

Synthesis of Formazan 1 N-(4-Methoxyphenyl)(Phenyl-Diazynl) Methylene)- 4-Methyl Aniline

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ABSTRACT

In the present work first the schiff base is synthesised through refluxing 4-methoxy benzaldehyde and 4-methyl aniline in presence of glacial acetic acid. The schiff base so obtained on treatment with diazonium chloride gives the desired formazan. This procedure gives an alternation of using 1 butanol instead of ethanol.

Key words: -Formazan, 1-butanol, diazotisation.

I. INTRODUCTION

Formazans are the compounds containing the characteristic azohydrazone group ($-N=C-NH-$), which is a good carrier of π -bonding and chelating properties. They are used as dyes, ligands in complex formation, and as analytical reagents, in which their intense color makes them good indicators of a redox reactions^{1,2}. Formazans form salts and complexes with several metal ions and they are also biologically active³. In the present study, a novel formazan complex with substituent on 1-phenyl ring has been synthesized and its structure was determined using the X-ray diffraction method and characterized with spectroscopic techniques.

II. EXPERIMENTAL WORK

In a round bottom flask, a mixture of aldehyde and substituted aniline in 1-butanol in the presence of 2,3 drops of glacial acetic acid was refluxed for half an hour. The reaction was monitored through thin layer chromatography. The reaction mixture cooled and poured on ice. The precipitated compound was filtered, washed with water and recrystallised from absolute alcohol.

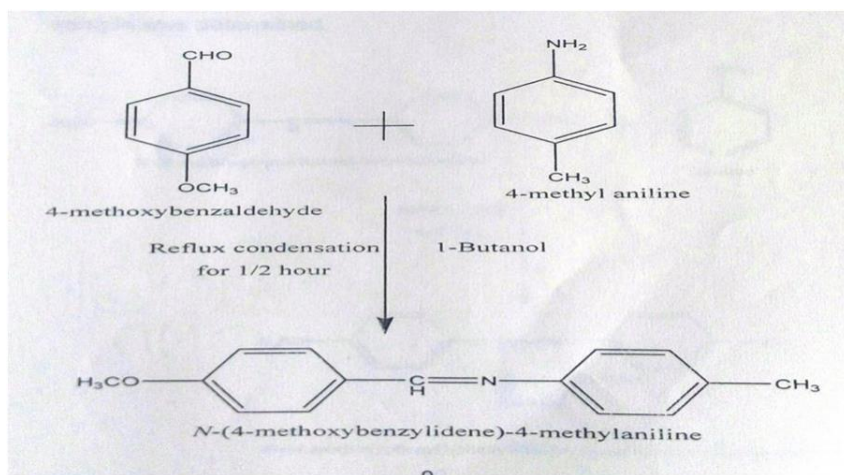


Fig. Synthesis of *N*-(4-methoxybenzylidene)-4-methylaniline

SYNTHESIS OF FORMAZAN 1 *N*-(4-METHOXYPHENYL)(PHENYL-DIAZONYL) METHYLENE)-4-METHYL ANILINE:-Aniline in glacial acetic acid and conc.HCL was diazotized with sodium nitrite in cold medium.The resultant diazonium chloride solution was added with stirring to the Schiff base and resulting dark coloured solution was kept overnight room temperature and then poured onto crushed ice.The solid thus obtained was filtered,washed with water,dried and recrystallized from ethanol.The melting point of crystallized sample was determined.

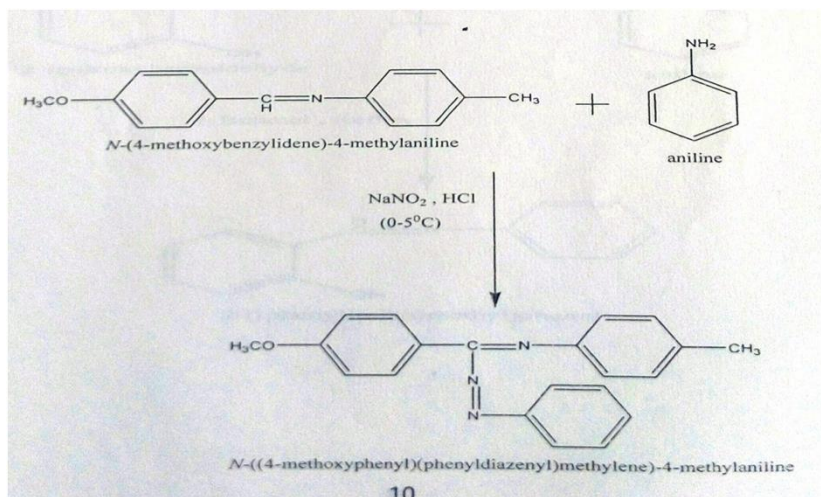


Fig. SYNTHESIS OF FORMAZAN 1 *N*-(4-METHOXYPHENYL)(PHENYL-DIAZONYL) METHYLENE)-4-METHYL ANILINE

Analytical data: - Melting point of the product is 98°C and the percentage yield is 78.45 %.

SPECTRAL ANALYSIS:-The IR Spectral graph shows following characteristic I.R. frequencies.

- I) A band at 2925(cm^{-1}) is for C-H stretch of $-\text{CH}_3$ group.
- II) Band at 1615 (cm^{-1}) is a characteristic band for C=N stretch.
- III) C=C stretch of aromatic ring is observed at 1566(cm^{-1}).
- IV) A band at 1300 (cm^{-1}) is a characteristic band for C-N stretch.
- V) C-O stretching band observed at 1253 (cm^{-1}).

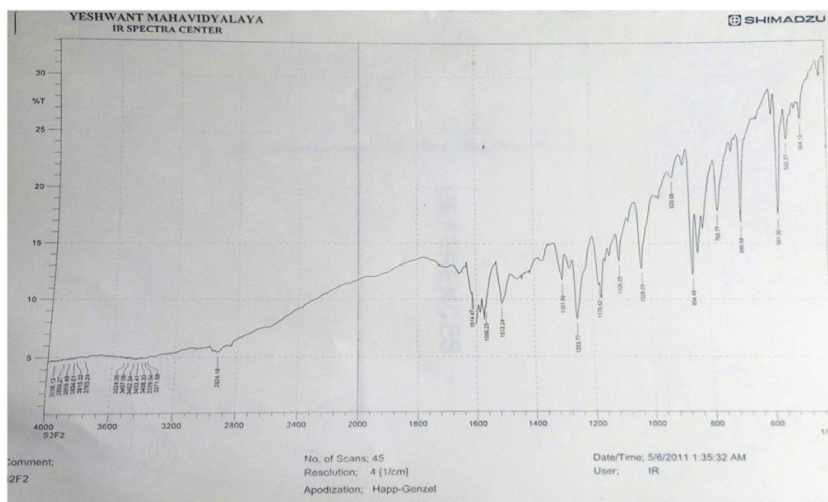


Fig. IR SPECTRA OF 1 N-(4-METHOXYPHENYL)(PHENYL-DIAZYL) METHYLENE)-4-METHYL ANILINE

III. RESULT & DISCUSSION

The I.R. spectra of formazans was recorded on SHIMADZU IR spectrophotometer. The percentage yield is calculated by the formula.

$$\text{Percentage yield} = (\text{experimental yield of the product} / \text{Theoretical yield of the product}) * 100$$

IV. CONCLUSION

The procedure described here provides a useful alternation for the formation of Schiff bases and formazans in mild conditions. It allows 1-butanol instead of ethanol.

V. REFERENCES

- [1]. Lewis JW, Sandorfy C. Infrared absorption and resonance Raman scattering of photochromic triphenylformazans. *Can J Chem* 1983;61:809-16.
- [2]. Katritzky AR, Belyakov SA, Cheng D, Durst HD. Synthesis of formazans under phase-transfer conditions. *Synthesis* 1995;5:577-81.
- [3]. Nuutinen JM, Romppanen R, Makinen S, Vainiotalo P. Gas-phase oxidation and reduction of some 1-(2-benzothiazolyl)-3,5-diphenyl formazans. Complex formation with transition metals under laser desorption ionization. *J Am Soc Mass spectrum* 1999;10(4):339-46.
- [4]. Tezcan H, Can S, Tezcan R. The synthesis and spectral properties determination of 3-substituted phenyl-1,5-diphenylformazans. *Dyes Pigm* 2002;52(2):121-27.
- [5]. Tezcan H, Uzluk E. The synthesis and spectral properties determination of 1,3-substituted phenyl-5-phenylformazans. *Dyes Pigm* 2007;75(3):633-40.
- [6]. Desai J.M. and Shah V.H., *Indian J. Chem.* 42B 631(2003)
- [7]. Tandon M.K, Umae P, Tandon P, Bhalla TN and Bhartwal JP, *Indian Drugs*. 21, (1983).