

**SYNTHESIS AND CHARACTERIZATION OF IRON(II)-CURCUMIN
COMPLEX**

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ABSTRACT

SYNTHESIS AND CHARACTERIZATION OF IRON-CURCUMIN COMPLEX

Curcumin is a yellow powder solid which is widely used in medical area. However this study focusing on photonic area. The preparation of Fe(II)-curcumin complex by different ratio (1:1, 1:1.5 and 1:2) and temperature at 25°C and 40°C was studied. Only Curcumin vary in mole ratio not the metal Iron(II). After that, the samples were characterized by using UV-Vis spectroscopy, Fluorescence spectroscopy, FTIR and TGA. For overall in UV-Vis analysis the absorbance is increased when temperature increase. λ_{\max} also increased and the blue and red shift observed. Meanwhile for fluorescence result, 1:2 at 40°C is the optimum Stoke's shift. In FTIR analysis, the changes in shift occurs indicate complexation involved. In TGA analysis, the all complex undergoes decomposition until formed iron oxide. As a conclusion, The optimum result is 1:2 at 40°C.

CHAPTER 1

INTRODUCTION

1.1 Background of study

1.1.1 The basics of coordination complexes

A complex is a substance composed of two or more components capable of an independent existence. A coordination complex is one in which a central atom or ion is joined to one or more ligands through what is called a coordinate covalent bond in which both of the bonding electrons are supplied by the ligands. In such a complex the central atom acts as an electron pair acceptor for example Lewis acid such as H^+ which has no electron at all, but can accept a pair from something like Cl^- and the ligand as an electron pair donor (Lewis base).

Ligand is a molecule or anion bonded to a central metal ion in a complex ion. Ligands composed of ions such as F^- or small molecules such as H_2O or CN^- possess more than one set of lone pair electrons, but only one of these pairs can coordinate with a central ion. Such ligands are said to be monodentate .

Larger ligands may contain more than one atom capable of coordinating with a single central ion, and are described as polydentate. Polydentate ligands whose geometry enables them to occupy more than one coordinating position of a central ion act as chelating agents and tend to