3. Erdalkalimetalle

3.1. Übersicht

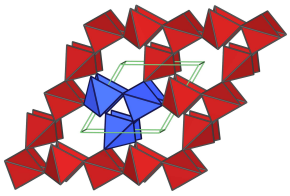
	Be	Mg	Ca	Sr	Ba
Tendenzen	$\Longrightarrow$ Atom-/Ionen-Radien, Reaktionsfähigkeit $\Longrightarrow$ $\Longrightarrow$ Basizität der Oxide, Löslichkeit der Hydroxide $\Longrightarrow$				
	$\Longleftarrow$ Hydratations-Radius/-Wärme, Ionisierungs-Energie $\Longleftarrow$ $\Longleftarrow$ Siede-/Schmelz-Punkt, Löslichkeit d. Sulfate, Gitterenergie d. Salze $\Longleftarrow$				
EN	1.5	1.2	1.0	1.0	0.9
E_0 [V]	−1.85	−2.37	−2.87	−2.89	−2.91
$r^{[6]}_{M^{2+}}$ [pm]	45	72	100	118	135
Elemente	an Luft beständig (Passivierung)		$\longleftarrow$ graue luftempfindliche Metalle $\longrightarrow$ $\longleftarrow$ mit H_2O Entwicklung v. H_2 $\longrightarrow$		
Struktur	h.c.p.		f.c.c.		b.c.c.
Smp. [°C]	1278	649	839	768	727
Darst.	chemisch oder elektrochemisch		$\longleftarrow$ heute nur chemisch		$\longrightarrow$
Halogenide	kov.	$\longleftarrow$	Fluoride schwerlöslich		$\longrightarrow$
Oxide	BeO	MgO (Magnesia)	CaO (Ätzkalk, gebr. Kalk)	SrO	BaO, BaO_2
Hydroxide	$Be(OH)_2$ (amphoter)	$\longleftarrow$	$M(OH)_2$ (basisch)		$\longrightarrow$
Carbonate		$MgCO_3$ (Magnesit)	$CaCO_3$ (Calcit, Aragonit,Vaterit)		
Nitrate	alle leicht löslich				
Sulfate		$MgSO_4 \cdot 7H_2O$ (Bittersalz)	$CaSO_4 \cdot 2H_2O$ (Gips) $CaSO_4 \cdot \frac{1}{2}H_2O$ (Anhydrit)	$SrSO_4\downarrow$	$BaSO_4\downarrow$
sonst. Verb.		$MgNH_4(PO_4) \cdot 6H_2O\downarrow$	$Ca_5[PO_4]_3(OH)$ (Apatit)		$BaCrO_4\downarrow$
Spektren	-	-	rot	rot	fahlgrün
Linienlagen	-	-	622.0	650-660	524.2
in [nm]	-	-	553.3	460.7	513.9

3.3. Halogenide

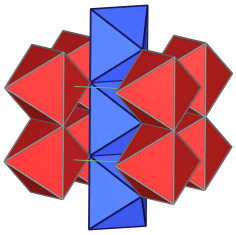
	Be	Mg	Ca	Sr	Ba
F	Quarz (4)	Rutil (6)	CaF_2 (8)	CaF_2 (8)	CaF_2 (8)
Cl	SiS_2 (4)	$CdCl_2$ (6)	Rutil (verz.) (6)	Rutil (verz.) (6)	$PbCl_2$ (9)
Br	SiS_2 (4)	CdI_2 (6)	Rutil (verz.) (6)	$PbCl_2$ (9)	$PbCl_2$ (9)
I	-	CdI_2 (6)	CdI_2 (6)	SrI_2 (7)	$PbCl_2$ (9)

Strukturtypen der Erdalkalimetall-Halogenide (CN_{Kation} in Klammern)

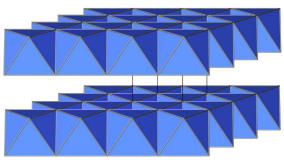
CN_{Kation}=4 CN_{Kation}=6 CN_{Kation}=8



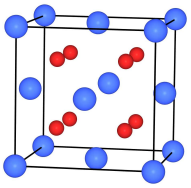
Quarz ⇑



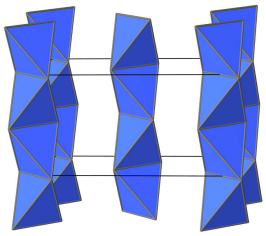
⇑ Rutil (TiO_2) ⇓



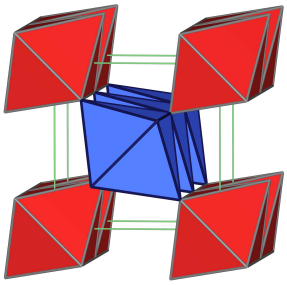
⇑ CdI_2 (CdI_6-Okt.)

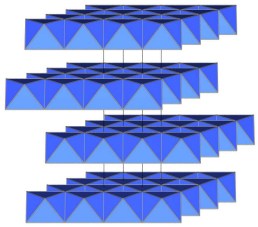


⇑ CaF_2 ⇓

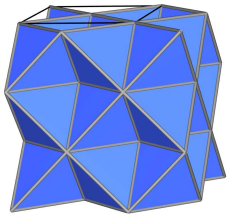


⇑ $BeCl_2$ (SiS_2-Typ)





⇑ $CdCl_2$ ($CdCl_6$-Okt.)



(FCa_4-Tetraeder)