Blue Fluorescence of a Binuclear Cd(II) Complex: [Cd(ClC₂H₄CO₂)₂(phen)]₂

Zhen-Shan Peng, Yao-Hui Jiang, Wen-Jun Jiang, Qian Deng, Jian-Xiang Liu, Tie-Jun Cai, and Ming-Zhong Huang

College of Chemistry and Chemical Engineering, Hunan University of Science and Technology, Hunan, Xiangtan 411201, China

Reprint requests to Prof. Tie-Jun Cai. Fax: Int. +86-732-8290217. E-mail: tjcai53@163.com


A new binuclear complex, [Cd(ClCH₂CH₂CO₂)₂(phen)]₂ (1), has been synthesized and structurally characterized by single crystal X-ray diffraction methods. The Cd atoms are linked by carboxylate oxygen atoms into a four-membered Cd₂O₂ rhombic ring with a Cd···Cd separation of 3.824 Å. Two carboxylate groups act as bidentate, and two as both bidentate bridging and bidentate chelating ligands. The hydrogen bonding and π-π stacking interactions are responsible for the supramolecular assembly and stabilization of the crystal structure. The complex has been characterized by elemental analysis, IR and UV/Vis spectra, and thermogravimetric and differential thermal analysis (TG/DTA). The complex exhibits blue fluorescence in the solid at room temperature.

Key words: Crystal Structure, Binuclear Cadmium(II) Complex, Fluorescence Properties