

dipolar zwitterionic form. The Cu(II) complexes seem to crystallize as isolated entities since only intramolecular H-bonds are found. However two disordered water positions can be found in a Fourier difference map, and two extra oxygen atoms were included in the refinement so that their occupancy adds to unity.

Keywords: X-ray crystallography of coordination compounds, copper coordination compounds, single crystals

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Spectroscopic and Structural Investigation of $ZnI_2(\text{nicotinamide})_2$, $[Zn(\text{H}_2\text{O})_2(\text{picolinamide})_2]I_2$ and $ZnI_2(\text{isonicotinamide})_2$

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The zinc(II) complexes of nicotinamide, picolinamide and isonicotinamide with iodide were synthesized and characterized by FT-IR and XRD techniques. In both the nicotinamide (na) and isonicotinamide (iso) Zn(II) complexes the Zn(II) ion is coordinated by two iodide ligands and two N atoms either of na or of iso ligands in a distorted tetrahedral coordination environment. The zinc(II) complex with picolinamide (pa) has a different environment having a stable five-membered chelate coordination through the ring N and O atoms of pa ligand and has a slightly distorted octahedral geometry.

The $ZnI_2(\text{na})_2$, $[Zn(\text{pa})_2(\text{H}_2\text{O})_2]I_2$ and $Zn(\text{iso})_2I_2$ complexes are all crystallized in monoclinic system with space groups $C2/c$, $P2_1/n$, $C2/c$, respectively. All these complexes are stabilized through intermolecular hydrogen bondings together with $\pi \dots \pi$ interactions.

Keywords: IR and XRD, zinc complexes, amides

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Green-yellow Thermochromism of (N-methyl-2,6-lutidinium) $_2$ CuCl_4

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The previously reported, green, room temperature phase of (N-methyl-2,6-lutidinium) $_2$ CuCl_4 consists of layers of square-planar CuCl_4^{2-} anions interspersed with coplanar organic cations.

The temperature behavior of the compound was studied, and a thermochromic phase transition from green to yellow found at 67 °C. The crystal structure of the high temperature yellow phase of $(\text{C}_8\text{H}_{12}\text{N})_2\text{CuCl}_4$ was determined at 77(1) °C with unit cell parameters triclinic, $P\bar{1}$, $a = 7.9350(5)$ Å, $b = 9.1550(7)$ Å, $c = 16.144(2)$ Å, $\alpha = 75.467(4)^\circ$, $\beta = 86.975(4)^\circ$, $\gamma = 64.505(5)^\circ$, $V = 1022.64(15)$ Å³, $Z = 2$.

The structure of the high temperature phase consists of flattened CuCl_4^{2-} tetrahedra with the two unique organic cations now canted relative to one another rather than coplanar. The canting of the organic cations lengthens the short aromatic C-H...Cl contacts in the low temperature phase which appear to stabilize the square planar over the flattened tetrahedral anion geometry.

Previous examples of green-yellow thermochromism in the A_2CuCl_4 family have occurred only in the presence of strong N-H...Cl hydrogen bonding, which stabilizes the square planar anion geometry in the low-temperature phase. The title compound is the first known to exhibit this behavior in the absence of strong N-H...Cl hydrogen bonding.

Keywords: copper complexes, phase transitions, hydrogen bonding

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Structure of Hydrido(carboxylato)Ir(III) Complexes and Catalytic Symmetric Hydrogenation of Imines

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Recently, we have succeeded in the isolation and characterization of $[\text{IrCl}(\text{binap})_2]_2$ **1** {binap = 2,2'-bis(di-phenylphosphino)-1,1'-binaphthyl}. [1] Complex **1** reacted easily with methanol and water to give the oxidative addition products. [2] Here we report on the highly diastereoselective oxidative addition of carboxylic acids to $[\text{IrCl}(\text{binap})_2]_2$, which gave mononuclear hydrido(η^2 -carboxylato)Ir(III) complexes.

Reaction of (*S*)-**1** with several carboxylic acids proceeded smoothly at r.t. to give $[\text{IrCl}(\text{H})(\text{O}_2\text{CR})\{(S)\text{-binap}\}]$ (*S*)-**2** (R = CH₃, *p*-tolyl, etc.) as air-stable almost colorless solids in good yields. The absolute configuration of $[\text{IrCl}(\text{H})(\text{O}_2\text{CC}_6\text{H}_4\text{CH}_3\text{-4})\{(S)\text{-binap}\}]$ was elucidated to be (*S*)-*OC*-6-23-*A*. Catalytic activity for these complexes for asymmetric hydrogenation of prochiral imines will also be discussed.

[1] Yamagata T., Iseki A., Tani K., *Chem. Lett.*, 1997, 1215-1216. [2] Yamagata T., Iseki A., Tani K., *Angew. Chem. Int. Ed.*, 1998, **37**, 3381-3383.

Keywords: absolute configuration, asymmetric catalysis, carboxylate complexes

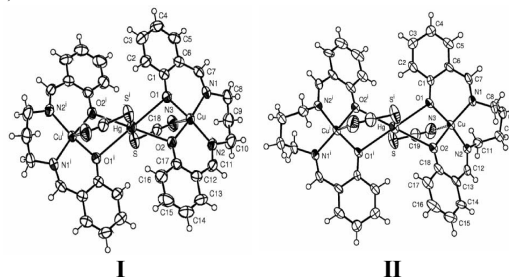
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Synthesis, Characterization and Crystal Structure of new Transition Metal Compounds of Thiocyanate

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Two similar hetero-trinuclear centrosymmetric Cu-Hg-Cu Schiff base complexes were prepared and characterized by elemental analysis, NMR, IR and UV-Vis spectroscopy. The crystal structures of the title compounds reveal that $\text{Hg}[\text{Cu}(\text{C}_{17}\text{H}_{16}\text{N}_2\text{O}_2)\text{SCN}]_2$ (I) crystallizes in the triclinic $P\bar{1}$ space group and $\text{Hg}[\text{Cu}(\text{C}_{18}\text{H}_{18}\text{N}_2\text{O}_2)\text{SCN}]_2$ (II) crystallizes in the monoclinic $P2_1/c$ space group. The central Hg atom of the compounds, which is located on an inversion centre, has a distorted octahedral coordination geometry. In both compounds, there are long range interactions between Cu and N atoms of the bridging SCN group at the axial position. The coordination geometry of the inversion-related terminal Cu atoms of the compounds is square-pyramidal. The Cu-Hg pairs are triple bridged by the O atoms of the Schiff base ligands and by the SCN groups. The Cu...Hg distance is 3.7623(9) Å (I) and 3.7778(17) Å (II).



Keywords: crystal structure, thiocyanate complexes, copper(II) and mercury(II) complexes

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Crystal Structure of Trimethyltin hydroxide, $(\text{CH}_3)_3\text{SnOH}$

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It has been reported that $(\text{CH}_3)_3\text{SnOH}$ has many incommensurate structures in crystalline state. So far, the precise structure analysis has not been reported. Only one X-ray crystal structure analysis without three dimensional coordinates available has been reported. [1]