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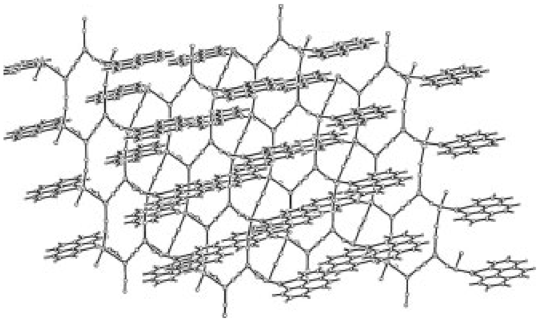
Section: Materials, Nanoscience and Catalysis

X.-B. Chen*, Yi-Zhi Li and Xiao-Zeng You 305–309

Hydrothermal synthesis of the fist two-dimensional folded layer formed by a cyano-bridged one-dimensional chain joined by Cu(I)–Cu(I) bonding

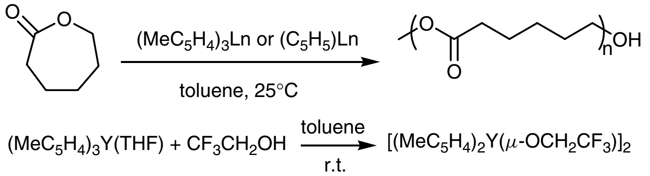


In the context molecular structures of tow complexes, $[Cu_3(CN)_3(phen)]$ (1) and $[Cu(CN)(phen)]_n$ (2) (phen = 1,10-phenalonine), were determined. Compound 1 contains three-coordinate $Cu(CN)_2$ sites, four-coordinate $Cu(CN)_3$ sites and three coordinate Cu(CN)(phen) sites, where Cu atoms present a triangular planar geometry and a distorted tetrahedron geometry , respectively. It is notable that the twist 1D infinite chain forms through two CN^- ions of these three ones as the bridges to alternately link the tetrahedron geometry Cu and the three-coordinate Cu sites. The remaining one CN^- ion projects from the chain and further coordinates to a $[Cu(phen)^+]$ side arm. In addition, 1D infinite chains are held together by Cu–Cu interaction resulting in 2D infinite folded layers of hexagonal meshes with [Cu1(CN)(phen)] groups projecting from the chains. Furthermore, Owing to the interdigitation of the neighboring phen rings, 2D layers stack orderly on the c-axis leading to 3D networks with large heart-like channels filled with the coordinated phen. The structure of 2 consists of an infinite helix chain formed by $Cu(phen)^+$ unit joined by CN^- groups.

H. Sun, S. Chen, Y. Yao, Q. Shen* and K. Yu 310–314

Homoleptic lanthanide metallocenes and their derivates: syntheses, structural characterization and their catalysis for ring-opening polymerization of ε-caprolactone

Homoleptic lanthanide metallocenes such as $(MeCp)_3Ln$ [Ln = Y (**1**), Er (**2**), Sm (**3**)] and Cp_3Ln [Ln = Er (**4**) and Sm (**5**)] have been found to be a novel type of initiators for the ring-opening polymerization of ε-caprolactone (ε-CL). In addition, a novel neutral trifluoroethoxo yttrium complex $[(MeC_5H_4)_2Y(\mu\text{-}OCH_2CF_3)]_2$ (**6**) has been synthesized by the reaction of **1** with trifluoroethanol in 1 : 1 molar ratio and characterized by single-crystal X-ray structural analysis. Preliminary study shows that the catalytic activity of complex **1** is higher than that of complex **6**.



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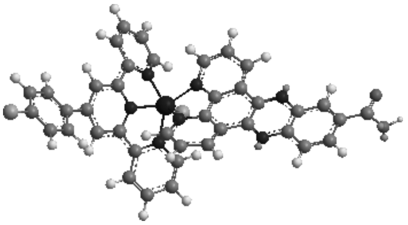
A series of polypyridine ruthenium complexes of the general formula [Ru(Rph-tpy)(dppz(COOH))Cl]PF_6 with R = Br, Cl, NO_2 where Rph-tpy is 4′-(4-Rphenyl-2,2′:6′,2″-terpyridine and dppz(COOH) is dipyrido[3,2-a:2′,3′-c]phenazine-2-carboxylic acid were prepared and characterized.



R. López, S. A. Moya*, C. Zúñiga, M. Yáñez, J. C Bayón and P. Aguirre* 315–321

Design and spectroscopic study of new ruthenium(II) complexes containing ligands derived from terpyridine and dipyrido [3,2-a:2′,3′-c]phenazine: {Ru(4′-Rph- tpy) [dppz(COOH)]Cl}PF_6 with R = NO_2, Br, Cl

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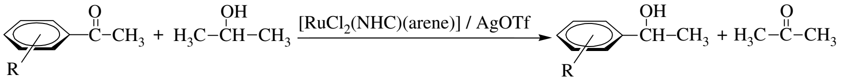
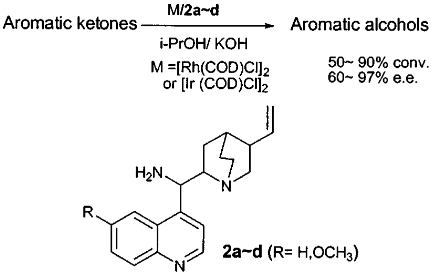
Four ruthenium-*N*-heterocyclic carbene complexes (**3–6**) have been prepared and the new compounds characterized by C, H, N analyses, ^{1}H-NMR and ^{13}C-NMR. The reduction of ketones to alcohols via transfer hydrogenation was achieved with catalytic amounts of complexes **3–6** in the presence of *t*-BuOK.



M. Yiğit, B. Yiğit, İ. Özdemir*, E. Çetinkaya and B. Çetinkaya 322–327

*Active ruthenium-(*N*-heterocyclic carbene) complexes for hydrogenation of ketones*

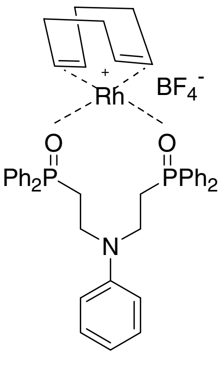
9-Amino (9-deoxy) *cinchona* alkaloids, **2a–2d,** derived from natural *cinchona* alkaloids, were applied in asymmetric transfer hydrogenation in both iridium and rhodium catalytic systems using *i*-propanol as the hydrogen source. A series of aromatic ketones was examined, and good to excellent conversions and enantioselectivities were observed. The best results were achieved using 9-amino(9-deoxy) epicinchonine **2a** as the ligand and $[Ir(COD)Cl]_2$ as the metal precursor.



W. He, P. Liu, B. L. Zhang, X. L. Sun and S. Y. Zhang* 328–334

Efficient iridium and rhodium-catalyzed asymmetric transfer hydrogenation using 9-amino (9-deoxy) cinchona *alkaloids as chiral ligands*

A new rhodium complex with a nitrogen-containing bis(phosphine oxide) ligand has been synthesized, and applied to hydroformylation of styrene displaying higher activity and regioselectivity towards the branched aldehyde than the bis(phosphine) analogue.



E. I. Tolis, K. A. Vallianatou, F. J. Andreadaki and I. D. Kostas* 335–337

A new rhodium complex with a nitrogen-containing bis(phosphine oxide) ligand as an efficient catalyst for the hydroformylation of styrene

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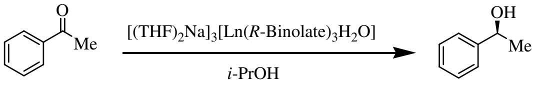

Heterometallic $[(THF)_2Na]_3[Ln(R\text{-Binolate})_3(H_2O)]$ [Ln = Sm (**1**) and Gd (**2**)] have been synthesized by reactions of either $LnCl_3$ or $LnBr_3$ with 3 equiv. Na(*R*-HBinolate) and characterized by X-ray crystallographic analysis. When complexes **1** and **2** were employed as catalysts in the MPV reaction of acetophenone, the *S*-phenylethanol was separated in 94 and 85% enantiomeric excess (e.e.) for **1** and **2**, respectively.

P. Yan, C. Nie,* G. Li, G. Hou, W. Sun and J. Gao 338–343

Crystal structure of chiral binaphthol lanthanide complexes and their catalysis in asymmetric transfer hydrogenation of acetophenone

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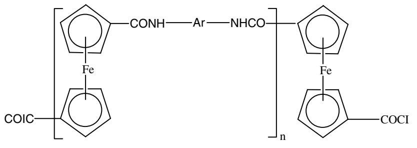

Three aromatic diamines were prepared by reacting 2, 6-dihydroxytoluene, bisphenol-A and 4,4′-dihydroxybiphenyl with *p*-nitrobenzylchloride, which was then polymerized with 1,1′-ferrocene-dicarboxylic acid chloride following a low-temperature solution polycondensation method to yield organometallic aromatic polyamides (aramids). The synthesized monomers and polymers were characterized by their solubilities, elemental analysis, FTIR spectroscopy and ^1H-NMR spectroscopy. The inherent viscosities, differential scanning calorimetry and thermogravimetry were also used for polymer characterization.

N. Iqbal, Z. Akhter*, M. A. Saeed and M. Saif ullah Khan 344–350

Synthesis and characterization of some novel organometallic aromatic polyamides

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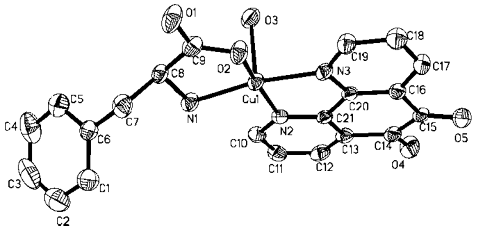

Two novel complexes, $[Cu(phendio)(L\text{-}Phe)(H_2O)](ClO_4)\cdot H_2O$ (**1**) and $[Ni(phendio)(Gly)(H_2O)](ClO_4)\cdot H_2O$ (**2**) have been synthesized and characterized. Crystal structure of $[Cu(phendio)(L\text{-}Phe)(H_2O)](ClO_4)\cdot H_2O$ shows that the copper(II) ion is coordinated in a distorted square pyramidal geometry. The electrochemical properties of these complexes are pH-dependent and the reduction of coordinated phendio proceeded via the $2e^-/2H^+$(pH < 4) and $2e^-/H^+$(pH > 4) processes being modulated by the amino acid ligands through combining proton on the NH_2 groups.

G.-J. Xu, Y.-Y. Kou, L. Feng, S.-P. Yan*, D.-Z. Liao, Z.-H. Jiang and P. Cheng 351–356

Cu(II) and Ni(II)-1,10-phenanthroline-5,6-dione-amino acid ternary complexes exhibiting pH-sensitive redox properties