

Ministry of Higher Education
and Scientific Research
University of Qadisiyah
College of Science
Department of Chemistry



**Preparation and characterization of new azo reagent
and its complexes and study for some analytical
applications**

A Thesis Submitted

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Degree in Chemistry

by

Alaa Hussein Ail
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Supervised by

Assist. prof .Dr. Zeina Mohammed Kadam

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Abstract

The study includes the preparation of new dye azo heterogeneous of the ring derived from imidazole of the ligand :

2-[2⁻ (5- Chloro carboxyl phenyl)azo]-imidazole and the identification of ligand (5-ClCPAI) were identified and analyzed by using ¹H-NMR ¹³C-NMR ,mass spectrum ,FT-IR ,UV-Vis ,XRD, SEM and EDX

A series of metal complexes with ligand (5-ClCPAI) the following ions Cr(III),Co(II) Hg(II), Zn(II),Cd(II),Cu(II) ,the study of the solvent effect on the study(pH) effect on complexes determination of mole ratio ,the ligand metal : ligand [M:L] 1:2 of the metal complexes

The thin films of prepared ligand in the concentration of (0.05,0.1,0.3) M were used and then the pure and doped thin films with 10%ZnO from (0.05M) was prepared with thickness (1000 ±10) nm . the spray pyrolysis method was used for the preparation.

The study of optical properties of thin films pure and doped study spectral of absorbance and transmittance within the wavelength (200-1000)nm and the results showed while for the transmittance decrease of the molar concentration and increase and doped and the absorbance increase with increase molar concentration and doped the high values of absorbance coefficient calculated from of absorbance were greater and the calculated of optical constant refractive index (n) ,reflectivity (R) ,absorbance coefficient and energy band gap , the study of structure properties of the membranes prepared through(XRD) that the were the results show thin films were multiple crystallization and preferred trend of growth is (101) particle size and calculated for all membranes .

The study of electrical properties of ligand thin film pure and doped (ZnO)and which included electrical conductivity the activation energy and resistivity the results showed that the ligand has high conductivity

increasing concentration and doping.