

$R_4Ir_{13}Ge_9$  ( $R = La, Ce, Pr, Nd, Sm$ ) and  $RIr_3Ge_2$  ( $R = La, Ce, Pr, Nd$ ): crystal structures with nets of Ir atoms

M. Yarema, O. Zaremba, R. Gladyshevskii, V. Hlukhyy, T. F. Fässler, *J. Solid State Chem.* 196 (2012) 72–78.

*Three Salts Containing the Tetra-anionic Fullerene Ion  $C_{60}^{4-}$  - Synthesis, X-Ray Single-Crystal Structure Determination and EPR Investigation*

M. B. Boeddinghaus, B. Wahl, T. F. Fässler, P. Jakes, R.-A. Eichel, *Z. Anorg. Allg. Chem.*, 638 (2012), 2205–2212.

*Interaction of Vanadium with Iron and Antimony at 870 and 1070 K.*

V. V. Romaka, L. Romaka, Y. Stadnyk, V. Gvozdetskii, R. Gladyshevskii, N. Skryabina, N. Melnychenko, V. Hlukhyy, T. F. Fässler, *Eur. J. Inorg. Chem.* (2012) 2588–2595.

*The Soluble Zintl Phases  $A_{14}ZnGe_{16}$  ( $A = K, Rb$ ) Featuring  $[(\eta^3-Ge_4)Zn(\eta^2-Ge_4)]^{6-}$  and  $[Ge_4]^{4-}$  Clusters and the Isolation of  $[(MesCu)_2(\eta^3,\eta^3-Ge_4)]^{4-}$  – the Missing Link in the Solution Chemistry of Tetrahedral Group 14 Element Zintl Clusters*

S. Stegmaier, M. Waibel, A. Henze, L.-A. Jantke, A. J. Karttunen, T. F. Fässler, *J. Am. Chem. Soc.*, 134 (2012) 14450–14460.

*Synthesis and Crystal Structure of  $K_3AsSe_4$  and  $K_4As_2Se_5$  Containing  $[AsSe_4]^{3-}$  and a Novel  $[As_2Se_5]^{4-}$  Isomer Featuring an As–As Bond*

P. W. Menezes, T. F. Fässler, *Z. Naturf.* 67b (2012) 651–656.

*Interstitial solid solution  $Hf_5Ga_xSn_3$  ( $x = 0–1$ )*

I. Voznyaka, Ya. Tokaychuka, V. Hlukhyy, T.F. Fassler, R. Gladyshevskii, *J. Alloys Comp.* 512 (2012) 246–251

$[(\eta^2-(Si/Ge)_4)Zn(\eta^2-(Si/Ge)_4)]^{6-}$  - Novel Zintl Clusters with Mixed Si/Ge Tetrahedra bridged by a Zn Atom

M. Waibel, T. Henneberger, T. F. Fässler, *Chem. Commun.* 48 (2012) 8676–8678.

*Reactivity of Cu(I) compounds towards ethylenediamine and dimethylformamide: Crystal Structure of  $CuCl(P^iPr_3)_n$  ( $n = 1, 2$ ),  $CuX(PPh_3)(en)_2$  ( $X = Cl, Br$ ) and  $CuX(PPh_3)(dmf)$*   
S. Scharfe, T. F. Fässler, *Z. Naturforsch.* 67b (2012) 564 – 572.

*$Ca_5Ni_{17}Ge_8$  – A Complex Intermetallic Compound Combining Various Structure Motifs of Alkaline-Earth Nickel Germanides*

V. Hlukhyy, L. Siggelkow, T. F. Fässler, *Z. Anorg. Allg. Chem.*, 638 (2012) 2029–2034.

*Synthesis and Crystal Structure of  $Ca(en)_4Ca(en)_3[Sn_2Se_6]$  and  $Ca(en)_4Se_4$  in Superheated and Supercritical Ethylenediamine*

P. W. Menezes , T. F. Fässler, *Z. Anorg. Allg. Chem.*, 638 (2012) 1109–1113.

*Crystal structure of 2-aminoethylammonium tris(1,2-ethanediamine)zinc(II) tetraselenoantimonate(V),  $(C_2H_9N_2)[Zn(C_2H_8N_2)_3][SbSe_4]$*

P. W. Menezes, T. F. Fässler, *Z. Kristallogr. NCS* 227 (2012) 439–440.

*The neat ternary solid  $K_{5-x}Co_{1-x}Sn_9$  with endohedral  $[Co@Sn_9]^{5-}$  cluster units: A precursor for soluble intermetalloid  $[Co_2@Sn_{17}]^{5-}$  clusters*

V. Hlukhyy, H. He, L.-A. Jantke, T. F. Fässler, *Chem. Eur. J.*, 18 (2012) 12000 – 12007.

*Sr<sub>7</sub>Ge<sub>6</sub>, Ba<sub>7</sub>Ge<sub>6</sub> and Ba<sub>3</sub>Sn<sub>2</sub> – Three New Binary Compounds Containing Dumbbells and Four-membered Chains of Tetrel Atoms with Considerable Ge-Ge π-Bonding Character*  
L. Siggelkow, V. Hlukhyy, T. F. Fässler, *J. Solid State Chem.* 191(2012) 76–89.

*SrZn<sub>2</sub>Sn<sub>2</sub> and Ca<sub>2</sub>Zn<sub>3</sub>Sn<sub>6</sub> – Two New Ae-Zn-Sn Polar Intermetallic Compounds (Ae: Alkaline Earth Metal)*  
S. Stegmaier, T. F. Fässler, *J. Solid State Chem.*, 192 (2012) 312–324.

*Extreme Differences in Oxidation States: Synthesis and Structural Analysis of the Germanide Oxometallates A<sub>10</sub>[Ge<sub>9</sub>]<sub>2</sub>[WO<sub>4</sub>] as well as A<sub>10+x</sub>[Ge<sub>9</sub>]<sub>2</sub>[W<sub>1-x</sub>Nb<sub>x</sub>O<sub>4</sub>] with A = K and Rb containing [Ge<sub>9</sub>]<sup>4-</sup> Polyanions*  
V. Hlukhyy, T. F. Fässler, S. Ponou, S. Lidin, N. P. Ivleva, R. Niessner, *Inorg. Chem.* 51 (2012) 4058–4065

*Na<sub>2.8</sub>Cu<sub>5</sub>Sn<sub>5.6</sub> – A Crystalline Alloy Featuring Intermetalloid  $\text{Sn}_{0.6}@\text{Cu}_5@\text{Sn}_5$  Double-Walled Nanorods with Pseudo-Five-Fold Symmetry*  
S. Stegmaier, T. F. Fässler, *Angew. Chem. Int. Ed.* 51 (2012) 2647 –2650.

*Ca<sub>2</sub>NiSn<sub>2</sub> – a Dimorphic Intermetallic Phase. Atomic and Electronic Structure as well as Topological Description of the Phase Transition via a Sigmatropic-analogue Rearrangement of Ni and Sn Atoms.*  
L. Siggelkow, V. Hlukhyy, T. F. Fässler, *Chem. Eur. J.* (2012) 987–997.

*Frontiers in Intermetallics*  
T. F. Fässler, G. Miller, *Z. Anorg. Allg. Chem.* 637 (2011) 1935.

*At the Border of Intermetallics and Transition Metal Oxides: Crystal–Crystal Intergrowth of the Zintl Phase Cs<sub>4</sub>Ge<sub>9</sub> and Cs<sub>2</sub>WO<sub>4</sub>/Cs<sub>3</sub>VO<sub>4</sub> and Nine-Atom Cluster Relocation in the Solid State*  
V. Hlukhyy, T. F. Fässler, *Angew. Chem., Int. Ed.* 51 (2012) 742 –747.

*Zintl Ions: Principles and Recent Developments*, Book Series: Structure and Bonding  
T. F. Fässler (Ed.), Volume **140**, Springer-Verlag, Heidelberg, **2011**.

*Zintl Phases: Principles and Recent Developments*, Book Series: Structure and Bonding  
T. F. Fässler (Ed.), Volume **139**, Springer-Verlag, Heidelberg, **2011**.

*Bulk Synthesis and Structure of a Microcrystalline Allotrope of Germanium (m-allo-Ge)*  
F. Kiefer, A. J. Karttunen, M. Döblinger, T. F. Fässler, *Chem. Mater.* 23 (2011) 4578–4586.

*A Bronze Matryoshka – The Discrete Intermetalloid Cluster [Sn@Cu<sub>12</sub>@Sn<sub>20</sub>]<sup>12-</sup> in the Ternary Phases A<sub>12</sub>Cu<sub>12</sub>Sn<sub>21</sub> (A = Na, K)*  
S. Stegmaier, T. F. Fässler, *J. Am. Chem. Soc.* 133 (2011) 19758–19768.

*Synthesis, Structure and Chemical Bonding of Ba<sub>2</sub>Ni<sub>5</sub>Ge<sub>4</sub> – An intermetallic compound with a new two-dimensional  $\text{Ni}_5\text{Ge}_4$  structural motif*  
L. Siggelkow, V. Hlukhyy, T. F. Fässler, *Z. Anorg. Allg. Chem.* 637 (2011) 2000–2006.

*Mixed Tetrahedral Zintl Clusters: Single Crystal Structure Determination of [Si<sub>4-x</sub>Ge<sub>x</sub>]<sup>4-</sup> (x = 2.4, 2.9) and [(MesCu)<sub>2</sub>(Si<sub>4-x</sub>Ge<sub>x</sub>)]<sup>4-</sup> (x = 0.7) as well as <sup>29</sup>Si MAS-NMR Spectra of A<sub>4</sub>Si<sub>2</sub>Ge<sub>2</sub> (A = K, Rb)*  
M. Waibel, G. Raudaschl-Sieber, T. F. Fässler, *Chem. Eur. J.* 17 (2011) 13391–13394.

*Quadratisch-planar koordinierte Iridium(II)- und Iridium(III)- Amidokomplexe mit einem neuartigen PNP-Pinzettenliganden.*

J. Meiners, M. Scheibel, M.-H. Lemée-Cailleau, S.A. Mason, M. B. Boeddinghaus, T.s F. Fässler, E. Herdtweck, M.M. Khusniyarov, S. Schneider, *Angew. Chem., Int. Ed.* 50 (2011) 8184-8187.

*Syntheses and  $^1\text{H}$  NMR spectra of substituted Zintl ions  $[\text{Ge}_9\text{R}_n]^{(4-n)-}$  – Crystal structures of  $[\text{Ge}_9\text{R}]^{2-}$  ( $\text{R} = 2,4,6\text{-Me}_3\text{C}_6\text{H}_2$ ,  $\text{CHCH}_2$ ) and indication of tris-vinylated clusters*  
C. B. Benda, J.-Q. Wang, B. Wahl, T. F. Fässler, *Eur. J. Inorg. Chem.* (2011) 4262-4269.

*Complex intermetallic compounds:  $\text{CaNi}_5\text{Ge}_3$ ,  $\text{Ca}_{15}\text{Ni}_{68}\text{Ge}_{37}$  and  $\text{Ca}_7\text{Ni}_{49}\text{Ge}_{22}$  – three multifaceted Ni-Ge framework structures combining the structural motifs of  $\text{Ni}_3\text{Ge}$  and  $\text{CaNi}_2\text{Ge}_2$ .*

L. Siggelkow, V. Hlukhyy, B. Wahl, T. F. Fässler, *Eur. J. Inorg. Chem.* (2011) 4012-4024.

*Synthesis of Non-Symmetrically Sulphonated Phosphine Sulphonate Based Pd(II) Catalyst Salts for Olefin Polymerisation Reactions*

T. M. J. Anselmenta, C. E. Andersona, B. Rieger, M. B. Boeddinghaus, T. F. Fässler, *Dalton Trans.* 40 (2011) 8304-8313.

*Synthesis of  $(\text{Ge}_9\text{-Ge}_9)^{6-}$  Dimeric Zintl Ions in liquid ammonia solutions of  $\text{K}_4\text{Ge}_9$ : Low-Dimensional Coordination Networks in the Crystal Structures of the Ammoniates  $\text{K}_n[\text{K}([\text{2.2.2}]\text{crypt})]_{6-n}[\text{Ge}_9\text{-Ge}_9](\text{NH}_3)_m$  ( $n = 2, 3$ , and  $4$ )*  
S. Scharfe, T. F. Fässler, *Z. Anorg. Allg. Chem.* 637 (2011) 901- 906.

*Heteroatomic Si/Ge Zintl Clusters: Single Crystal Structure Determination of  $[\text{Si}_{9-x}\text{Ge}_x]^{4-}$  ( $x = 1.2, 1.5$ )*

M. Waibel, C. B. Benda, B. Wahl, T. F. Fässler, *Chem. Eur. J.* 17 (2011) 12928 – 12931

*Relationships between soluble Zintl anions, ligand-stabilized cage compounds, and intermetalloid clusters of tetrel ( $\text{Si} - \text{Pb}$ ) and pentel ( $\text{P} - \text{Bi}$ ) elements*

T. F. Fässler , *Struct. Bond.* 140 (2011) 91–131

*Synthesis and Revised Structure of the Zintl phase  $\text{Li}_7\text{Ge}_{12}$*

F. Kiefer, T. F. Fässler, *Solid State Sciences* 13 (2011) 636-640.

*$\text{TbNb}_6\text{Sn}_6$  – The first ternary compound in the rare earth-niobium-tin system*

V. Pavlyuk, T. F. Fässler, V. Hlukhyy, *Acta Crystallogr. E, Structure Reports online* 66 (2010) I82-U168.

*Structural Principles of Semiconducting Group 14 Clathrate Frameworks*

A. J. Karttunen, T. F. Fässler, M. Linnolahti, T. A. Pakkanen, *Inorg. Chem.* 50 (2011) 1733-1742.

*$\text{Tb}_{13}\text{ZnSn}_{13}$ : A novel intergrowth structure type.*

I. Oschapovskyy, V. Pavlyuk, T. F. Fässler, V. Hlukhyy, *Chem. Met. Alloys*, 3 (2010) 177-183.

*Crystal structure of disodium strontium tetrastannide,  $\text{Na}_2\text{SrSn}_4$*

.S-J. Kim, T. F. Fässler,

*Z. Kristallogr. NCS* 225 (2010) 629-630

*$\eta^6$ -Arene Complexes of Ruthenium and Osmium with Pendant Donor Functionalities*  
T. Reiner, M. Waibel, A. N. Marziale, D. Jantke, F. J. Kiefer, T. F. Fässler, J. Eppinger, *J. Organomet. Chem.* 695 (2010) 2667–2672.

*Homoatomic Zintl Ions, Cage Compounds, and Intermetalloid Clusters of Group 14 and Group 15 Elements*  
S. Scharfe, F. Kraus, S. Stegmaier, A. Schier, T. F. Fässler, *Angew. Chem., Int. Ed.* 50 (2011) 3630 – 3670.

*$[(MesCu)_2(\eta^3-Si_4)]^{4-}$  - A Mesitylcopper-Stabilized Tetrasilicide Tetraanion*  
M. Waibel, F. Kraus, S. Scharfe, T. F. Fässler, *Angew. Chem., Int. Ed.* 49 (2010) 6611 – 6615.

*$[Ag(Sn_9-Sn_9)]^{5-}$  - A Homoleptic Silver Complex of A Dimeric  $Sn_9$  Zintl Anion*  
J.-Q. Wang, B. Wahl, T. F. Fässler, *Angew. Chem., Int. Ed.* 49 (2010) 6592 - 6595.

*$[Sn_9HgSn_9]^{6-}$ : An Intermetalloid Zintl Ion with Two  $Sn_9$  Connected by Heteroatom*  
L. Yong, M.B. Boeddinghaus, T.F. Fässler, *Z. Anorg. Allg. Chem.* 636 (2010) 1293 – 1296

*BaNi<sub>2</sub>Ge and Ca<sub>4</sub>Ni<sub>4</sub>Ge<sub>3</sub> – two layered structures with  $^2\infty[Ni_2Ge]$  and  $^2\infty[Ni_4Ge_3]$  networks*  
L. Siggelkow, V. Hlukhyy, T. F. Fässler, *Z. Anorg. Allg. Chem.* 636 (2010) 1870–1879.

*Two-, One-, and Zero-dimensional Elemental Nanostructures Based on Ge<sub>9</sub>-Clusters*  
A. J. Karttunen, T. F. Fässler, M. Linnolahti, T. A. Pakkanen, *Chem. Phys. Chem.* 11 (2010) 1944-1950.

*Single Crystals of Rb<sub>4</sub>C<sub>60</sub>: Synthesis and Structure Determination*  
S.Hoffmann, D. Kasinathan, T. F. Fässler, *Inorg. Chem.*, 49 (2010) 2577-2579.

*Varying Bonding Modes of the Zintl Ion  $[Ge_9]^{4-}$  in Cu(I) Complexes: Syntheses and Structures of  $[Cu(\eta^4-Ge_9)(PR_3)]^{3-}$  ( $R = ^iPr, Cy$ ) and  $[Cu(\eta^4-Ge_9)(\eta^1-Ge_9)]^{7-}$*   
S. Scharfe, T. F. Fässler , *Eur. J. Inorg. Chem.*, 2010, 1207–1213.

*$[Sn_9]^{4-}$  Zintl Ions as Reactive Precursor for Neat Solids: Syntheses and Crystal Structures of Rb<sub>4</sub>[SnTe<sub>4</sub>], K<sub>x</sub>Cs<sub>4-x</sub>[SnTe<sub>4</sub>], and K<sub>x</sub>Cs<sub>10-x</sub>[Sn<sub>4</sub>Te<sub>12</sub>]*  
J.-Q. Wang, V. Hlukhyy, T. F. Fässler, *Z. Naturf. B*, 64 (2009) 1319 – 1324.

*Synthesis, Structure, and Electronic Properties of 4H-Germanium*  
F. Kiefer , V. Hlukhyy, A. J. Karttunen , T. F. Fässler, C. Gold , E.-W. Scheid, W. Scherer, J. Nylen , U. Häussermann, *J. Mater. Chem.* 20 (2010) 1780-1786.

*Structural stability of tin clathrates under high pressure.*  
T. Imai, T. Kume, S. Sasaki, H. Shimizu, A. Kaltzoglou, T. F. Fässler, *J. Phys. Chem. Solids*, 71 (2010) 587-589.

*Synthesis, Structure and Chemical Bonding of CaCo<sub>2</sub>Si<sub>2</sub> and BaCo<sub>2</sub>Ge<sub>2</sub> - two new compounds with ThCr<sub>2</sub>Si<sub>2</sub> structure type*  
L. Siggelkow, V. Hlukhyy, T. F. Fässler *Z. Anorg. Allg. Chem.*, 636 (2010) 378–384.

*Polyhedral nine-atom clusters of Tetrel Elements and Intermetalloid Derivatives*  
S. Scharfe, T. F. Fässler *Phil. Trans. R. Soc. A* 368 (2010) 1265-1284

*Homoatomic and Intermetalloid Tetrel Clusters – Synthesis, Characterization, and Reactivity*  
S. Scharfe, T. F. Fässler  
in *Nanoparticles. From Theory to Application*, G. Schmid (Ed.), Wiley-VCH, Weinheim, 2010,  
P. 49 – 68

*Step by Step Synthesis of the Endohedral Stannaspherene  $[Ir@Sn_{12}]^{3-}$  via the Capped Cluster Anion  $[Sn_9Ir(COD)]^{3-}$*   
J.-Q. Wang, S. Stegmaier, B. Wahl, T. F. Fässler, *Chem. Eur. J.* 16 (2010) 1793-1798.