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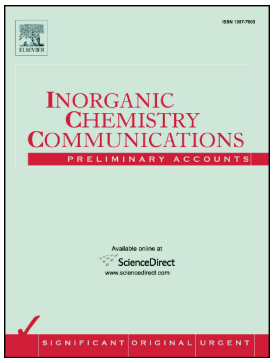

PH-dependent fluorescence sensing activities of two water-stable 2-D zinc(II) compounds

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ACCEPTED MANUSCRIPT

PH-dependent fluorescence sensing activities of two water-stable 2-D Zinc(II) compounds

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Abstract: Two 2-D Zn(II) compounds, namely, $[Zn(HL1)(bpy)]_n$ (**1**) and $\{[Zn(HL2)(bpe)]\cdot 0.5bpe\}_n$ (**2**) (H_3L1 = 5-(2'-carboxyl phenoxy)isophtalic acid, H_3L2 = 1,3-bis(2-carboxylphenoxy)benzoic acid, bpy = 4,4'-bipyridine, bpe = 4,4'-vinylenedipyridine), have been solvothermally synthesized from two flexible phenolic carboxylic acid ligands. Both compounds exhibit 2-D layered structures with 4-conneted 4^4 and 3- connected 6^3 topology, respectively. PXRD indicated that these compounds were stable in the basic conditions with pH range of 7−11 and their fluorescence intensities are strongly correlated with the pH value. The protonated carboxylic groups may have influences on the resulting fluorescence intensities. The possible proton transfer mechanism was discussed for such pH sensors in details through FTIR and ICP measurements. In addition, the analytical efficiency and accuracy in practical applications of these sensors were performed on the real lake water.

Keywords: Zn(II) compounds, pH-dependent fluorescence, flexible phenolic carboxylic acid ligand

In last two decades, metal-organic frameworks (MOFs), as a class of multifunction materials assembled from organic ligands and metal ions, have been received enormous attention because of their fascinating structural and interesting chemical properties [1-2], such as magnetic, gas storage, catalysis, drug delivery [3-9] and other fields. Particularly, luminescent metal-organic frameworks (LMOFs) have been regarded as excellent candidates to obtain high sensitive detector for chemical sensing of metal ions [10-12], small organic molecules [13-14], explosives [15-16] and anions [17-18].

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