Applied Organometallic Chemistry

(Appl. Organometal. Chem.)

CONTENTS

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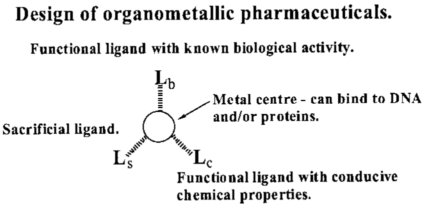
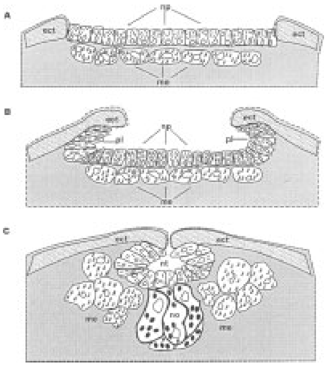
Section: Bioorganometallic Chemistry

The medicinal properties of organometallic compounds are under intensive evaluation, especially in the treatment of cancer, as they exhibit certain properties that appear to be superior to those of other types of drug. We identify these properties and show where current organometallic drugs are finding most interest, and describe some recent results from our own research.

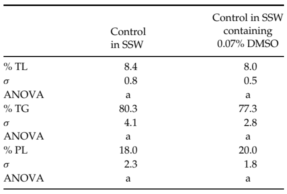


Section: Speciation Analysis and Environment

This paper reports the cytotoxic effects of tri-*n*-butyltin (IV) chloride, TBTCl, on the neurulation process of the ascidian *Ciona intestinalis*. Exposure of the embryos at early neurula stage in 10^{-5} and 10^{-7} M TBT (IV) chloride solutions for 1–2 h provoked the irreversible arrest of their development.



Reduction of total lipids (TL) content and significant variations of triglyceride (TG) and phospholipid (PL) fractions were observed as a consequence of exposure of *Ciona intestinalis* ovaries to tributyltin chloride (TBTCL) solutions.



	Control in SSW	Control in SSW containing 0.07% DMSO
% TL	8.4	8.0
σ	0.8	0.5
ANOVA	a	a
% TG	80.3	77.3
σ	4.1	2.8
ANOVA	a	a
% PL	18.0	20.0
σ	2.3	1.8
ANOVA	a	a

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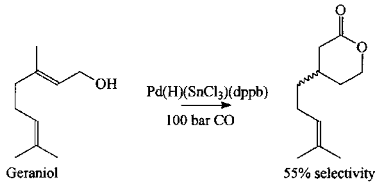
Section: Materials, Nanoscience and Catalysis

Palladium-catalysed cyclocarbonylation of isopulegol, dihydromyrcenol, and geraniol is achieved with good to high yields in the presence of the active species [Pd(H)($SnCl_3$)(L_2)].



D. H. Nguyen, F. Hebrard, J. Duran, A. Polo, M. Urrutigoíty, Ph. Kalck*** 30–34

An efficient catalytic system for cyclocarbonylation of terpenes into lactones

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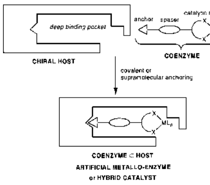
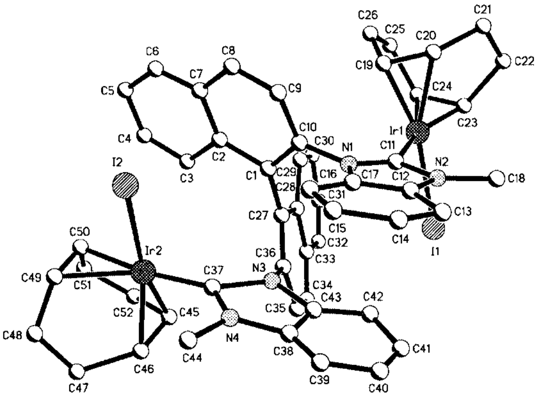
This review is focused on the use of semisynthetic enzymes to produce efficient enantioselective hybrid catalysts for a given reaction. Also included are our recent research results and implications in developing the biotin–avidin technology to localize the biotinylated organometallic catalyst precursor within a well-defined protein environment.



C. M. Thomas and T. R. Ward* 35–39

Design of artificial metalloenzymes

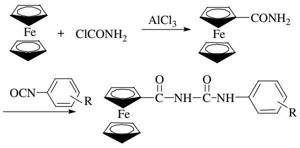
An axially chiral Ir(I)–NHC complex was successfully synthesized from the reaction of axially chiral binaphthyl dibenzimidazolium salt **5** with [Ir(COD)Cl]$_2$ in THF in the presence of base KO^{t}Bu under reflux. Its unique crystal structure is unambiguously disclosed by X-ray diffraction.



M. Shi* and W.-L. Duan 40–44

Synthesis of an axially chiral Ir–NHC complex derived from BINAM

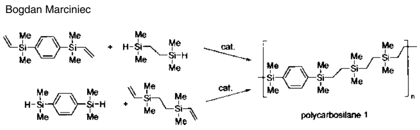
We replaced the benzoyl moiety by ferrocenoyl in benzoylphenylurea, and synthesized a series of new benzoylphenylureas containing a ferrocenyl moiety by the reaction of carbamylferrocene with phenylisocyanate in good yields. The crystal structure and bioactivities of the new compounds was determined.



L. Chen, Q. Wang*, R. Huang, C. Mao, J. Shang and H. Song 45–48

Synthesis of ferrocenoylphenylureas and the crystal structure of FcCONHCONHC$_6$H$_5$

New phenylene–silylene–ethylene polymers have been successfully synthesized using platinum–divinylsiloxane or rhodium and iridium siloxide complex-catalysed polyhydrosilylation of divinylsubstituted carbosilanes with dihydrocarbosilanes or intermolecular hydrosilylation of new hydrovinylcarbosilane.



P. Pawluc, B. Marciniec*, I. Kownacki and H. Maciejewski 49–54

Synthesis of phenylene–silylene–ethylene polymers via transition metal complex catalyzed hydrosilylation polymerization

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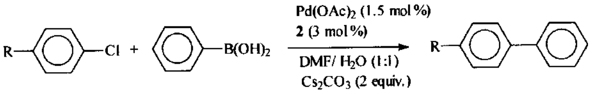

A convenient method for Suzuki cross-coupling reactions is presented which employs a catalyst formed *in situ* from $Pd(OAc)_2$ and air-stable 1,3-bis(alkyl)imidazolinium salts.

I. Özdemir*, S. Demir, S. Yaşar and B. Çetinkaya **55–58**

Palladium-catalysed Suzuki reaction of aryl chlorides in aqueous media using 1,3-dialkylimidazolidin-2-ylidene ligands

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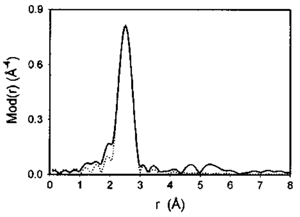
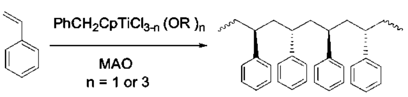


A thorough characterization of cadmium bis(*O*-alkylxanthates), Cd(*O*-RXan)$_2$, where *O*-RXan is $CH_3CH_2OCS_2$ (*O*-EtXan) or $(CH_3)_2CHOCS_2$ (*O*-^{i}PrXan), was undertaken by means of a multi-technique approach, with particular attention to their thermal behavior and fragmentation pattern. The results indicate the suitability of cadmium bis(*O*-alkylxanthates) as single-source precursors for the CVD of CdS thin films.

D. Barreca*, A. Gasparotto, C. Maragno, R. Seraglia, E. Tondello, A. Venzo, V. Krishnan and H. Bertagnolli **59–67**

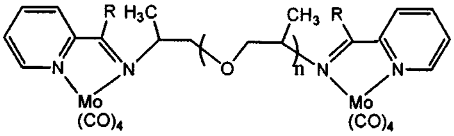
Cadmium O*-alkylxanthates as CVD precursors of CdS: a chemical characterization*



Two new series of various substituted half-sandwich titanium complexes $PhCH_2CpTiCl_2(OR)$ (R = Et (**1**), ^{i}Pr (**2**), ^{t}Bu (**3**), cyclohexyl (**4**), benzyl (**5**)) and $PhCH_2CpTi(OR)_3$ (R = Et (**6**), ^{i}Pr (**7**), ^{t}Bu (**8**), cyclohexyl (**9**), benzyl (**10**)) were prepared. All complexes were tested as catalyst precursors for the syndiotactic polymerization of styrene. The effect of variation in temperature, MAO/catalyst molar ratio and polymerization time was studied. The s-PS sample obtained exhibits low molecular weight ($M_w = 2.78 \times 10^4$) and narrow molecular weight distribution ($M_w/M_n = 1.50$).

H. Zhang, Q. Chen, Y. Qian and J. Huang* **68–75**

Synthesis of monoalkoxy and trialkoxy substituted half-sandwich titanium complexes $PhCH_2CpTiCl_{3-n}(OR)_n$ *(n = 1 or 3) as catalysts for syndiotactic styrene polymerization*



These complexes ($n = \sim 6$ or ~ 33; R = Me or Ph), as free radical initiators, afforded methyl methacrylate polymerization in chlorinated solvents.

A. Menteş*, M. Sarbay, B. Hazer and H. Arslan **76–80**

Molybdenum tetracarbonyl complexes with linear chain polyether-containing Schiff base ligands and their reactivity in the polymerization of methyl methacrylate

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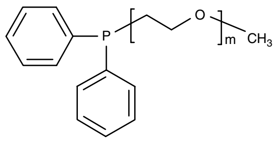

A thermoregulated phase-transfer (TRPT) Rh(I) complex catalyst **A** prepared from $Rh(acac)(CO)_2$ and a thermoregulated ligand $CH_3(OCH_2CH_2)_mPPh_2$ ($M_w = 918$) was applied to the biphasic hydroformylation of 1-octene, and a high activity with an aldehyde yield of 97.5% was demonstrated.

F. Wen, H. Bönnemann*, J. Jiang, D. Lu, Y. Wang and Z. Jin **81–89**

Evidence of colloidal rhodium formation during the biphasic hydroformylation of 1-octene with thermoregulated phase-transfer phosphine rhodium(I) catalysts

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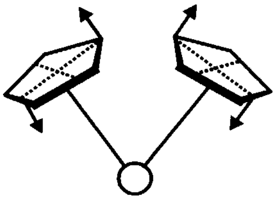
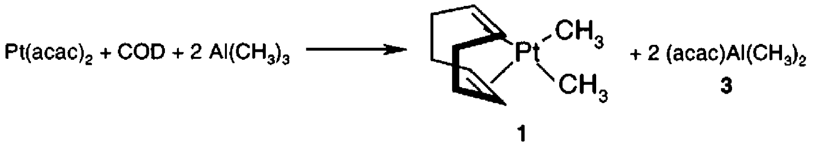
Reactions of antitumour active bent metallocenes with bioligands can be accompanied by full η^5-bonded cyclopentadienyl ring elimination or the bent metallocene fragment $M(Cp)_2$ remains unaffected. It has not been easy to decide unambiguously whether the reaction products contain $M(Cp)_2$ or $M(Cp)$ fragments. We have found that Raman spectroscopy is a very simple and sensitive tool for detection of the bent metallocene fragment $M(Cp)_2$ in both solid state and solution.



M. Pavlišta*, R. Bína, Z. Černošek, M. Erben, J. Vinklárek and I. Pavlík 90–93

Raman spectroscopic evidence for bent metallocene fragments $[M(Cp)_2]^{2+}$

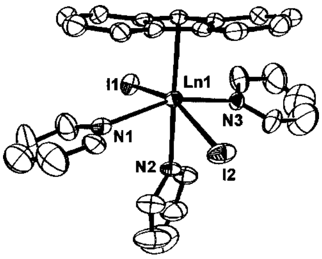
Complex $[(COD)Pt(CH_3)_2]$ is available from $Pt(acac)_2$ in a one-pot procedure with 92% yield.



F. Wen and H. Bönnemann* 94–97

A facile one-pot synthesis of $[(COD)Pt(CH_3)_2]$

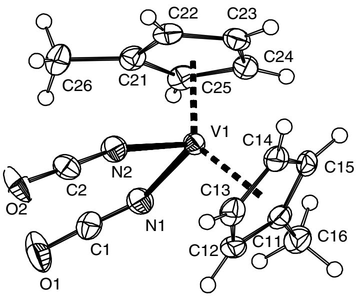
The structures of the title compounds are mononuclear with each lanthanide bound by a single η^5-fluorenyl ligand, two trans-disposed iodides and three meridionally oriented pyridine molecules.



G. R. Giesbrecht*, J. C. Gordon, D. L. Clark and B. L. Scott 98–99

Crystallographic report: (η^5-Fluorenyl)-tris-pyridine-di-iodo-lanthanum(III) and -neodymium(III)

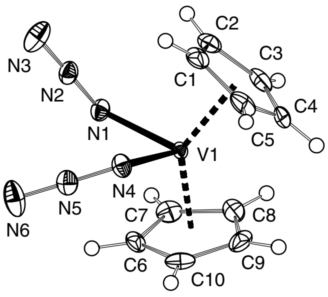
The crystal structure of the first cyclopentadienyl vanadium(IV) pseudohalide complex, $(\eta^5\text{-}C_5H_4CH_3)_2V(NCO)_2$, was determined. The molecule has a typical bent metallocene structure in which two η^5-bonded methylcyclopentadienyl rings and two nitrogen atoms of cyanato ligands occupy the pseudotetrahedral coordination sites around the vanadium(IV) center.



J. Honzíček, M. Erben, I. Císařová and J. Vinklárek* 100–101

Crystallographic report: Bis(η^5-methylcyclopentadienyl)-bis(cyanato)-vanadium (IV)

The crystal structure of the cyclopentadienyl vanadocene complex $(\eta^5\text{-}C_5H_5)_2V(N_3)_2$ was determined. The molecule has a typical bent metallocene structure in which two η^5-bonded cyclopentadienyl rings and two nitrogen atoms of azide ligands occupy the pseudotetrahedral coordination sites around the vanadium(IV) center.



J. Honzíček, M. Erben, I. Císařová and J. Vinklárek* 102–103

Crystallographic report: The crystal structure of bis(η^5-cyclopentadienyl)-diazidovanadium(IV)

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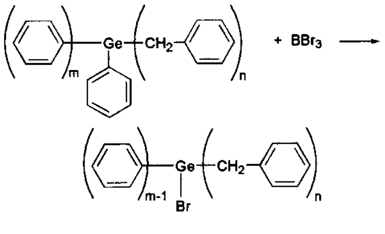
Section: Main Group Metal Compounds

It was established that BBr_3 can bring about phenyl–bromine ligand exchange on germanium without breaking the coexisting benzyl–germanium bond(s). This reaction will terminate when one phenyl group is exchanged, even if two or more phenyl groups are bonded to germanium.



Y. Takeuchi*, K. Suzuki, T. Yagi, Y. Yoshida and Y. Suzuki 104–107

A novel phenyl–bromine ligand exchange reaction on germanium by boron tribromide

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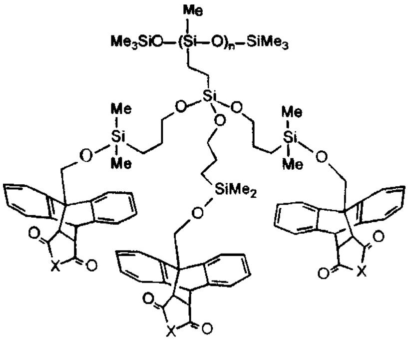
Anthracene-grafted polysiloxane was prepared by the dehydrocoupling between linear siloxane polymers and anthracene-carbinol. The cylindrical type of dendritic polysiloxane was prepared up to the second generation by the hydrosilation between polysiloxane and vinyltrichlorosilane, and the continual addition of allyl alcohol. The Diels–Alder reaction of anthracene moieties on polysiloxane and maleimide derivatives, maleic acid anhydride, and 1,4-quinone derivatives was carried out under mild conditions.



X = NH, N-Et, CH=CH

C. Kim*, K. Kwark and C.-G. Song 108–112

Diels–Alder reaction of anthracene on grafted polysiloxane and cylindrical carbosilane dendrimer

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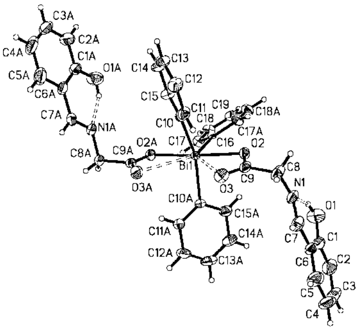
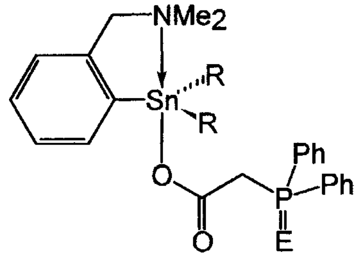
Four novel triarylbismuth(V) di(*N*-salicylidene)amino carboxylates were synthesized. Their structures were confirmed by ^1H NMR, IR, elemental analysis and X-ray diffraction. The *in vitro* antitumor activities of all compounds against three human cancer cells at 10 μM are reported.



G.-C. Wang, J. Xiao, Y.-N. Lu, L. Yu, H.-B. Song, J.-S. Li*, J.-R. Cui, R.-Q. Wang and F.-X. Ran 113–117

*Synthesis, characterization and in vitro cytotoxicity screening of some triarylbismuth(V) di(*N*-salicylidene)amino carboxylates and the crystal structure of* $(2\text{-}HOC_6H_4CH{=}NCH_2CO_2)_2Bi(C_6H_5)_3$

Monomeric organotin(IV) carboxylates $R_2\text{-}L^{NC}SnOC(O)CH_2P(E)Ph_2$, where L^{NC} is a *C,N*-chelating 2-(dimethylamino)phenyl group, and R/E = Ph/void (**1a**), Ph/O (**1b**), Ph/S (**1c**), Me/void (**2a**), Me/O (**2b**) and Me/S (**1c**), were synthesized and characterized by multinuclear NMR, IR and MS spectra. The solid-state structures of **1b**, **1c**, **2b** and **2c** were determined by single-crystal X-ray diffraction.



P. Zoufalá, I. Císařová, A. Růžička and P. Štěpnička* 118–124

Preparation and structures of [2-(dimethylamino)phenyl]diorganotin(IV) acetates substituted with organophosphorus groups in the α-position of the acetate ligand

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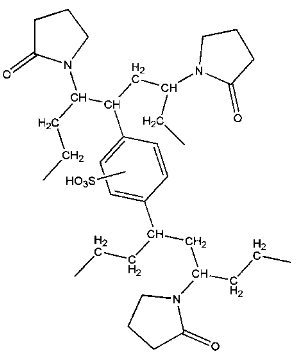
Radiotracer batch ion-exchange experiments were employed to investigate the uptake of ^{90}Sr and ^{137}Cs isotopes by various cation-exchanged forms of a 30% cross-linked macroporous 1-vinyl-2-pyrrolidone–divinylbenzene cation-exchange resin. The results showed that the Li^{+} and H^{+} forms of the resin were more effective in removing ^{90}Sr and ^{137}Cs, both in carrier-free and with carrier concentrations.



M. Zamin*, T. Shaheen and S. A. R. Zaidi
.... 125–128

Ion exchange of ^{90}Sr and ^{137}Cs into 1-vinyl-2-pyrrolidone–divinylbenzene cation-exchange resin

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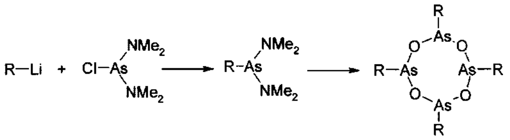
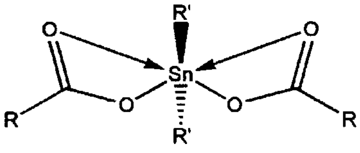
Arsoxanes (RAsO)$_n$ were prepared from the reactions of RLi and bis(dimethylamino)chloroarsine; the X-ray crystal structure of tetrameric *m*-trifluromethylphenylarsine oxide is described.



H. Sun, B. O. Patrick and W. R. Cullen*
.... 129–131

A convenient way of making arsoxanes (RAsO)$_n$, X-ray crystal structure of (m-$F_3CC_6H_4AsO)_4$

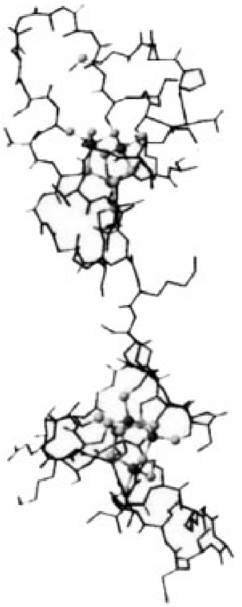
Six new organotin(IV) complexes with *N*-maleoylglycine are reported; these complexes were duly characterized by multinuclear magnetic resonance, FT IR and ^{119m}Sn Mössbauer spectroscopies with MS and %CHN analysis. Spectroscopic analysis revealed octahedral geometry for diorganotin(IV) derivatives. All the organotin(IV) complexes were screened for *in vivo* antitumour activity against human tumoural cells; two compounds (**3** and **4**) showed antitumour activity *in vivo*, whereas all the compounds (**1**–**6**) displayed toxicity *in vitro*.



M. I. Khan*, M. K. Baloch, M. Ashfaq and G. J. Peters 132–139

In vivo toxicological effects and spectral studies of organotin(IV) Carboxylates of N-*maleoylglycine*

Metallothioneins, which show high affinity for metals such as zinc, copper and mercury, were purified from tissues of rat after oral intake of $HgCl_2$, and then characterized using hyphenated method developed. Significant mercury-binding metallothioneins co-existing with copper and maybe zinc were found in kidney



J.-C. Shen, Z.-Y. Huang, Z.-X. Zhuang, X.-R. Wang* and F. S. C. Lee
.... 140–146

Investigation of mercury metallothionein complexes in tissues of rat after oral intake of $HgCl_2$

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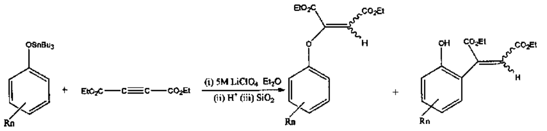
Different organotin phenoxides react at room temperature with diethyl acetylene-dicarboxylate in diethyl ether, in the presence of lithium perchlorate to give a mixture of corresponding phenyl vinyl ethers and ring ethenylated phenols.



W. J. Kinart*, C. M. Kinart, Q. T. Tran and R. Oszczęda 147–152

Studies on the catalysis of the reaction of organotin phenoxides with diethyl acetylenedicarboxylate

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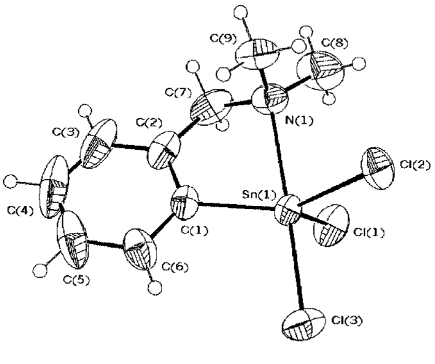
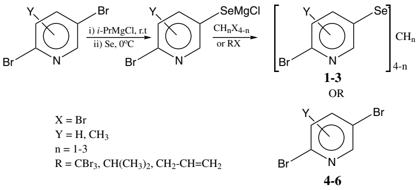
$[2\text{-}(Me_2NCH_2)C_6H_4]SnCl_3$ (**1**) and its DMSO adduct $[2\text{-}(Me_2NCH_2)C_6H_4]SnCl_3{\cdot}DMSO$ (**1a**) have been prepared. The NMR data (^1H, ^{13}C, ^{119}Sn) in solution indicate 5- and 6-coordinated metal atoms in **1** and **1a**, respectively. The molecular structure in solid state was established by single-crystal X-ray diffraction. The N atom of the pendant CH_2NMe_2 arm is strongly coordinated to the tin atom, thus resulting in distorted trigonal bipyramidal (*C*, *N*)$SnCl_3$ and octahedral (*C*, *N*)$SnCl_3O$ cores for **1** and **1a**, respectively. For both compounds hydrogen bonding generates supramolecular associations in the crystal.



R. A. Varga, C. Silvestru* and C. Deleanu 153–160

Synthesis, solution behaviour and X-ray structures of $[2\text{-}(Me_2NCH_2)C_6H_4]SnCl_3$ and $[2\text{-}(Me_2NCH_2)C_6H_4]SnCl_3{\cdot}DMSO$

A one-pot synthesis of various unsymmetrical 2-bromo-5-pyridylselenium compounds has been carried out under non-cryogenic conditions by selective mono bromine–magnesium exchange of 2,5-dibromopyridine using isopropylmagnesium chloride. This exchange, upon insertion of elemental selenium, followed by treatment with alkyl halide, gives the title compounds in good yield. The molecular structure of 2-bromo-5-selenopyridyltribromomethane has been examined: the compound crystallizes in the monoclinic space group $P2_1/n$; the X-ray structure shows that intermolecular Br···Br, N···Se and Se···Br interactions control its crystal packing.



K. K. Bhasin*, V. Arora, S. K. Sharma and P. Venugopalan 161–166

A novel and facile one-pot synthesis of pyridylselenium compounds through selective bromine–magnesium exchange with isopropylmagnesium halide

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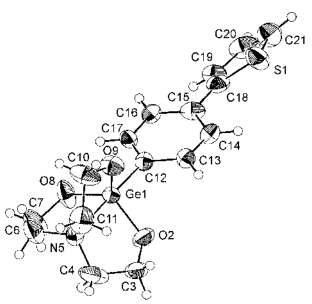
The X-ray crystal structure of 1-[4-(2-thienyl)phenyl]germatrane reveals that there are two molecules connected by a center of pseudoinversion; the germanium atom is penta-coordinated and adopts trigonal bipyramidal geometry. The (2-thienyl)-phenyl group and the nitrogen atom each occupy an apical position with transannular N→Ge bond of 2.247(4) Å and 2.219(4) Å.



E. Lukevics*, L. Ignatovich, T. Shul'ga and S. Belyakov 167–168

Crystallographic report: 1-[4-(2-Thienyl)-phenyl]germatrane

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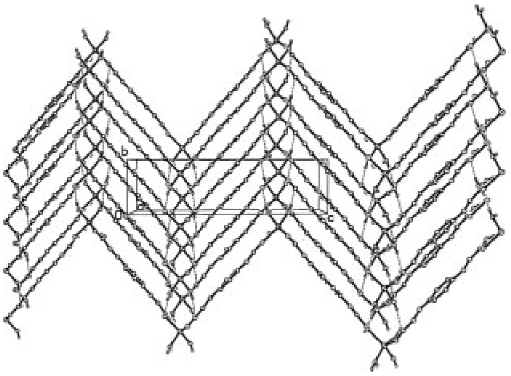
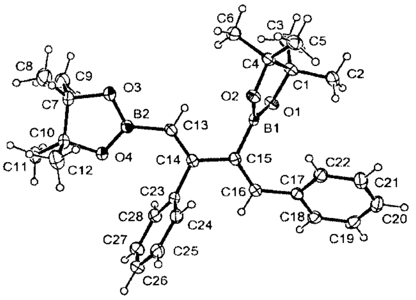
The zinc(II) atom in the crystal structure of the title coordination polymer, $[Zn(p\text{-BDOA})\cdot 2H_2O]_n$ (p-BDOA^{2-} = benzene-1,4-dioxyacetate), exists in a distorted trigonal prismatic geometry. Adjacent zinc(II) ions are linked by the p-BDOA^{2-} ligands to furnish a one-dimensional zigzag chain. A three-dimensional network structure is stabilized by extended hydrogen bonds.



S. Gao*, J.-W. Liu, L.-H. Huo, H. Zhao and S. W. Ng 169–170

Crystallographic report: Diaqua(benzene-1,4-dioxyacetate)zinc(II): a one-dimensional zigzag chain

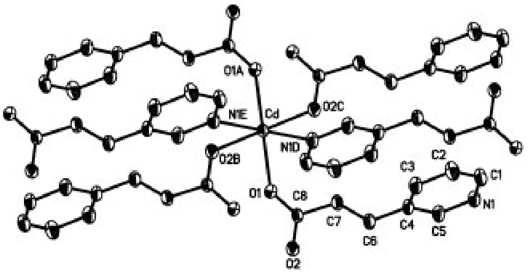
The compound comprises a 1*Z*,3*E*-butadiene moiety substituted by two pinacol boronate functional groups.



A. Shibli, H. Abu Ali, I. Goldberg and M. Srebnik* 171–172

*Crystallographic report: 2,4-Diphenyl-1,3-bis(4,4,5,5-tetramethyl[1,3,2]dioxaborolan-2-yl)-buta-1*Z*,3*E*-diene*

In $[\text{bis(3-pyridylacrylato)cadmium(II)}]_n$, the local coordination geometry around the cadmium center is based on an octahedron. The carboxylate acts as a tridentate ligand by bridging two cadmium atoms and binds a third cadmium atom via the pyridyl group, with the result that a two-dimensional layered network is formed.



Y.-M. Song, R. Shi, X.-S. Wang, H. Zhao and R.-G. Xiong* 173–174

Crystallographic report: $[\text{Bis(3-pyridylacrylato)cadmium(II)}]_n$

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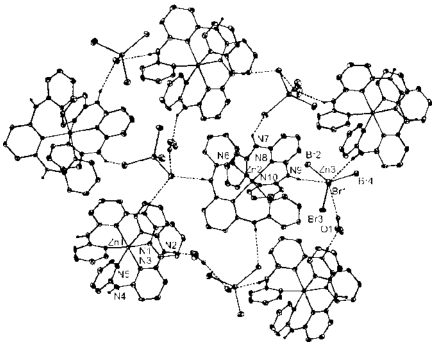
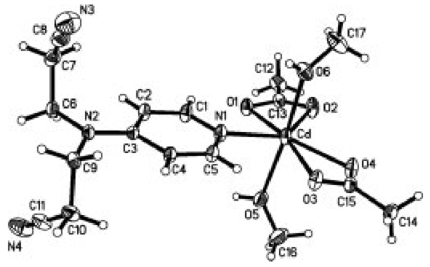
The zinc(II) atom in the complex cation of [Zn(tpda)$_2$][ZnBr$_4$]·H2O is octahedrally coordinated, whereas the zinc(II) atom in the anion is tetrahedrally coordinated. The cations and the anions are connected by hydrogen bonds, affording a two-dimensional network.



Y. Xie, X. Wang, M. Zhang, K. Wei, Q. Liu* and S. Peng 175

Crystallographic report: Bis(tripyridyldiamine)zinc(II) tetrabromozincate(II) hydrate

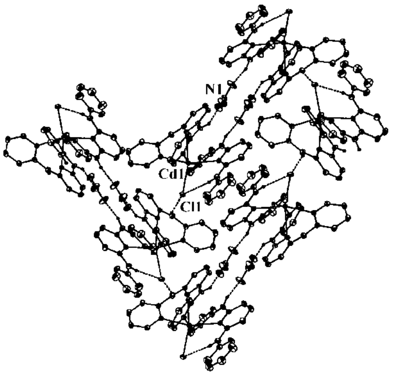
In the molecule of Cd(CH$_3$CO$_2$)$_2$(C$_{11}$H$_{12}$N$_4$)(CH$_3$OH)$_2$, the cadmium atom is coordinated by the pyridine-nitrogen atom of the 4-[*N*, *N*-bis(2-cyanoethyl)amino]pyridine ligand, two oxygen atoms of two methanol molecules and four oxygen atoms of two acetate groups in a distorted pentagonal bipyramidal geometry.



J. Ni, Y.-Z. Li, Z. Zhang, H.-L. Chen and Z.-L. Wang* 176–177

*Crystallographic report: Bis(acetato-*O,O′*)-{4-[*N,N*-bis(2-cyanoethyl)amino]pyridine} bis(methanol)cadmium(II), [Cd(II)(C$_{11}$H$_{12}$N$_4$) (CH$_3$CO$_2$)$_2$(CH$_3$OH)$_2$]*

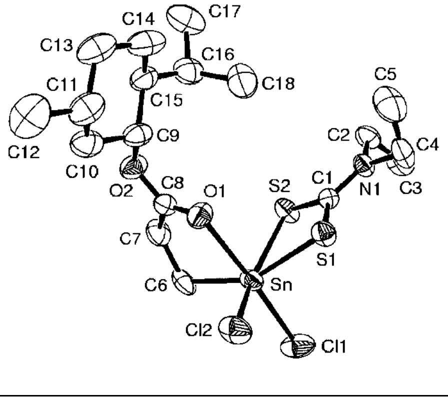
The cadmium(II) atom in [(tpda)$_2$CdCl] NO$_3$, is octahedrally coordinated to one chlorine and five pyridyl-nitrogen atoms. The coordination cations and nitrate anions are connected by multiple hydrogen bonds, affording a two-dimensional structure.



K. Wei, Y. Xie, X. Wang, M. Zhang, Q. Liu* and S. Peng 178

Crystallographic report: Chlorobis(tripyridyldiamine)cadmium(II) nitrate

The tin atom in the title compound adopts a distorted octahedral geometry within a CCl$_2$OS$_2$



L. Tian, Z. Shang*, Q. Yu and L. Zhang 179–180

Crystallographic report L*-(—)-Dichloro(β-menthoxycarbonylethyl)tin* N,N*-diethyldithiocarbamate*

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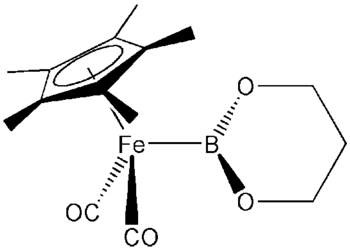
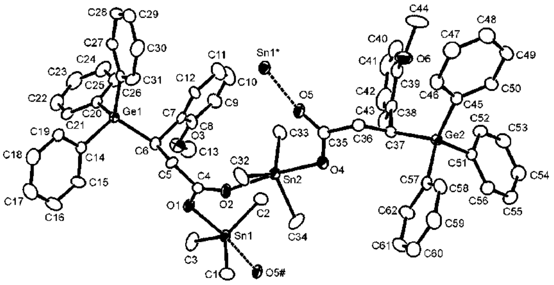
The structure of the pentamethylcyclopentadienyliron boryl complex (η^5-C_5Me_5)Fe(CO)$_2$B(tmg) (tmg = $-OCH_2CH_2CH_2O-$) reveals an Fe–B distance (2.024(4) Å) significantly in excess of that reported for related catecholboryl complexes.



A. Rossin, S. Aldridge* and L.-I. Ooi 181–182

Crystallographic report: (η^5-C_5Me_5)-Fe(CO)$_2$($BOCH_2CH_2CH_2O$): an organoiron complex containing the (trimethyleneglycolato)boryl ligand

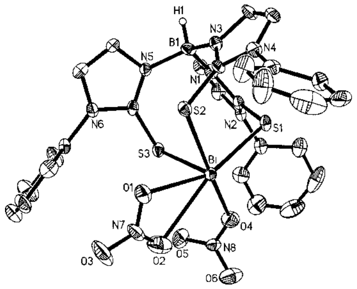
The crystal structure of bimetallic compound [3-triphenylgermyl)-3-*o*-methoxyphenylpropionato] trimethyltin(IV) is reported. The structure is polymeric owing to the presence of bidentate bridging carboxylate ligands.



M. K. Khosa, M. Parvez, M. Mazhar* and S. Ali 183

*Crystallographic report: Polymeric [3-(triphenylgermyl)-3-*o*-methoxyphenylpropionato]trimethyltin(IV)*

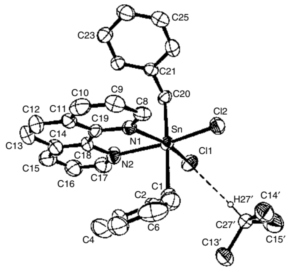
Bi[HB(tim^{Ph})$_3$](NO$_3$)$_2$ features a distorted pentagonal pyramidal geometry defined by a sulfur-rich tripodal ligand and three oxygen atoms, derived from mono- and bi-dentate nitrate ligands.



M. Shu*, J. Cui and J. Sun 184–185

Crystallographic report: Hydro[tris(3-phenyl-2-thioimidazol-1-yl)]boratobismuth(III) dinitrate

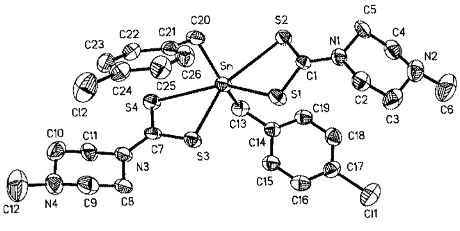
The monomeric title compound features a distorted octahedral tin (IV) centre within a $C_2Cl_2N_2$ donor set with two *cis* Cl atoms and two *trans* benzyl groups.



B. S. Krishnamoorthy, S. Chandrasekar, P. Arunkumar and K. Panchanatheswaran* 186

Crystallographic report: Dibenzyl(dichloro)(1,10-phenanthroline)tin (IV) chloroform solvate

The tin atom in (4-*Cl*-$C_6H_4CH_2$)$_2$Sn[$S_2CN(CH_2CH_2)_2NCH_3$]$_2$ is in a C_2S_4 skew-trapezoidal bipyramidal geometry with the two carbon atoms being disposed over the weaker Sn–S bonds.



H. D. Yin* and S. C. Xue 187

*Crystallographic report: Di(p-chlorobenzyl)tin bis(*N*-methyl piperazinyldithiocarbamate)*

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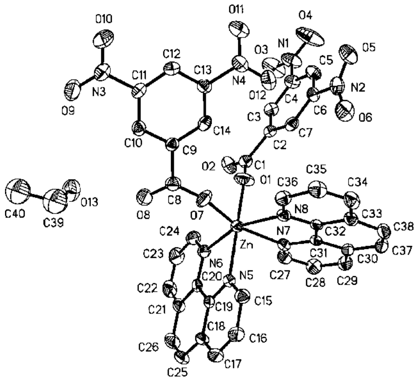
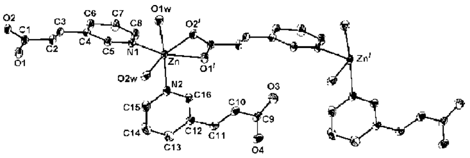
Cis-[Zn(3,5-dinitrobenzoato)$_2$(1,10-phenanthroline)$_2$]·CH_3CH_2OH features unidentate and *cis*-disposed 3,5-dinitrobenzoate ligands and chelating 1,10-phenanthroline ligands so that a distorted octahedral N_4O_2 coordination geometry results.



H. D. Yin*, Q. B. Wang **188**

Crystallographic report: Cis-*[Zn(3,5-dinitrobenzoato)$_2$(1,10-phenanthroline)$_2$]·CH_3CH_2OH*

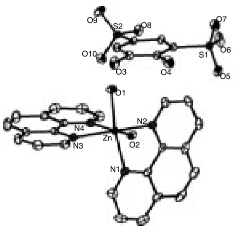
The Zn center in [bis(3-pyridylacrylato)diaquazinc(II)]$_n$ is in a slightly distorted octahedral geometry within a *cis*-N_2O_4 donor set. Each tridentate 3-pyridylacrylate ligand links two Zn centers, resulting in the formation of a linear chain.



Q. Wu, X.-F. Huang, T. Zhou, Y.-Z. Tang and R.-G. Xiong* **189–190**

Crystallographic report: Polymeric [diaqua bis(3-pyridylacrylato)zinc(II)]

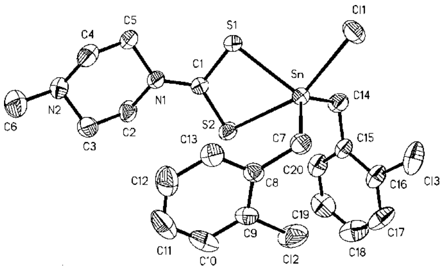
The zinc atom has a distorted octahedral geometry defined by two 1,10-phenanthroline and two *cis* water molecules. A three-dimensional network structure arises owing to extensive hydrogen bonds involving all the components of $[Zn(phen)_2(H_2O)_2][C_6H_2(OH)_2(SO_3)_2]\cdot3H_2O$.



W.-G. Wang, J. Zhang*, Z.-F. Ju and L.-J. Song **191–192**

Crystallographic report: Diaquabis(1,10-phenanthroline)zinc(II) 4,5-dihydroxy-1,3-benzenedisulfonate trihydrate

The tin atom in (2-*Cl*-$C_6H_4CH_2)_2Sn(Cl)S_2CN(CH_2CH_2)_2NCH_3$ is in a trigonal bipyramid geometry defined by a C_2ClS_2 donor set with the chlorine and weakly bound sulfur atoms in axial positions.



H.-D. Yin* and S.-C. Xue **193**

*Crystallographic report: Chlorodi(*o*-chlorobenzyl)tin* N*-methylpiperazinyldithiocarbamate*

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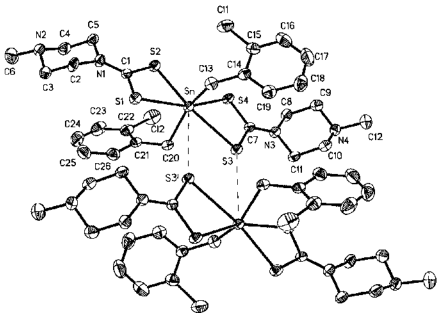
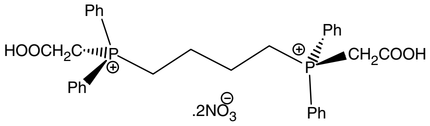
The tin atom in $\{(2\text{-}Cl\text{-}C_6H_4CH_2)_2Sn[S_2CN(CH_2CH_2)_2NCH_3]_2\}_2$ is in a skew-trapezoidal bipyramidal geometry defined by a C_2S_4 set with C–Sn–C 150.61(19)°. Centrosymmetric pairs associated via weak Sn···S to form a dimer.



H.-D. Yin* and S.-C. Xue 194

Crystallographic report: A weakly bridged dimer: di(o-chlorobenzyl)tin(IV) bis(N-methylpiperazinyldithiocarbamate)

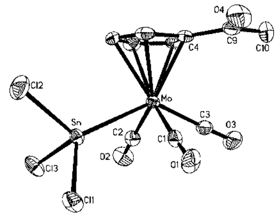
The centrosymmetric $\{[(HOOCCH_2PPh_2)]_2(CH_2)_4\}^{2+}$ cation adopts an extended conformation in which the phosphorus center adopts a tetrahedral geometry. O–H···O and C–H···O hydrogen bonding interactions expand this structure to form a two-dimensional layered architecture.



M. Du* and X.-J. Zhao 195–196

Crystallographic report: 1,4-Bis(carboxymethyldiphenylphosphonio)butane dinitrate $(CH_2)_4[(HOOCCH_2)Ph_2P^{(+)}]_2\cdot 2(NO_3^{(-)})$

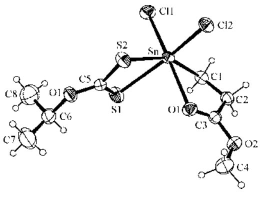
The tin atom in $Cl_3SnMo(CO)_3C_5H_4COCH_3$ is in a distorted tetrahedral geometry with the molybdenum atom adopting a 3:4 piano stool geometry.



X.-M. Zhao, J.-T. Wang and L.-F. Tang* 197

Crystallographic report: Tricarbonylacetylcyclopentadienylmolybdenum-tin(IV) trichloride, $Cl_3SnMo(CO)_3C_5H_4COCH_3$

The tin atom in $CH_3OCOCH_2CH_2SnCl_2[S_2COCH(CH_3)_2]$ adopts a distorted octahedral geometry via the bidentate xanthate ligand and intramolecular carbonyl coordination.



L. Tian*, L. Zhang, X. Liu and Z. Zhou 198–199

Crystallographic report: Dichloro(β-methoxycarbonylethyl)tin(IV) isopropylxanthate

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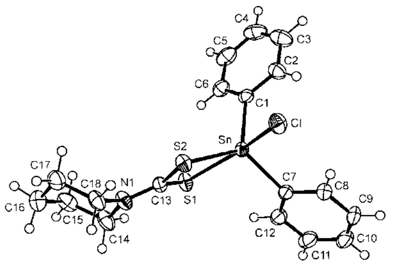
A trigonal bipyramidal C_2ClS_2 coordination geometry for tin is found in $Ph_2Sn(S_2CN(CH_2)_5)Cl$.



S. Ali*, S. U. Ahmad, Sadiq-ur-Rehman, S. Shahzadi, M. Parvez and M. Mazhar 200

Crystallographic report: Chlorodiphenyltin (IV) piperidine-1-carbodithioate

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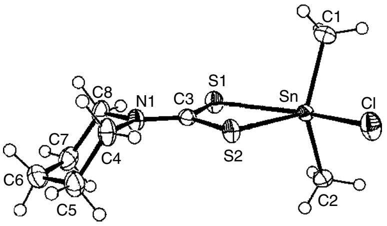
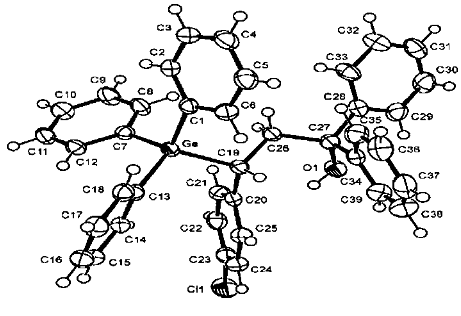
$Me_2Sn(S_2CN(CH_2)_5)Cl$ contains five-coordinated tin with a bidentate dithiocarbamate ligand spanning equatorial and axial positions in a distorted trigonal bipyramidal geometry.



S. Ali*, S. U. Ahmad, S. Shahzadi, Sadiq-ur-Rehman, M. Parvez and M. Mazhar 201

Crystallographic report: Chlorodimethyltin (IV) piperidine-1-carbodithioate

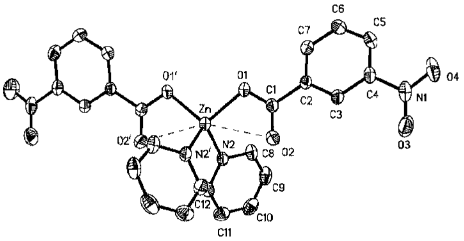
The germanium atom in $[(C_6H_5)_3GeCH(4\text{-}ClC_6H_4)CH_2C(C_6H_5)_2OH]$ is in a distorted tetrahedral geometry. Steric hindrance precludes O–H···O intra- or inter-molecular bonding.



M. K. Khosa, M. Parvez, M. Mazhar*, S. Ali and Sadiq-ur-Rehman 202

Crystallographic report: 1,1-Diphenyl-3-(triphenylgermyl)-3-(4-chlorophenyl) propanol

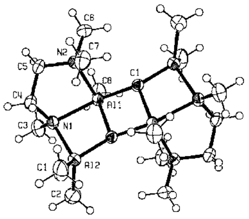
The molecular structure of $[Zn(O_2CC_6H_4NO_2\text{-}m)_2(pyridine)_2]$ exhibits a distorted N_2O_2 tetrahedral geometry; the molecule has two fold symmetry.



H.-D. Yin* and Q.-B. Wang 203

Crystallographic report: Bis(m-nitrobenzoato)bis(pyridine)zinc(II)

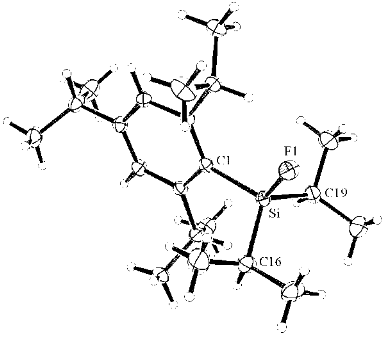
Dimeric and centrosymmetric $[MeAlO{\cdot}Me_2AlNMe(CH_2)_2NMe_2]_2$ comprises two different kinds of aluminum center. One is tetrahedrally coordinated by two methyl groups, the nitrogen atom of one ligand molecule and one bridging oxygen atom, and the other is coordinated by one methyl group, two bridging oxygen atoms and two nitrogen atoms, derived from the amide ligand molecule in a distorted trigonal bipyramidal fashion.



E. Hecht* 204–205

Crystallographic report: [Methyl-aluminum-μ-oxo-dimethylaluminum-trimethylethylenediamide]$_2$

Owing to steric congestion in $i\text{-}Pr_2(2,4,6\text{-}i\text{-}Pr_3C_6H_2)SiF$, the geometry at the Si atom deviates slightly from ideal tetrahedral geometry with an increased C–Si–C angle of 119.02(9)° and elongated Si–C and Si–F bond distances.



R. Pietschnig* and K. Merz... 206–207

*Crystallographic report: Fluoro-bis-*iso*-propyl-(2,4,6-tris-*iso*-propylphenyl)silane,* i*-$Pr_2(2,4,6\text{-}i\text{-}Pr_3C_6H_2)SiF$*

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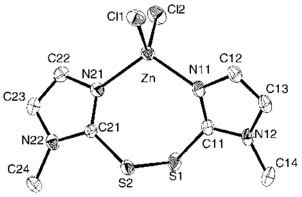
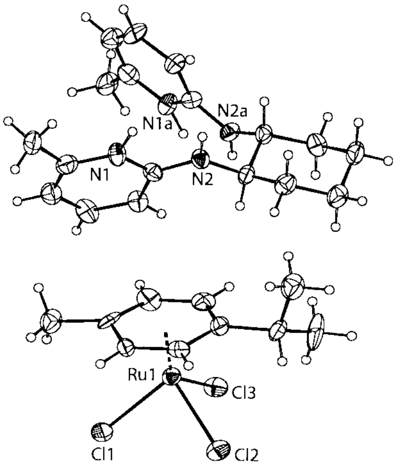
The Zn center in [$ZnCl_2$(L-S-S-L)], where L-S-S-L = bis(1-methylimidazole-2)disulfide, adopts a tetrahedral configuration defined by two Cl atoms and two N atoms from L-S-S-L, which was obtained by *in situ* oxidation of 1-methylimidazole-2-thione.



Y. Matsunaga, K. Fujisawa*, N. Amir, Y. Miyashita and K. Okamoto 208

Crystallographic report: Dichloro[bis(1-methylimidazole-2)disulfide] zinc(II)

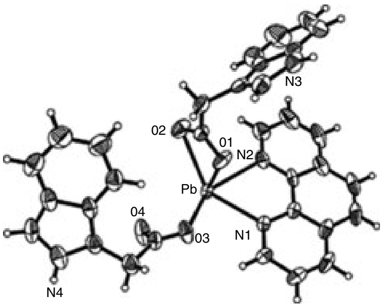
The title compound has been obtained in high yield by treating [$RuCl_2$(*p*-cymene)]$_2$ with an excess of hydrochloric acid in the presence of one equivalent of *N*,*N*′-bis-(6-methylpyrid-2-yl)-(1*R*,2*R*)-1,2-diaminocyclohexane.



J. A. Cabeza*, I. da Silva, I. del Río and S. García-Granda 209–210

*Crystallographic report: [*N,N′*-Bis-(6-methylpyrid-2-ylium)(1R,2R)-1,2-diaminocyclohexane] bis-[(*p*-cymene)-trichlororuthenate(II)]*

The lead atom in Pb(phen)(IA)$_2$ is in a heavily distorted square pyramidal geometry surrounded by an N_2O_3 donor set with Pb–O distances ranging from 2.354(5) to 2.726(5) Å.



Z.-F. Chen*, L. Huang, R.-X. Hu, S.-M. Shi, H. Liang and Y. Li 211–212**

Crystallographic report: Bis(indole-3-acetato)(1,10-phenanthroline)lead(II)

Book Review

W. Hayes and G. Goodall 213

Modern polyesters: chemistry and technology of polyesters and copolyesters

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Book Review

R. O. Jenkins 214

Enzyme catalysis in organic synthesis

Book Review

R. Maynard 215

Indoor environment: airborne particles and settled dust

Book Review

J. Hall 216

Handbook of metalloproteins, volume 3

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