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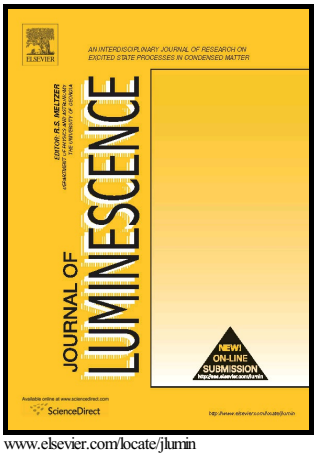

www.elsevier.com/locate/jlumin

PII: S0022-2313(18)30007-3
DOI: https://doi.org/10.1016/j.jlumin.2018.03.041
Reference: LUMIN15460

To appear in: *Journal of Luminescence*

Received date: 2 January 2018
Revised date: 12 March 2018
Accepted date: 16 March 2018

Cite this article as: Safaa El-din H. Etaiw and Mohamed M. El-bendary, Cd(II) supramolecular coordination polymer incorporating pyrazine-2-carboxylic acid: Crystal structure, spectral characteristics and catalytic activity, *Journal of Luminescence,* https://doi.org/10.1016/j.jlumin.2018.03.041

Cd(II) supramolecular coordination polymer incorporating pyrazine-2-carboxylic acid: Crystal structure, spectral characteristics and catalytic activity

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Abstract

Faint pink crystals of the supramolecular coordination polymer (SCP) {$[Cd_3(pyzca)_6(H_2O)_4].8H_2O$}, **1** were obtained by the reaction of cadmium sulfate with pyrazine-2-carboxylic acid (pyzcaH) as ligand. The structure of **1** was characterized by single crystal X-ray diffraction, elemental analyses, electronic, infrared (IR), NMR spectra and thermal studies. The SCP **1** expands along the a-axis creating 1D-chain which compressed like a sprig. The 1D-chains extends via coordinate bonds forming 2D-layer constructing wide rectangular rings. The 2D-layers are stacked to give rise to the 3D-open framework generating voids accommodating the guest water molecules. The catalytic behavior of **1** was investigated for the degradation of acid blue 92 dye (AB-92). The reaction is first order with respect to AB-92 dye. Mineralization of AB-92 was investigated by FT-IR spectra. Disodium salt of terephthalic acid photoluminescence probing technology was carried out to identify the reactive $^{\bullet}OH$ radicals. The kinetic data indicated that **1** are effective catalyst for degradation of AB-92. The luminescent