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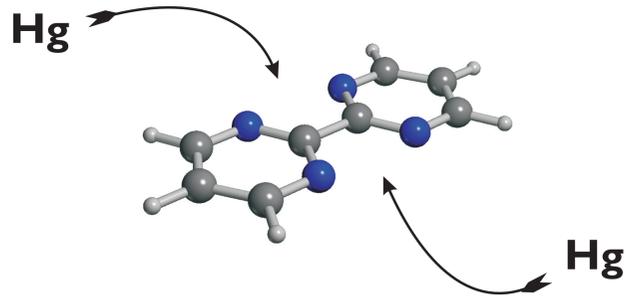
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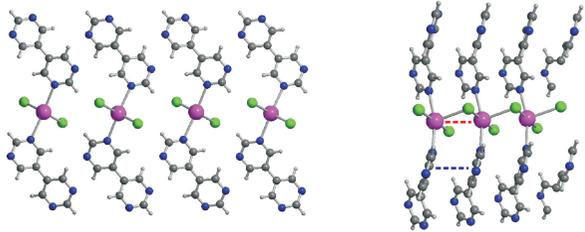
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Coordination polymers of Hg(II) with 2,2'-bipyrimidine



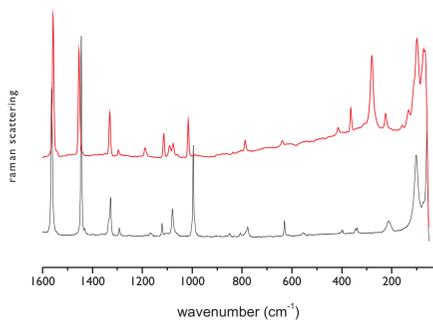
In 1983 S. Lanza reported the preparation and spectroscopic characterization of a binuclear complex of 2,2'-bipyrimidine (bpy) with HgCl_2 (Inorg. Chim. Acta, 1983, 75(1), 131). This work has been developed by Q. Jaradat, K. Barqawi and T.S. Akasheh in 1986 (Inorg. Chim. Acta, 1986, 116(1), 63), that prepared the analogous with bromine and iodine and did a spectroscopic and electrochemical characterization of the complexes. Recently, a renovated interest on this kind of chelating ligand has been inspired by his flexibility in the formation of coordination polymers. Jing-Yun Wu, Hung-Yu Hsu, Chun-Chieh Chan, Yuh-Sheng Wen, Chitang Tsai, and Kuang-Lieh Lu reported a brilliant synthesis of a layered structure obtained by interaction of HgCl_2 and HgBr_2 with 5,5'-bipyrimidine (Cryst. Growth Des., 2009, 9(1), 258):



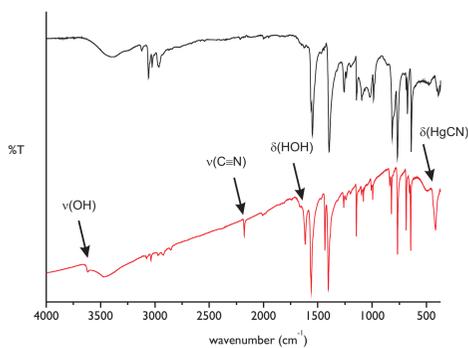
Bridging halogenide, mercuriophilic interaction and π - π interactions between aromatic rings have permitted to obtain a columnar structure based on a Hg-Cl-Hg coordination polymer.

Because of the interesting structural and luminescent properties usually shown by coordination polymers of d^{10} metals containing aromatic ligands, we decided to develop the study of the interactions between 2,2'-bipyrimidine and HgX_2 compounds, where $X = \text{Cl, I, CN, SCN}$, with the purpose to obtain $\text{Hg}_2(\text{bpy})_2\text{X}_4$ complexes.

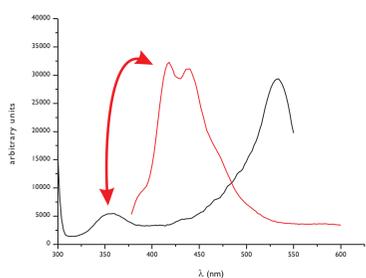
The synthesis of the complexes has been executed by refluxing an acetonitrile solution of bpy and the appropriate mercury salt, in the ratio 1:2. The clear solution obtained has been slowly evaporated and crystal suitable for XRD analysis have been obtained.



Raman spectra of $(\text{bpy})\text{Hg}_2\text{Cl}_4$ (red) and bpy (black). It's possible to notice the effect of the coordination on the vibrational modes of bpy (the shift of ring modes in the range 1600-1400 cm^{-1} and at 1000 cm^{-1}), and the appearance of a strong mode at 280 cm^{-1} , attributable to Hg-Cl stretching.



Infrared spectra of $(\text{bpy})\text{Hg}_2(\text{CN})_4$ (bottom) and bpy (top) with some significant assignments



Excitation-emission spectra of $(\text{bpy})\text{Hg}_2(\text{SCN})_4$. The intense emission obtained upon excitation at 350 nm is under study, in order to discriminate the contribution of ligand transition from those of the metal.

