

**SYNTHESIS AND CHARACTERIZATION OF MANGANESE-
CURCUMIN COMPLEX**

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ABSTRACT

SYNTHESIS AND CHARACTERIZATION OF MANGANESE-CURCUMIN COMPLEX

Curcumin are widely used in medical area but in this study focusing on photonic area. Curcumin in different ratios and temperature was prepared. The chosen ratios of Manganese: Curcumin were 1:1, 1:1.5, and 1:2 while the temperatures were room temperature and 40°C. For the ratio, only curcumin vary in mole ratio not the metal, manganese. Curcumin complex has been characterized by using spectroscopic method such as UV/Visible spectrometry, Fluorescence spectrometry, FTIR and TGA. From UV/VIS analysis, absorbance increase when increase temperature. Meanwhile, λ_{max} decrease when the temperature increases, blue shift observed. Fluorescence analysis, the ratio of 1:2 room temperature give the high stoke's shift. In FTIR, results, have missing of peak compare to the curcumin standard. In TGA, entire complex have the decomposition. As the conclusion, room temperature was the optimum temperature and 1:2 is the best ratio.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

1.1.1 Metal complex

Complexes are basically containing at least one complex ion, a species consisting of a central metal cation that is bonded to a molecule called ligands. In order to maintain charge neutrality in the complex, the complex ion is typically associated with other ions, called counter ions. Ligands are classified in terms of the number of donor atoms that each uses to bond to the central metal ion. There are three types of ligands that are monodentate, bidentate and polydentate ligands. Monodentate ligands use a single donor atom. Bidentate ligands have two donor atoms, each of which bonds to the metal ion. Polydentate ligands have more than two donor atoms. Metal complexes are extensively used in small molecule OLED and PV technologies as n-, or p-transporting and light-emitting materials. They often play the role of either luminescent ‘hosts’ or ‘guests’. Metal complexes are often well soluble in organic solvents and suitable for both solution and vacuum deposition processing (Silberberg, 2006).

In this study, metal dye will be synthesized using curcumin as the functional dye while the metal is from transition metal. Curcumin is chosen as it is easily available and is abundant in nature and is sustainable. Curcumin is an