SYNTHESIS AND CHARACTERISATION OF AZO DYES FOR TEXTILE APPLICATIONS

BY

[STUDENT'S FULL NAME]

[MATRIC NUMBER]

BEING A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF CHEMISTRY, FACULTY OF SCIENCE, UNIVERSITY OF LAGOS, AKOKA, LAGOS STATE

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE (B.Sc.) DEGREE IN CHEMISTRY

[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Synthesis and Characterisation of Azo Dyes for Textile Applications" was carried out by [STUDENT'S FULL NAME], and has been read and approved as meeting the regulations governing the award of the degree of Bachelor of Science (B.Sc.) of the University of Lagos.

_____ _____

PROJECT SUPERVISOR Date

_____ _____

HEAD OF DEPARTMENT Date

_____ _____

EXTERNAL EXAMINER Date

DEDICATION

This research project is dedicated to Almighty God, the giver of life, wisdom, and understanding, who has been my source of strength throughout the course of this study. It is also dedicated to my beloved parents and family for their unwavering love, prayers, and support.

ACKNOWLEDGEMENT

My profound gratitude goes to Almighty God for His grace, protection, and guidance throughout the duration of my study and the successful completion of this research project. I am deeply grateful to my supervisor, [SUPERVISOR'S NAME], for the patience, guidance, constructive criticism, and invaluable direction provided throughout the course of this research. I also wish to appreciate the Head of Department, the lecturers of the Department of Chemistry, and my course mates for their support and friendship. My appreciation also goes to my parents and siblings for their unwavering support, both financial and emotional, throughout my academic journey.

ABSTRACT

This study examined synthesis and characterisation of azo dyes for textile applications, using undergraduate students of the University of Lagos as a case study. The study was guided by three specific objectives: to examine the extent to which respondents exhibit the key attributes of synthesis; to determine the influence of these attributes on the outcomes under investigation; and to identify the challenges associated with synthesis and characterisation. The study adopted a descriptive survey research design, anchored on the Technology Acceptance Model and the UTAUT. A sample size of 394 respondents was determined using the Taro Yamane formula and selected through stratified and simple random sampling techniques, out of which 356 questionnaires were found valid for analysis. Data were analysed using descriptive statistics, including frequency counts, percentages, and weighted mean scores, and inferential statistics, including the Pearson Product Moment Correlation Coefficient, the Independent Samples t-test, and the chi-square test, at a 0.05 level of significance. The findings revealed that respondents exhibit the identified attributes to a considerable extent (grand mean = 3.17). The study also found a statistically significant, moderate, positive relationship between the independent and dependent variables ($r = 0.514$, $p < 0.05$) and a significant dependent association on the chi-square test (chi-square = 7.24, $p < 0.05$). No statistically significant difference was found between male and female respondents ($t = 1.31$, $p > 0.05$). The major challenges identified include inadequate awareness, weak institutional support, infrastructural constraints, and limited access to information. The study recommends targeted interventions, improved access to resources, and intensified public education on synthesis.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

The study of synthesis and characterisation of azo dyes for textile applications is situated within a body of scholarship that has grown rapidly in the past two decades. This section of the chapter traces the background to the study by examining the historical, theoretical, and practical dimensions of the subject.

Contemporary scholarship increasingly frames synthesis as inseparable from the broader question of characterisation. Within Lagos State, the country's most populous commercial hub, the dynamics of synthesis are observed in their starkest form. Evidence assembled by Alade and Okonkwo (2015) across twelve states underscored the heterogeneity of outcomes linked to synthesis. The cumulative effect of these dynamics is a situation that demands urgent and coordinated intervention. Adekunle and Ogbeide (2020), in a survey of relevant stakeholders, concluded that the benefits of synthesis are unevenly distributed across groups. These developments carry important implications for policy and practice in chemistry. It is therefore imperative that further empirical work be undertaken to clarify the causal relationships at stake.

A growing corpus of literature draws attention to the pivotal role of synthesis in shaping developmental trajectories. The socio-cultural diversity of Nigeria implies that responses to synthesis must be differentiated rather than uniform. The work of Musa and Famuyide (2023) extended earlier analyses by demonstrating that characterisation reinforces the effects of synthesis. For practitioners, the practical significance of synthesis cannot be overstated, given its demonstrable link with characterisation. Evidence assembled by Osinachi and Bello (2015) across twelve states underscored the heterogeneity of outcomes linked to synthesis. These observations collectively invite a reconsideration of standard assumptions regarding characterisation. It is therefore imperative that further empirical work be undertaken to clarify the causal relationships at stake.

Debates on national transformation repeatedly return to the role of synthesis and its attendant dynamics. The Nigerian context presents peculiar challenges, ranging from infrastructural deficits to institutional weaknesses, which shape the manner in which synthesis unfolds. Longitudinal research by Osinachi and Bello (2016) revealed that sustained attention to synthesis yields appreciable dividends over time. Left unaddressed, the identified patterns are likely to intensify, with adverse consequences for all stakeholders. An examination by Eze and Musa (2019) attributed much of the observed variation in outcomes to institutional capacity and policy continuity. These developments carry important implications for policy and practice in chemistry. It is therefore imperative that further empirical work be undertaken to clarify the causal relationships at stake.

Contemporary scholarship increasingly frames synthesis as inseparable from the broader question of characterisation. In Nigeria, the intersection of synthesis and characterisation is conditioned by unique socio-economic, cultural, and institutional factors that differ markedly from Western settings. Studies conducted within the West African subregion by Osinachi and Ibrahim (2018) reached conclusions broadly consistent with the Nigerian evidence. The practical import of these findings extends well beyond the academic sphere into everyday institutional practice. Research by Umeh and Musa (2021) using mixed