

Title: Ligands for Multifunctional Dinuclear Complexes

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Abstract

The aim of this work was to prepare substituted phenols as ligands for binuclear complexes of copper(II), which could be used as anion receptors. Two main synthetic strategies are summarised in the introduction: First is single step Mannich-type reaction of 4-substituted phenol, paraformaldehyde and secondary amine, other includes preparation of substituted bis(halomethyl)phenol and its following reaction with secondary amine.

A single step Mannich-type reaction was used for preparations of following known ligands: 2,6-bis[(N-methyl piperazine-1-yl)methyl]-4-formyl phenol (L1), 2,6-bis[(N-methyl piperazine-1-yl)methyl]-4-nitro phenol (L3) and 2,6-bis[(N-phenyl piperazine-1-yl)methyl]-4-nitro phenol (L4). The new ligand, 2,6-bis[(N-phenyl piperazine-1-yl)methyl]-4-formyl phenol (L2), was prepared in the same way. A structure of this ligand was determined using X-ray. One Pd(II) complex $[\text{PdL}_2\text{Cl}_2] \cdot 1.5\text{MeCN}$ (K3) was prepared and its structure was determined.

UV-VIS spectroscopy was used to study interactions in ligand – metal and ligand – metal – anion systems in order to determine the anion – binding capabilities of the complexes. Additions of various copper salts showed that the influence of the anions, even the minimally coordinating ones, is significant and complicated.

Key words:

anion receptors, ligands for binuclear copper(II) complexes, Mannich-type reaction, UV-VIS spectroscopy