Applied Organometallic Chemistry

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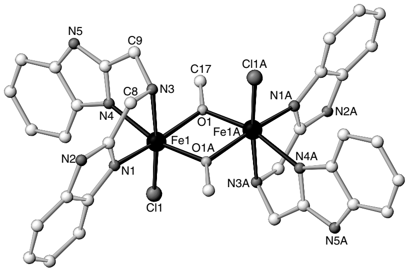
Section: Bioorganometallic Chemistry

A new dialkoxo-bridged diiron(III) complex is presented. Cryomagnetic analyses indicated a moderate antiferromagnetic interaction between Fe(III) ions. The binding interaction of DNA with the diiron complex was investigated by spectroscopic and agarose gel electrophoretic methods, showing moderate cleavage activity on pBR322 plasmid DNA.



J.-Y. Xu, J.-L. Tian, H.-D. Bian, S.-P. Yan*, D.-Z. Liao, P. Cheng and P.-W. Shen 129–134

Synthesis, magnetic property and DNA cleavage behavior of a new dialkoxo-bridged diiron(III) complex

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Section: Materials, Nanoscience and Catalysis

Activation of H_2O_2 by traces of transition metal ions results in good to excellent yields of organic compounds. This one pot system is eco-friendly convenient, and oxidizes a wide range of organic compounds. Regeneration of solvent make it highly economical.

$$\text{X.Ar.CHO} + H_2O_2 \xrightarrow[\text{AcOH, 80 -100 °C, Yields = 5.1 to 94\%}]{\text{Catalyst } (\sim 10^{-7}\text{ mol})} \text{X.Ar.COOH} \quad \text{(a to f)}$$

Scheme 1

X= -H (a and f), -Cl (b), -NO_2 (c and d), -OCH_3 (e), Ar = $C_6H_5CH{=}CH$- (f) cinnamaldehyde

$$C_{14}H_{10} + H_2O_2 \xrightarrow[\text{Yields = 60 to 81\%, 100 °C}]{\text{Catalyst } (\sim 10^{-7}\text{ mol}),\ \text{AcOH}} C_{14}H_8O_2 \quad \text{g \& h)}$$

Scheme 2

$$C_6H_{11}OH + H_2O_2 \xrightarrow[\text{100 °C , Yields =17 to 26\%}]{\text{Catalyst}(\sim 10^{-7}\text{ mol}),\ \text{AcOH}} C_6H_{10}O \text{ (i)}$$

Scheme 3

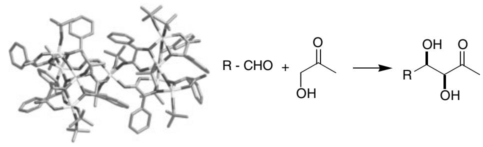
$$C_6H_5CH_2OH + H_2O_2 \xrightarrow[\text{100 °C , Yields =21 to 49\%}]{\text{Catalyst}(\sim 10^{-8}\text{ mol}),\ \text{AcOH}} C_6H_5CHO \quad \text{(j)}$$

Scheme 4

P. K. Tandon*, Gayatri, S. Sahgal, M. Srivastava, S. B. Singh 135–138

Catalysis by Ir(III), Rh(III) and Pd(II) metal ions in the oxidation of organic compounds with H_2O_2

The synthesis of two multinuclear chiral titanium complexes has been described as well as the application of these complexes in direct aldol addition and carbonyl-ene reaction. High regio- and diastereoselectivities were observed.



B. Schetter, C. Stosiek, B. Ziemer and R. Mahrwald* 139–145

Multinuclear enantiopure titanium self-assembly complexes—synthesis, characterization and application to organic synthesis

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Identification statement

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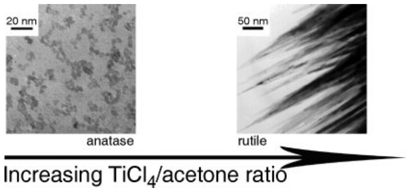
We demonstrate low temperature (110 °C) solvothermal syntheses of single-phase titania from $TiCl_4$ in acetone. Small, uniform and yet size-tunable (5–10 nm) anatase titania nanocrystallites are synthesized using a low concentration of $TiCl_4$ in acetone; rutile nanofibers are obtained using a high concentration of $TiCl_4$.



Y. Wu, H.-M. Liu and B.-Q. Xu* 146–149

Solvothermal synthesis of TiO_2: anatase nano-crystals and rutile nanofibres from $TiCl_4$ in acetone

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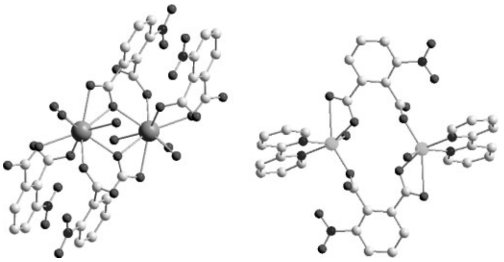
Two novel benzenedicarboxylate-metal complexes [Sm(nphth)(Hnphth)$(H_2O)_3 \cdot H_2O]_2$ and [Zn(nphth)(bipy)(H_2O) $\bullet H_2O]_2$ (2) (H_2nphth = 3-nitrophthalic acid, bipy = 2,2′-bipyridine) have been synthesized under hydrothermal condition. Both of which and characterized exhibit dimeric structure with different coordination mode of nphth ligand and show different kinds of luminescence.



Y.-S. Song, B. Yan* and Z.-X. Chenb 150–155

Two novel benzenedicarboxylate-metal complexes: synthesis, crystal structures and fluorescent properties

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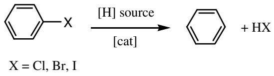
Dehydrohalogenation of haloaromatics in ionic liquids-derived from ethylmethylimidazolium or similar salts has been performed using Pd–C, $Pd(OAc)_2$ and other catalysts using formate salts as a hydrogen source. In the ionic liquid [emim][BF_4], chlorobenzene was dehalogenated by up to 40%, bromobenzene up to 25% and iodobenzene up to 41% in 2 h. Reactions in the absence of the ionic liquid were also performed.



C. A. Ohlin, Z. Béni, G. Laurenczy*, N. Ruiz and A. M. Masdeu-Bultó 156–160

Heterogeneous dehalogenation of aryl-halides in the presence of ionic liquids

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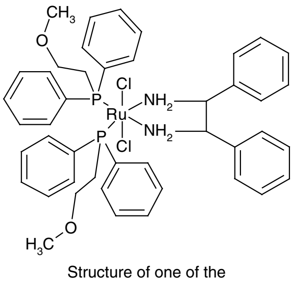
Structural studies performed on catalytically active ruthenium(II) complexes indicate that the complexes retain their structural integrity when they are embedded on polysiloxane matrices to form stationary phase materials. The AXAFS studies reveal that the variations in the catalytic activity of the complexes with different ligands can be correlated to the differences in the electronic structure around the active ruthenium center.



Structure of one of the ruthenium(II) complexes

V. Krishnan* and H. Bertagnolli 161–171

Structural studies on ruthenium(II) complexes used in interphase catalysis for the hydrogenation of ketones

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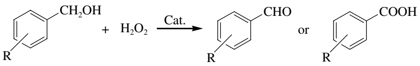
Several novel kinds of bis-quaternary ammonium peroxotungstate and peroxomolybdate complexes have been synthesized and complexes characterized by elemental analysis, IR and Raman spectroscopy. Their catalytic properties in mild oxidation of benzyl alcohol and ring-substituted benzyl alcohols were investigated with aqueous 30% H_2O_2 under halide- and organic solvent-free conditions.



X. Shi and J. Wei* 172–176

Preparation, characterization and catalytic oxidation properties of bis-quaternary ammonium peroxotungstates and peroxomolybdates complexes

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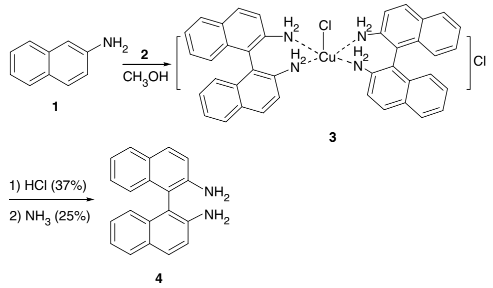
Oxidative coupling of 2-naphthylamine (**1**) using a simple effective oxidation reagent $(PhCH_2NH_2)_2CuCl_2$ (**2**) gives the intermediate $[\{1,1'-(C_{10}H_6)_2-2,2'-(NH_2)_2\}_2CuCl]\ Cl\cdot CH_3OH\cdot 3H_2O$ (**3**), which is decomposed to give 2,2′-diamino-1,1′-binaphthyl (**4**) in a moderate yield.

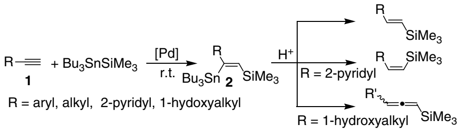


G. Zi*, L. Xiang, Y. Zhang, Q. Wang and Z. Zhang 177–182

Synthesis, structure, and activity of $(PhCH_2NH_2)_2CuCl_2$ *for oxidative coupling of 2-naphthylamine*

Section: Main Group Metal Compounds

A $Pd(dba)_2-P(OR)_3$ combination allowed the silastannation of acetylenes to take place at room temperature, producing (*Z*)-2-silyl-1-stannyl-1-phenylethene in high yield. Protodemetallation of the novel (*Z*)-silyl(stannyl) ethenes produced (*E*)-vinylsilanes, (*Z*)-vinylsilane or allenylsilane, depending on the silyl(stannyl) ethene.

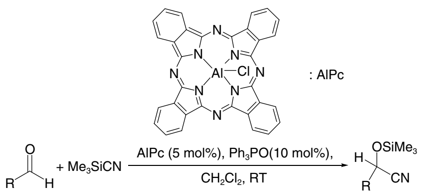


T. Endo, F. Sasaki, H. Hara, J. Suzuki, S. Tamura, Y. Nagata, T. I-iyoshi, A. Saigusa and T. Nakano* 183–197

A highly efficient synthesis of (Z)-1-aryl-2-silyl-1-stannylethenes and their conversion to (E)-2-arylethenyl-, (Z)-2-(heteroaryl)ethenyl- and allenyl-silanes

---

Aluminum phthalocyanine (AlPc) in the presence of Ph_3PO acts as a highly effective catalyst for cyanosilylation of various aldehydes to the corresponding cyanohydrin trimethylsilyl ethers. The reaction proceeds smoothly with 5 mol% catalyst loading at room temperature, giving up to 96% yield.



G. Rajagopal, S. S. Kim* and S. C. George 198–202

Aluminum phthalocyanine: an active and simple catalyst for cyanosilylation of aldehydes

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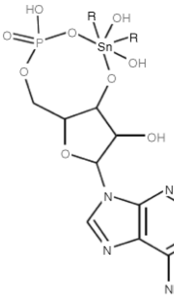
Interactions of $[R_2Sn(H_2O)_2]^{2+}$ with 5′-AMP, 5′-GMP, 5′-CMP, 5′-UMP and 5′-IMP have been studied by semi-empirical methods. The preferred sites of interaction were calculated to be the ribose O2 and O3 hydroxyl oxygens and/or the phosphate oxygens, with the nitrogen sites in the bases the least attractive to the tin compounds.



E. P. Cassús, S. P. Machado and J. L. Wardell* 203–208

Semi-empirical studies of the interactions of dialkyldi(aquo)tin dications $[R_2Sn(H_2O)_2]^{2+}$*, with selected nucleotides*

Erratum

Y.-T. Yu and B.-Q. Xu 209

Shape-controlled synthesis of Pt evolution of the tetrahedral shape.