

# Spectroscopic Studies of complexes with 5-Cl-8-Oxyquinolinepropoxycalix[4]arene

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Calixarenes have a cavity which can be provide by different functional groups on upper and lower rim, affording greater solubility in organic solvents and a suitable architecture for the complexation of ions<sup>1</sup>. The functionalization of these calixarenes with appropriate groups, allow they have several applications, such as receptors of neutral molecules and metal ions, ion sensors, light-emitting compounds, fluorescent probes, even potential bactericides and fungicides agents<sup>2</sup>. This project aims the synthesis and characterization of coordination complexes of functionalized calix[4]arenes with the 5-chloro-8-hydroxyquinoline<sup>1</sup>. The use of metals, such as Hg<sup>2+</sup>, Cd<sup>2+</sup> and Ru<sup>2+</sup> was explored with a focus on high emission of this ligand. The results obtained in the infrared spectra showed the shifts of  $\nu(\text{C}=\text{N})$  1615 cm<sup>-1</sup> from ligand **1** to 1601, 1611, 1622, in [Cd.1]<sup>2+</sup>, [Hg. 1]<sup>2+</sup> and [RuNOCl.1]<sup>2+</sup> complexes, respectively, indicating the complexation of metals on the N and O of quinoline. Besides that, the <sup>1</sup>H NMR data provided shift of signals of 2-CH and 4-CH from free ligand at 8.51 ppm and 8.97 ppm, to 8.90 and 8.61, 9.31 and 8.82, 9.18 and 8.52 ppm, respectively for Hg<sup>2+</sup>, Cd<sup>2+</sup> and Ru<sup>2+</sup>, indicating a change in the structure and symmetry of metal complexes. The absorption band of the complex [Cd. 1]<sup>2+</sup> and [Hg. 1]<sup>2+</sup> have a transfer charge transition (d→p or L→M), and for [RuNOCl.1]<sup>2+</sup> has a transfer charge metal ligand (TCML) transition. The fluorescence spectrum of the Cd<sup>2+</sup> complex shows band at 406 nm, while the Hg<sup>2+</sup> presents two bands at 498 and 582 nm, shifted to the region of cyan and yellow, regarding the free ligand, at 408 nm. The [RuNOCl.1]<sup>2+</sup> complex exhibited two bands at 546 and 612 nm.

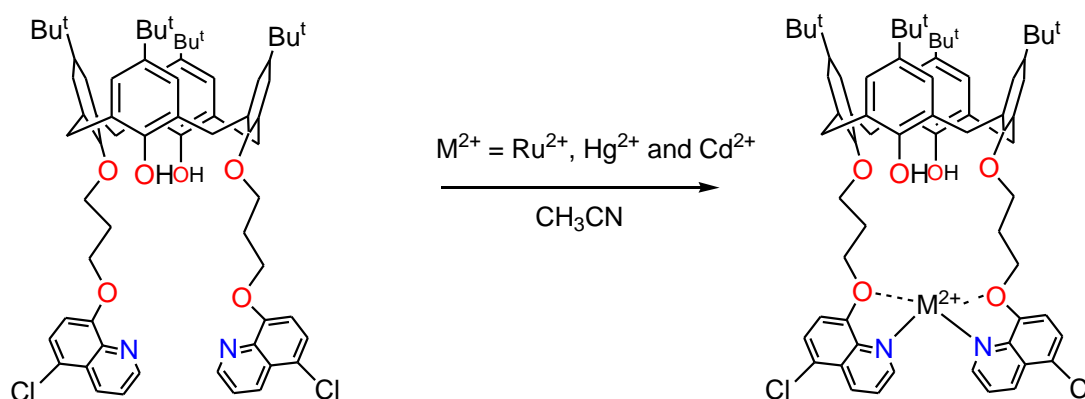


Fig. 1 Scheme of syntheses of complexes.

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