

Study the Electrical Conductivity for a New Azo Compound

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ISSN-1817-2695

(Received 25/11/2007, Accepted 20/2/2008)

Abstract

Now two azo dyes Biphenyl-4,4'-bis(4-Azo-8-hydroxy squinolinol) and Biphenyl-4,4'-bis(4-Azo-8-hydroxy squinolinol) were prepared. The prepared by fox method, dyes were identified via FTIR-Infrared spectrophotometer and UV-visible spectrometry. The electrical properties were measured and the result was obtained on conductivity arrived to $10^6 \text{ ohm}^{-1} \text{ cm}^{-1}$ with undoping.

Keywords: Electrical Properties, Azo Compound Derivative from Diaminediphenol

Introduction

Azo dyes contain one or more azo groups (-N=N-) which are linked to SP² hybridized carbon atoms, based on the number of such groups [1]. The dyes known as monazo dyes have only one (-N=N-) group while diazo and triazo dyes contain two and three (-N=N-) group, respectively. The azo groups are generally connected to benzene and naphthalene rings, but can also be attached to aromatic heterocycles or enolizable aliphatic groups [2]. Synthetic dye manufacturing started in 1856, when the English chemist W.H. Perkin, in an attempt to synthetic quinine obtained instead a bluish substance with excellent dyeing properties that later became known as aniline purple. Tyrian purple or mauveine. Perkin, 18 years old, patented his invention and set up a production line. This concept of research and development was soon to be followed by others and new dyes began to

appear on the market, a process that was strongly stimulated by Kekulé's discovery of the molecular structure of benzene in 1865. In the beginning of the 20th century, synthetic dyestuffs had almost completely supplanted natural dyes [3]. The synthesis of most azo dyes involves diazotization of a primary aromatic amine, followed by coupling with one or more nucleophilic aromatic compound such as an aryl amine or a phenol [4]. Azo dyes are the most important class of industrial dyes, both in number and amount. In addition, azo dyes have found wide application in dyeing wool, polyamide fiber, semi-conductivity textile and food industries [5].

In the present study a new azo compounds were prepared and identification by IR, U-V-Visible spectrometry and study the Electrical properties

Experimental

Materials

Aniline, Biphenyldiamine, 8-hydroxy squinolinol, 1-naphthol from (Fluka Co), hydrochloric acid,

sodium nitrite, sodium hydroxide from (Merck Co), were purified before using [6].

Instruments

- 1 IR Infrared spectrophotometer from made by (Buck Scientific) Model 500, in the range (4000 – 600) cm⁻¹, in Department of Chemistry / College of Education/ Basrah University.
- 2 U-V-Visible spectrophotometer, Model-U-1500 HITACHI, Department of Chemistry / College of Education/ Basrah University.