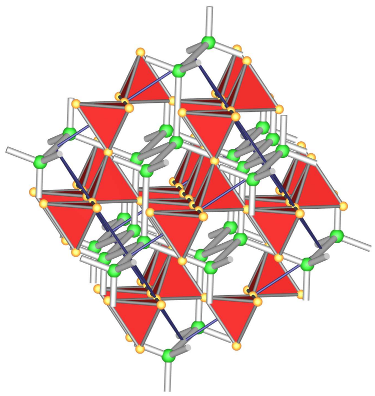
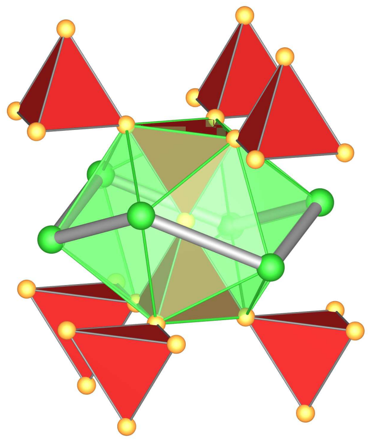
Legierungen, intermetallische Phasen (Bsp. Ca – Cu – Sn) (Forts.)

❸ Ca – Cu: Laves-Phasen usw.

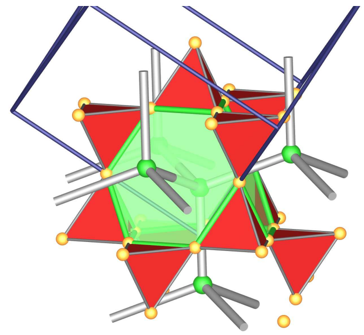
① $MgCu_2$



$MgCu_2$: Gesamtstruktur

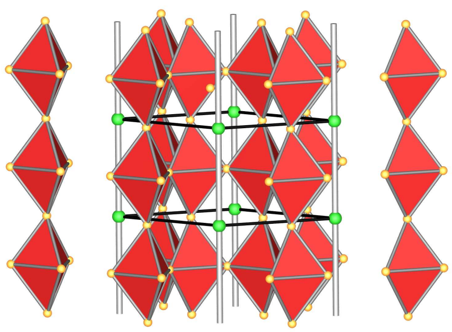


Cu: CN 6+6 (FK 12)



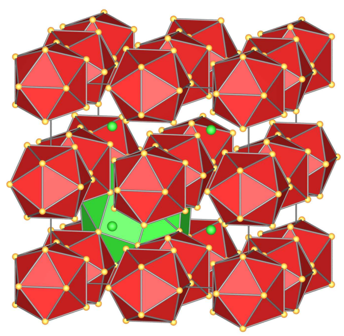
Mg: CN 12+4 (FK 16)

② $CaCu_5$

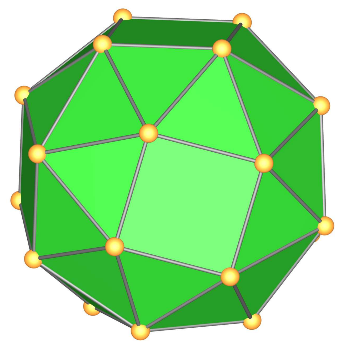


$CaCu_5$-Typ

③ $BaCu_{13}$

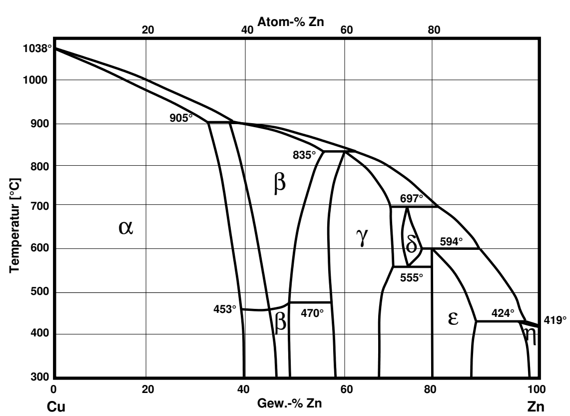


$NaZn_{13}$-Typ

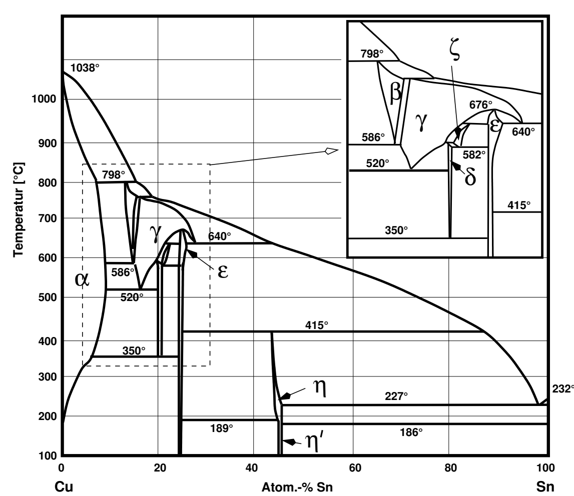


'Snub-Cube' als Na-CN

❹ Cu – Sn: Hume-Rothery-Phasen



Phasendiagramm Cu-Zn (Messing)



Phasendiagramm Cu-Zn (Bronze)

	α-Phase	β-Phase	γ-Phase	ϵ-Phase
Struktur	fcc	bcc	kompl. kubisch (s.u.)	hcp
VEC (n. Hume-Rothery)	-	$\frac{3}{2}=\frac{21}{14}$=1.5	$\frac{21}{13}$=1.615	$\frac{7}{4}=1.75$
Maximale Löslichkeit	1.362	1.48	1.538	
Experimentelle Werte				
Cu-Zn	1.284	CuZn (1.48)	Cu_5Zn_8 (1.58-1.66)	$CuZn_3$
Cu-Sn	1.270	Cu_5Sn (1.49)	$Cu_{31}Sn_8$ (1.67)	Cu_3Sn
Cu-Al	1.408	Cu_3Al (1.48)	Cu_9Al_4 (1.62-1.77)	-
Co-Zn		$CoZn_3$	Co_5Zn_{21}	-
Cu-In		Cu_3In	Cu_9In_4	-

Valenzelektronenkonzentrationen (VEC) und Strukturchemie