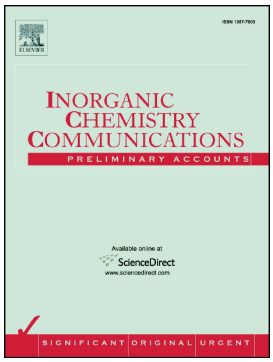

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Siriporn Phengthaisong, Achareeya Cheansirisomboon, Jaursup Boonmak, Sujittra Youngme

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The crystal structure and photocatalytic properties of a cobalt(II) coordination polymer based on 4,4´-oxy(bis)benzoic acid

Siriporn Phengthaisong[a], Achareeya Cheansirisomboon[b,*],
Jaursup Boonmak[a], Sujittra Youngme[a]

[a]*Materials Chemistry Research Center, Department of Chemistry and Center of Excellence for Innovation in Chemistry, Faculty of Science, Khon Kaen University, Khon Kaen 40002, Thailand*

[b]*Department of Chemistry, Faculty of Engineering, Rajamangala University of Technology Isan, Khon Kaen Campus, Khon Kaen 40000, Thailand*

Corresponding author. Email: im_chean@hotmail.com

Abstract

Efficient degradation of organic dyes pollutants from waste water is important for ecological and environmental. To explore and develop new photocatalytic materials on degradation of organic dyes based on a new Co(II) coordination polymer, $\{[Co(dpa)(oba)](H_2O)\}_n$ (**1**) (H_2oba = 4,4´-oxy(bis)benzoic acid and dpa = 1,2-di(4-pyridyl)ethane) has been synthesized and structurally characterized. Compound **1** crystallizes in the triclinic space group $P\bar{1}$. Each Co(II) center is 6-coordinated with distorted octahedral geometry. The Co(II) ions are linked by dpa and oba ligands to generate 2D zig-zag layers. These 2D layers are interparallel with each other, resulting in the formation of 2D+2D→3D interparallel polycatenation with (4,4)-connected net and ***sql*** topology. Compound **1** shows effective photocatalytic degradation of methylene blue in aqueous solution under UV irradiation which may use as a potential photoactive material.

At present, in view of the intense desire for “green life”, the remarkable encouragement has been on acquiring highly effective and ambitious light-driven catalysis to treat the pollution of the environment, particularly organic dye molecules are main cause of water pollution [1-2]. Most dyes are the toxin and cause drastic problems to the aquatic environment and may cause severe damage to human health. A capable and economic method to discharge of harmful dyes from waste water to minimize their possible effect on humans and the environment is a severe challenge and destination [3]. There have been great attempts in treating contaminated water based on adsorption, chemical treatment and by the photocatalytic method. Of these, the photocatalytic degradation provides an appropriate and reusable method. Moreover, the majority of the products of decomposition