



## Contents

### Special Issue: 12th International Symposium on Inorganic Ring Systems (IRIS 12)

Editorial . . . . .	913
Foreword. . . . .	914

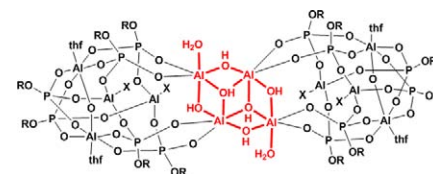
### Reviews

#### Ramaswamy Murugavel, Nayanmoni Gogoi

*J. Organomet. Chem.* 695 (2010) 916

Rings, chains and cages in metal phosphate chemistry: The interdependence and possible interconversion between various structural forms

Our endeavour to build soluble model compounds of basic building blocks in zeolite structures have resulted in a plethora of main group and transition metal phosphate complexes. The structural variety of the metal phosphates presented in this review also compliments the efforts to build similar super structures based on silanols and phosphonic acids. Careful examination of the core structures allowed us to rationalize the interdependence between the different structural types and visualize their plausible pathway of formation.

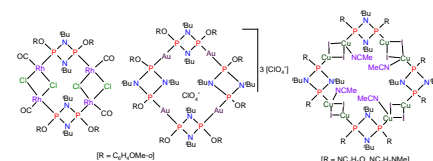


#### Maravanji S. Balakrishna

*J. Organomet. Chem.* 695 (2010) 925

Cyclodiphosphazanes with functionalities: Synthesis, reactivity and transition metal chemistry

The reactivity and transition metal chemistry of cyclodiphosphazanes containing donor functionalities is described.



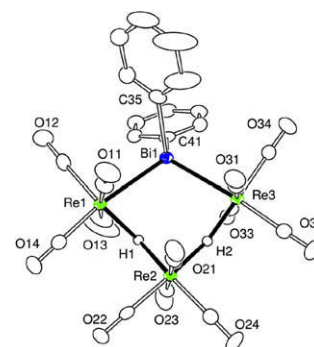
### Regular Papers

#### Richard D. Adams, William C. Pearl Jr.

*J. Organomet. Chem.* 695 (2010) 937

Synthesis of anionic rhenium carbonyl hydrides by the ring opening of rhenium carbonyl heterocycles

The EPh<sub>2</sub>-bridged dirhenium carbonyl hydride anions  $\{[HRe(CO)_4]_2(\mu-EPh_2)\}$  E = Bi and Sb were obtained by the ring opening fragmentation reaction of  $Re_3(CO)_{12}(\mu-H)_2(\mu-BiPh_2)$  by  $[Bu_4N][OH]$ , and the ring opening reaction of  $Re_2(CO)_8(\mu-SbPh_2)(\mu-H)$  by  $NaBH_4$ , respectively.

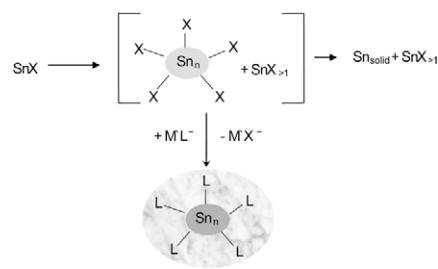


**Andreas Pacher, Claudio Schrenk, Andreas Schnepf**

*J. Organomet. Chem.* 695 (2010) 941

Sn(I) halides: Novel binary compounds of tin and their application in synthetic chemistry

Gaseous SnBr is formed at 1370 °C, and synthesized in preparative scale, by applying a co-condensation technique. Herein first analyses of SnBr are presented, showing that SnBr is more reactive than the corresponding GeBr, already disproportionating quantitatively to elemental tin and SnBr<sub>2</sub> on heating to room temperature. By applying nitrogen-based donor molecules like NnBu<sub>3</sub> or pyridine, the reactivity can be moderated and the solubility is enhanced leading e.g. to an SnBr emulsion, which can be used for the synthesis of metalloid cluster compounds of tin.

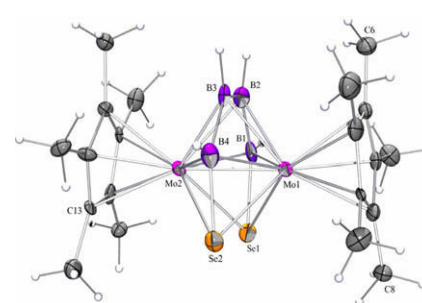


**Satyanarayan Sahoo, Shaikh M. Mobin, Sundargopal Ghosh**

*J. Organomet. Chem.* 695 (2010) 945

Direct insertion of sulfur, selenium and tellurium atoms into metallaborane cages using chalcogen powders

Reaction of  $[(\eta^5\text{-C}_5\text{Me}_5)\text{MCl}_4]$  (M = Mo or W) with sixfold excess of  $[\text{LiBH}_4\text{thf}]$  followed by thermolysis with excess chalcogen powders (S, Se or Te) yielded dichalcomolybda- and tungstaboranes,  $[(\eta^5\text{-C}_5\text{Me}_5\text{M})_2\text{B}_4\text{H}_4\text{E}_2]$  (M = Mo or W; E = S, Se or Te) in modest yields.

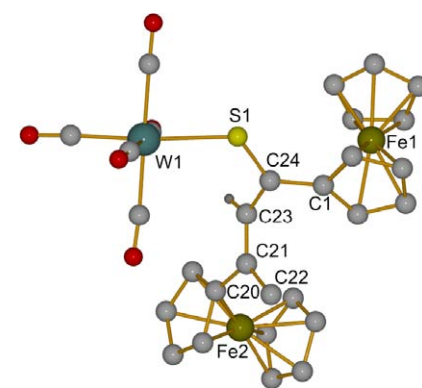


**Pradeep Mathur, Amrendra K. Singh, Saurav Chatterjee, Vinay K. Singh, Shaikh M. Mobin**

*J. Organomet. Chem.* 695 (2010) 950

Metal carbonyl-promoted reactions of ferrocenylacetylene with sulfur to form thiophene, dithiine, thioketone and vinylthioketone derivatives

Photochemical reactions of ferrocenylacetylene with sulfur in presence of  $\text{M}(\text{CO})_6$  (M = Cr, Mo, W) gives 2,5-diferrocenylthiophene and, with M = Cr, 2,6-diferrocenyl-dithiine. Formation of ferrocenyl-substituted thioketone complexes was observed in the reaction of ferrocenylacetylene with water and sulfur, in presence of  $\text{W}(\text{CO})_6$ .



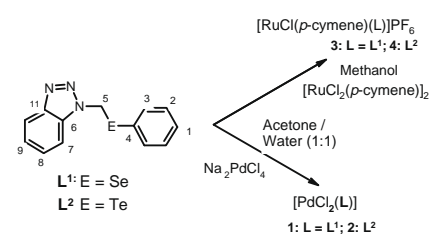
**Dipanwita Das, Pradhumn Singh, Ajai K. Singh**

*J. Organomet. Chem.* 695 (2010) 955

Palladium and half sandwich ruthenium(II) complexes of selenated and tellurated benzotriazoles: Synthesis, structural aspects and catalytic applications

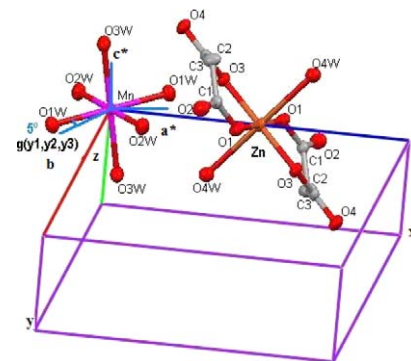
1-(Phenylselenomethyl)-1H-benzotriazole (**L**<sup>1</sup>), 1-(4-methoxy phenyltelluromethyl)-1H-benzotriazole (**L**<sup>2</sup>),  $[\text{PdCl}_2\text{L}]$  and  $[\text{Ru}(\eta^6\text{-}p\text{-cymene})(\text{L})\text{Cl}](\text{PF}_6)$  (**L** = **L**<sup>1</sup> or **L**<sup>2</sup>) have been

synthesized. Proton, carbon-13, Se-77 and/or Te-125 NMR spectra authenticate both ligands and their complexes. The single crystal structure of **L**<sup>1</sup>, **L**<sup>2</sup>, and  $[\text{Ru}(\eta^6\text{-}p\text{-cymene})(\text{L})\text{Cl}](\text{PF}_6)$  (**L** = **L**<sup>1</sup> or **L**<sup>2</sup>) have been solved. The Ru-Se and Ru-Te bond lengths have been found 2.4801(11) and 2.6183(10) Å, respectively. The palladium complexes have been explored for Heck and Suzuki C-C coupling reactions (TON upto  $9.5 \times 10^4$ ) and Ru-complexes for catalytic oxidation of alcohols (TON ~  $7.8\text{-}9.4 \times 10^4$ ). The Ru-complexes of telluroether ligands are better for catalytic oxidation than those of selenoether ones.

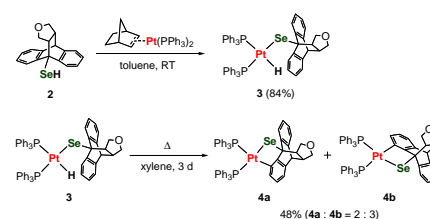
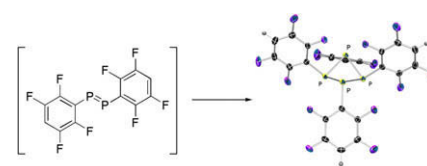
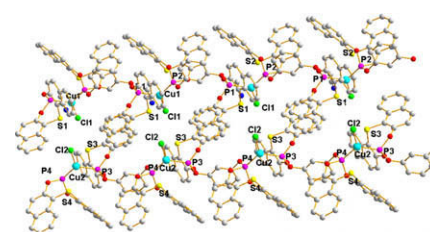


**S. Boobalan, P. Sambasiva Rao***J. Organomet. Chem.* 695 (2010) 963

Structural elucidation of transition metal complex by single crystal EPR study

Crystal structure of hexaaquazincdiaquabis(malonato) zincate  $[\text{Zn}(\text{H}_2\text{O})_6][\text{Cu}(\text{mal})_2(\text{H}_2\text{O})_2]$ , indicating the substitutional position of Mn(II) and angle of deviation of Mn–O bond direction from g direction.**Norio Nakata, Yuki Yamaguchi, Akihiko Ishii***J. Organomet. Chem.* 695 (2010) 970

Synthesis and thermal reaction of hydrido(selenolato) platinum(II) complex having a 9,10,11,12,14,15-hexahydro-9,10[3',4']-furanoanthracenyl group

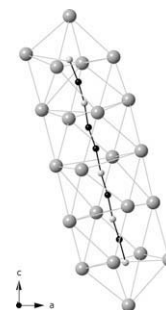
The oxidative addition of selenol **2** having a 9,10,11,12,14,15-hexahydro-9,10[3',4']-furanoanthracenyl group with  $[\text{Pt}(\eta^2\text{-nb})(\text{Ph}_3\text{P})_2]$  (nb = norbornene) in toluene formed the corresponding hydrido(selenolato) Pt(II) complexes  $[\text{cis-PtH}(\text{SeHhf})-(\text{Ph}_3\text{P})_2]$  (**3**) as a stable compound. Refluxing a xylene solution of **3** for 3 days produced two isomers of five-membered selenaplatinacycles **4a** and **4b** in moderate yield as an inseparable mixture.**Andreas Orthaber, Ferdinand Belaj, Rudolf Pietschnig***J. Organomet. Chem.* 695 (2010) 974A fluoroaryl substituent with spectator function: Reactivity and structures of cyclic and acyclic  $\text{HF}_4\text{C}_6$ -substituted phosphanesThe reactivity of a series of phosphanes with a fluoroaryl group ( $\text{HF}_4\text{C}_6^-$ ) carrying a spectator function in para position has been explored by experimental and quantum chemical methods with respect to the formation of low coordinated and phosphorus rich phosphanes.**Maravanji S. Balakrishna, Pawan Kumar, B. Punji, Joel T. Mague***J. Organomet. Chem.* 695 (2010) 981Large-bite bisphosphite, 1,3- $\text{C}_6\text{H}_4\{\text{OPOC}_{10}\text{H}_6(\mu\text{-S})\text{C}_{10}\text{H}_6\text{O}\}_2$ : Synthesis, copper(I), and gold(I) complexesThe copper(I) and gold(I) complexes of large-bite bisphosphite ligand 1,3- $\text{C}_6\text{H}_4\{\text{OPOC}_{10}\text{H}_6(\mu\text{-S})\text{C}_{10}\text{H}_6\text{O}\}_2$  (**3**) is described.

**Souheila Lassoued, Régis Gautier,  
Ahmed Boutarfaia, Jean-François Halet**

*J. Organomet. Chem.* 695 (2010) 987

Rings and chains in solid-state metal borides and borocarbides. The electron count matters

The bonding and structural arrangement in a few representative ring- or chain-containing solid-state metal borides and borocarbides are analyzed with respect to the electron count of the non-metal entities.

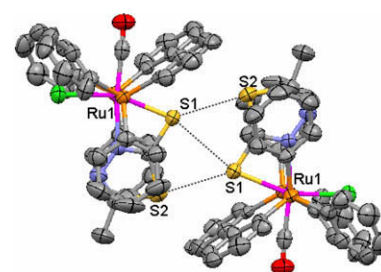


**Prashant Kumar, Mahendra Yadav,  
Ashish Kumar Singh, Daya  
Shankar Pandey**

*J. Organomet. Chem.* 695 (2010) 994

Synthesis and characterization of some novel ruthenium(II) complexes containing thiolate ligands

Reactions of the ruthenium complexes  $[\text{RuH}(\text{CO})\text{Cl}(\text{PPh}_3)_3]$ , and  $[\text{RuCl}_2(\text{PPh}_3)_3]$  with hetero-difunctional S,N-donor ligands, 2-mercapto-5-methyl-1,3,5-thiadiazol (HL<sup>1</sup>), 2-mercapto-4-methyl-5-thiazoleacetic acid (HL<sup>2</sup>), and 2-mercapto-benzothiazole (HL<sup>3</sup>) afforded neutral  $\kappa^2$ -S,N bonded complexes  $[\text{RuCl}(\text{CO})(\text{PPh}_3)_2(\text{HL}^1)]$  (1),  $[\text{RuCl}(\text{CO})(\text{PPh}_3)_2(\text{HL}^2)]$  (2),  $[\text{RuCl}(\text{CO})(\text{PPh}_3)_2(\text{HL}^3)]$  (3),  $[\text{Ru}(\text{PPh}_3)_2(\text{HL}^1)_2]$  (4),  $[\text{RuCl}(\text{PPh}_3)_3(\text{HL}^2)]$  (5),  $[\text{RuCl}(\text{PPh}_3)_3(\text{HL}^3)]$  (6).

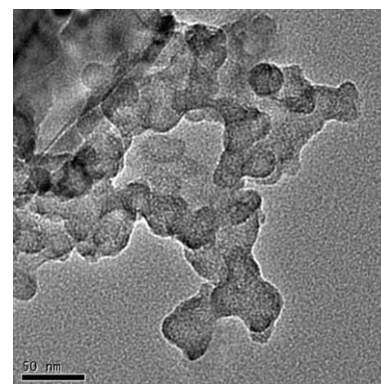


**Menaka, Samuel E. Lofland, Kandalam  
V. Ramanujachary, Ashok K. Ganguli**

*J. Organomet. Chem.* 695 (2010) 1002

A new low temperature methodology to obtain pure nanocrystalline nickel borate

A new low temperature route has been developed for the synthesis of nanoparticles (20–30 nm) of nickel borate using microemulsion route. These nanoparticles show an antiferromagnetic ordering with Néel temperature of 47 K.

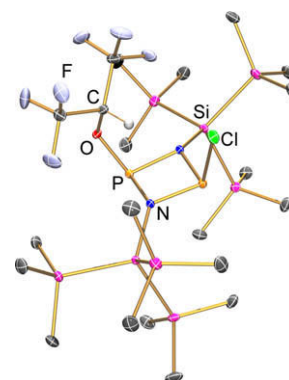


**Marcus Kuprat, René Kuzora,  
Mathias Lehmann, Axel Schulz,  
Alexander Villinger, Ronald Wustrack**

*J. Organomet. Chem.* 695 (2010) 1006

Silver tetrakis(hexafluoroisopropoxy)aluminate as hexafluoroisopropyl transfer reagent for the chlorine/hexafluoroisopropyl exchange in imino phosphanes

Highly reactive hypersilylated cyclo-diphosphadiazonium  $[\text{Hyp}_2\text{N}_2\text{P}_2\text{Cl}]^+$  and supermesityl substituted iminophosphenium  $[\text{Mes}^-\text{N}=\text{P}]^+$  cations, which are capable of abstracting  $[\text{OCH}(\text{CF}_3)_2]^-$  from the  $[\text{Al}(\text{OCH}(\text{CF}_3)_2)_4]^-$  counter ion in formal Lewis acid/Lewis base reactions are discussed. By this approach the hitherto unknown  $\text{Mes}^-\text{N}=\text{P}-\text{OCH}(\text{CF}_3)_2$  and  $\text{Hyp}_2\text{N}_2\text{P}_2(\text{Cl})\text{OCH}(\text{CF}_3)_2$  as well as the dimer of the free Lewis acid  $[\text{Al}(\text{OCH}(\text{CF}_3)_2)_3]_2$  have been obtained and fully characterized.

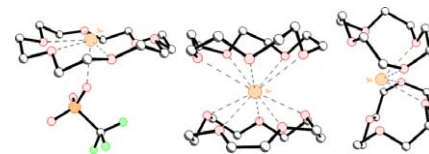


**Rajoshree Bandyopadhyay, Benjamin F.T. Cooper, Aaron J. Rossini, Robert W. Schurko, Charles L.B. Macdonald**

*J. Organomet. Chem.* 695 (2010) 1012

Crown ether complexes of tin(II) trifluoromethanesulfonate

The treatment of tin(II) trifluoromethanesulfonate with crown ethers of different sizes produces salts of three different cationic tin crown ether complexes in excellent yield. The structural features of the cations are evaluated by single-crystal X-ray diffraction and density functional theory calculations.

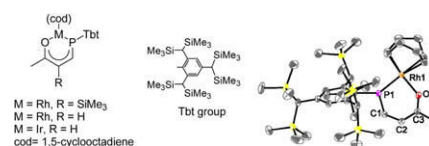


**Teruyuki Matsumoto, Takahiro Sasamori, Nobuhiro Takeda, Norihiro Tokitoh**

*J. Organomet. Chem.* 695 (2010) 1019

Synthesis and properties of group 9 metal complexes bearing a  $\beta$ -ketophosphenato ligand

A novel  $\beta$ -ketophosphenato ligand was designed and synthesized as a heavier congener of a  $\beta$ -ketoiminato ligand. Rhodium and iridium complexes bearing this new  $\beta$ -ketophosphenato ligand have been synthesized and fully characterized.

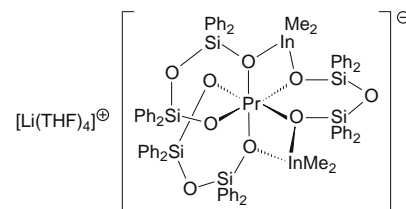


**Anja Edelmann, Steffen Blaurock, Cristian Hrib, Frank T. Edelmann**

*J. Organomet. Chem.* 695 (2010) 1026

Double InMe<sub>2</sub> insertion into a 12-membered Si<sub>4</sub>O<sub>6</sub>Li<sub>2</sub> inorganic ring system coordinated to praseodymium

A novel transformation of a lanthanide(III) disiloxanediolate complex with trimethylindium is reported. Treatment of the praseodymium "inorganic metallocene" complex  $\{[(\text{Ph}_2\text{SiO})_2\text{O}]_2\{\text{Li}(\text{DME})\}_2\}\text{PrCl}$  (DME) with InMe<sub>3</sub> resulted in double insertion of InMe<sub>2</sub> units into the 12-membered Si<sub>4</sub>O<sub>6</sub>Li<sub>2</sub> inorganic ring system attached to praseodymium and formation of the novel ionic complex  $[\text{Li}(\text{THF})_4]^- [\text{Pr}\{\text{O}(\text{SiPh}_2\text{OInMe}_2\text{OSiPh}_2\text{OSiPh}_2\text{O})_2\}]^+$ .

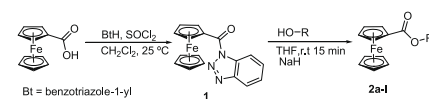


**Deniz Hür, Sultan Funda Ekti, Hakan Dal**

*J. Organomet. Chem.* 695 (2010) 1031

*N*-ferrocenoyl benzotriazole: A convenient tool for the synthesis of ferrocenoyl esters

*N*-ferrocenoyl benzotriazole was reacted with alcohols in mild conditions to prepare ferrocenoyl esters in high purity and in good yield.

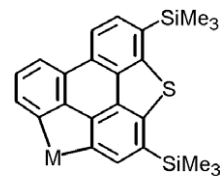


**Masaichi Saito, Tomoharu Tanikawa,  
Tomoyuki Tajima, Jing Dong Guo,  
Shigeru Nagase**

*J. Organomet. Chem.* 695 (2010) 1035

Arching a bay area of triphenyleno[1,12-*bcd*]thiophene with group 14 functionalities: Synthesis of the first triphenylene derivatives having thiophene and metallafluorene moieties

Arching a bay area of triphenyleno[1,12-*bcd*]thiophene with group 14 functionalities gave the first triphenylene derivatives whose two pairs of bay carbons are connected by two different heteroatom functionalities. Triphenyleno[1,12-*bcd*:4,5-*b'c'd'*]dithiophene was also synthesized under the mild reaction conditions. Photo-physical properties of newly-obtained heterotriphenylene derivatives are discussed with theoretical calculations.



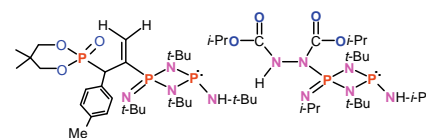
M = S, Me<sub>2</sub>Si, Me<sub>2</sub>Sn

**K.C. Kumara Swamy, G. Gangadhararao,  
R. Rama Suresh, N.N. Bhuvan Kumar,  
Manab Chakravarty**

*J. Organomet. Chem.* 695 (2010) 1042

Exploring organic reactions using simple cyclodiphosphazanes

Utility of compounds [RPN-*t*-Bu]<sub>2</sub> [R = Cl, NH-*t*-Bu] as mechanistic probes in phosphine activated transformations/Mitsunobu reaction, as co-ligands in Pd-catalyzed organic transformations and as precursors for phosphorus compounds exhibiting molecular non-stoichiometry is described.

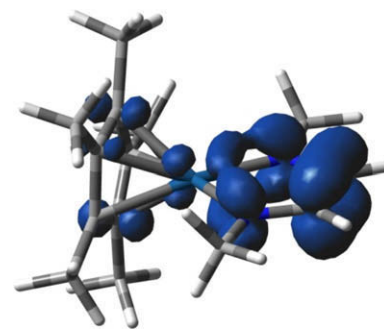


**Wolfgang Kaim, Monika Sieger,  
Stefan Greulich, Biprajit Sarkar,  
Jan Fiedler, Stanislav Zálaiš**

*J. Organomet. Chem.* 695 (2010) 1052

The 1,4-diazabutadiene/1,2-enediido non-innocent ligand system in the formation of iridaheteroaromatic compounds: Spectro-electrochemistry and electronic structure

One-electron oxidation of the coordinatively unsaturated enediidoiridium(III) complex IrCp\*(RNCHCHNR), R = 2,6-dimethylphenyl, yielded a cationic species, both of which were characterized computationally (DFT, TD-DFT) and experimentally (EPR, UV-vis spectroelectrochemistry).

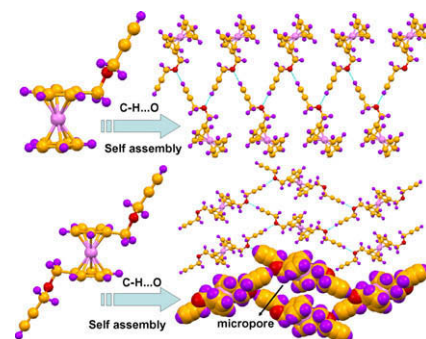


**Arunabha Thakur, N.N. Adarsh,  
Amarnath Chakraborty, Manjula Devi,  
Sundargopal Ghosh**

*J. Organomet. Chem.* 695 (2010) 1059

Synthesis of mono and doubly alkynyl substituted ferrocene and its crystal engineering using -C-H...O supramolecular synthon

Mono and doubly alkynyl substituted ferrocene complexes, [Fc(CH<sub>2</sub>OCH<sub>2</sub>CCH)<sub>*n*</sub>], (*n* = 1, 2; Fc = ferrocene) have been synthesized from the room temperature reaction of mono and 1,1'-dihydroxymethyl ferrocene and propargyl bromide in modest to good yields.

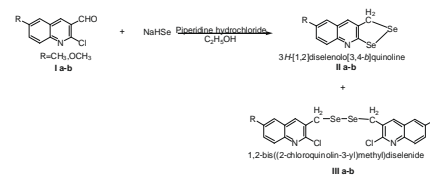


**K.K. Bhasin, Ekta Arora, Chee-Hun Kwak, S.K. Mehta**

*J. Organomet. Chem.* 695 (2010) 1065

Synthesis and characterization of novel quinoline selenium compounds: X-ray structure of 6-methoxy-3H-[1,2]diselenolo[3,4-b]quinoline

The present work reports an efficient and simple one-pot synthesis and characterization of quinoline selenium compounds by the reaction of 2-chloro-3-formyl quinoline (**I a–b**) with sodium hydrogen selenide in ethanol. Structure of 6-methoxy-3H-[1,2]diselenolo[3,4-b]quinoline (**II b**) has been confirmed by X-ray crystallography.

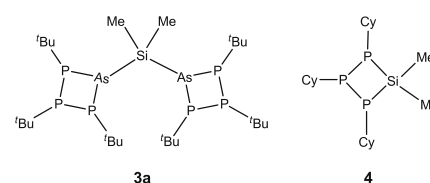


**Wesley T.K. Chan, Felipe García, Mary McPartlin, Rebecca L. Melen, Dominic S. Wright**

*J. Organomet. Chem.* 695 (2010) 1069

Syntheses and structures of  $[\text{Me}_2\text{Si}\{\text{As}(\text{P}^t\text{Bu})_3\}_2]$  and  $[(\text{CyP})_3\text{SiMe}_2]$  (Cy = cyclohexyl,  $\text{C}_6\text{H}_{11}$ )

The syntheses and structures of the new heterocycles **3a** and **4** are reported, via reactions of  $[(\text{RP})_n\text{As}]^-$  ions (R =  $^t\text{Bu}$ , Cy) with  $\text{Me}_2\text{SiCl}_2$ .

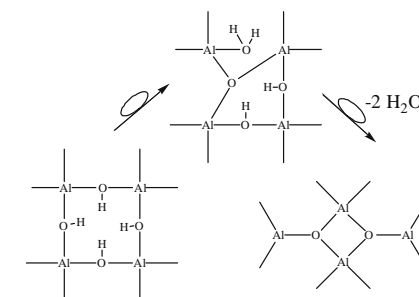


**Michael Veith, David Kolano, Tatjana Kirs, Volker Huch**

*J. Organomet. Chem.* 695 (2010) 1074

Condensation reaction through base assistance within  $(\text{Ph}_2\text{SiO})_8[\text{AlO}(\text{OH})]_4$

The structurally characterized  $(\text{Ph}_2\text{SiO})_8-[\text{AlO}(\text{O})_{0.25}]_4(\text{OH}\cdot\text{ted})_2(\text{OH}_2\cdot\text{ted})$  (**3**) represents the intermediate of the condensation reaction from the eight-membered ring  $(\text{Ph}_2\text{SiO})_8[\text{AlO}(\text{OH})]_4$  to the dehydrated product  $(\text{Ph}_2\text{SiO})_8[\text{AlO}(\text{O})_{0.5}]_4\cdot 2\text{nmp}$  (**2**) suggesting a stepwise mechanism.



## Note

**Michael A. Beckett, Elliot L. Bennett, Peter N. Horton, Michael B. Hursthouse**

*J. Organomet. Chem.* 695 (2010) 1080

Tetraphenylboroxinate(1-) salts of monoborate cations: Synthesis and single-crystal X-ray structures of  $[\text{Ph}_2\text{B}\{\text{OCH}_2\text{CH}_2\text{N}(\text{Me})(\text{CH}_2)_n\}_2][\text{Ph}_4\text{B}_3\text{O}_3]$  ( $n = 4, 5$ )

The zwitterionic ( $2\text{N}^+$ ,  $1\text{B}^-$ ) monoborate cation is observed in the salts:  $[\text{Ph}_2\text{B}\{\text{OCH}_2\text{CH}_2\text{N}(\text{Me})(\text{CH}_2)_n\}_2][\text{Ph}_4\text{B}_3\text{O}_3]$  ( $n = 4, 5$  (shown)). The cation arises through condensation of a 2-hydroxyethyl substituted quaternary ammonium cation with a diphenylborinate moiety.

