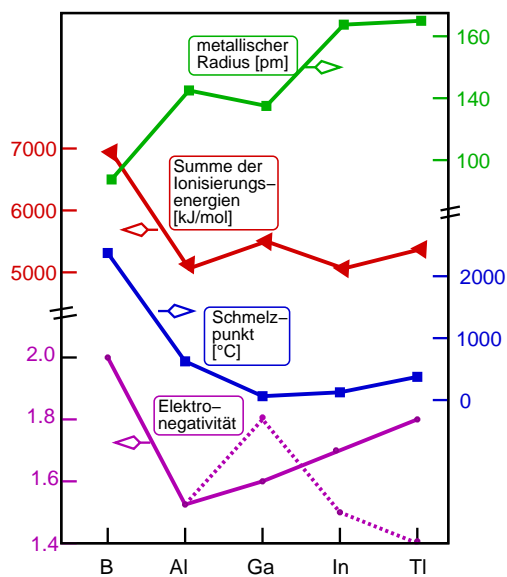


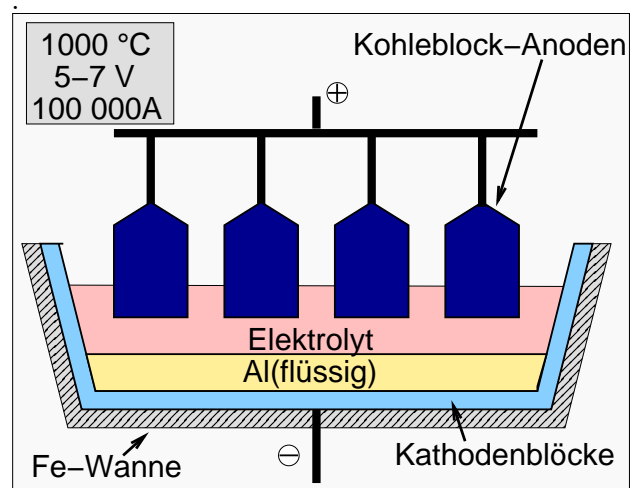
## 4. Triele (13. Gruppe; III. Hauptgruppe)

## 4.1. Übersicht

|                                 | Al  | Ga                               | In                  | Tl                      |
|---------------------------------|---|----------------------------------|---------------------|-------------------------|
| EN (Allred-Rochow)              | 1.47  | 1.82                             | 1.49                | 1.44                    |
| $E_0$ [V]                       | -1.68   | -0.53                            | -0.34               | $-0.34^{+1}/+0.72^{+3}$ |
| $r_{M^{3+}}$ [pm] für CN 6      | 67.5  | 76                               | 94                  | 102.3                   |
| $r_M$ [pm] für CN 12            | 143.2   | 141.1                            | 166.3               | 171.6                   |
| <b>Elemente</b>                 | ← glänzende luftstabile Metalle →   |                                  |                     | luftempfindlich         |
| Schmelzpunkt [°C]               | 660   | 30                               | 156                 | 302                     |
| Struktur                        | f.c.c.  | eigener T.                       | f.c.c./b.c.c.       | h.c.p.                  |
| <b>Darstellung</b>              | Schmelzelektrolyse  | ← Elektrolyse der Salzlösungen → |                     |                         |
| <b>MH<sub>3</sub> (Hydride)</b> | polymerer FK  | Dimere                           |                     |                         |
| <b>Halogenide</b>               | $MF_3$ : $ReO_3$ -Str.; $AlCl_3$ : Schichtstr.; Rest + in Lsg+Dampf: $M_2X_6$ |                                  |                     |                         |
| <b>Oxide</b>                    | $\alpha$ -(Korund) und $\gamma$ -(Hydrargillit) $M_2O_3$                      |                                  | $M_2O_3$ und $M_2O$ |                         |
| <b>Hydroxide</b>                | $\alpha$ -(Bayerit) und $\gamma$ -(Gibbsit) $M(OH)_3$                         |                                  |                     |                         |
| <b>Oxid-Hydroxide</b>           | $\alpha$ - $MO(OH)$ (Diaspor)   |                                  |                     |                         |
| <b>E(V)-Verb.</b>               | III/V-Halbleiter  |                                  |                     |                         |
| <b>sonstige Verb.</b>           | $M^I M^{III}(SO_4)_2 \cdot 12H_2O$<br>(Alaune)                                |                                  |                     |                         |
|                                 | $MgAl_2O_4$ (Spinell)   |                                  |                     |                         |
| <b>Flammenfärbung</b>           | -   | -                                | blau (indigo)       | grün                    |

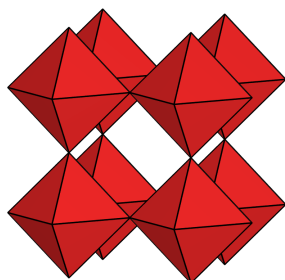
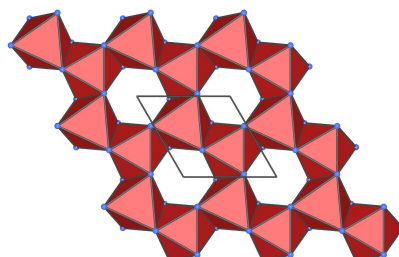
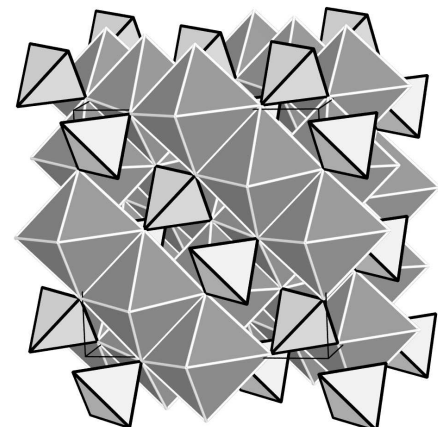


## 4.2. Elemente



Elektrolytische Al-Herstellung

## 4.3. Halogenide und 4.4. Oxide

 $AlF_3$  ( $ReO_3$ -Typ)Oktaederschichten in  $AlCl_3$   
und in  $\alpha$ - $Al_2O_3$ Struktur von Spinell ( $MgAl_2O_4$ ):  
 $MgO_4$ -Tetraeder;  $AlO_6$ -Oktaeder