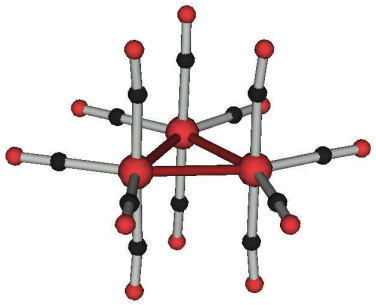
**Anionen**

| einkernig | | | | | | | |
|---|---|---|---|---|---|---|---|
| Zusammen-setzung | $Zr(CO)_6^{2-}$ | $M(CO)_6^-$<br>$M(CO)_5^{3-}$ | $M(CO)_5^{2-}$<br>$M(CO)_4^{4-}$ | $M(CO)_5^-$<br>$M(CO)_4^{3-}$ | $M(CO)_4^{2-}$ | $M(CO)_4^-$<br>$M(CO)_3^{3-}$ | |

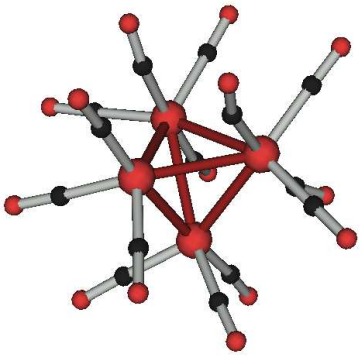
Übersicht ein- und zweikernige Metallcarbonyle



$Re_2(CO)_{10}$



$Ru_3(CO)_{12}$



$Os_4(CO)_{14}$

Strukturen mehrkerniger Carbonylkomplexe