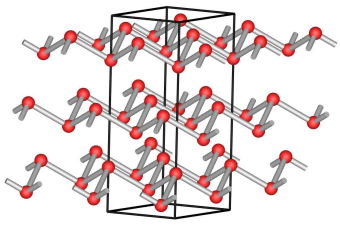
Bismut: Das schwerste Element

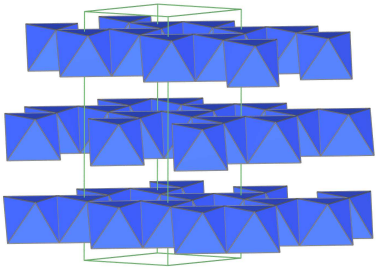
Übersicht (vgl. Vorlesung 'Chemie der Metalle')

	Ge	Sn	Pb	As	Sb	Bi
EN	1.8	1.8	1.9	2.2	1.8	1.7
$r_{M^{4+/5+}}$ [pm] (CN 6)	53	69	78	46	60	76
Elemente	←	glänzende bis graue luftstabile Metalle				→
Schmelzpunkt [°C]	945	232	327	subl.	631	271
Struktur	Diamant	Diamant, β-Sn	f.c.c.	graues As		
Darstellung	Red. mit H_2	Red. mit C o. Röstreaktion		Red. mit C oder Fe		
Legierungen	mit ähnlichen Metallen: niedrig schmelzende Lote mit $A^{I,II}$-Metallen: Metallide (Zintl-Phasen)					
Hydride	MH_4 zuneh. instabil			MH_3 zuneh. instabil		
Halogenide	MX_4: F: hochschmelzend, Cl: Moleküle			MX_3: Molek. bzw. BiI_3-T. MF_5: Moleküle bzw. Oktaederketten		
Chalkogenide	GeO_2, GeO: ähnlich Si-O	MO: PbO-Struktur Sn_3O_4 SnO_2 (Zinnstein)	Pb_3O_4 (Mennige) Gemischtv.	M_2O_3 M_4O_6 As_4S_4 (Realgar)	Sb_2O_4 (Cervantit)	Bi_2O_3 (Defekt-CaF_2)

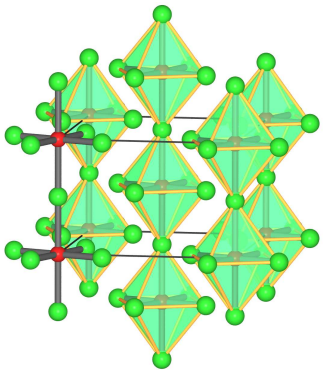
Strukturen



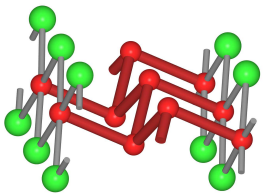
graues Arsen



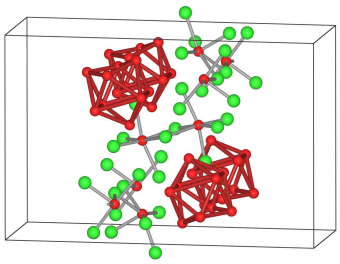
BiI_3



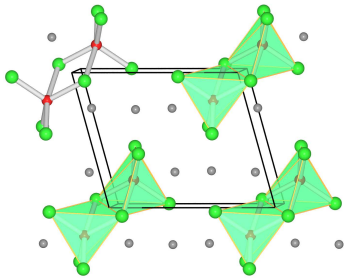
BiF_5



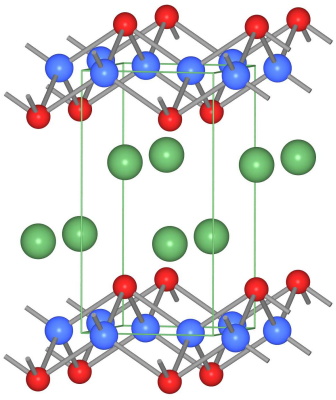
BiBr



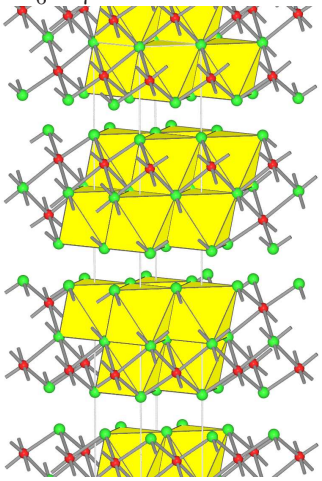
Bi_6Br_7



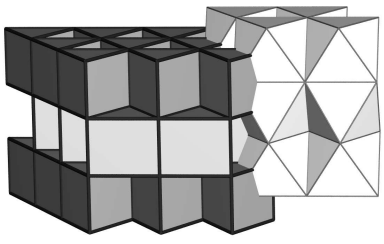
K_3BiO_4



BiOCl



Bi_2Te_3



NiAs: Oktaeder [$NiAs_6$]; trigonale Prismen [$AsNi_6$]