

CONTENTS

Title Page	
Declaration	
Certificate	
Acknowledgement	
Abbreviation and List of Symbols	
Abstract	i
Contents	ii-iv
Chapter 1A: Design, Synthesis and Reactivity of a Novel Bispropargyl Azobenzene-based Sulfone	1-22
Section 1A.1 Introduction	3
Section 1A.2 Objective	4
Section 1A.3 Synthesis	5
Section 1A.4 Spectral Characterization	6
Section 1A.5 Isomerization Study	8
Section 1A.6 Chemical Reactivity Under Basic Conditions	9
Section 1A.7 DNA Cleavage Experiments	12
Section 1A.8 Conclusion	14
Section 1A.9 Experimental	15
Section 1A.9.1 General Experimental	15
Section 1A.9.2 Gel Electrophoresis of DNA	16
Section 1A.9.3 General procedure for the synthesis of the compounds and their spectral data	17
Section 1A.10 Selected NMR Spectra	19
Section 1A.11 Reference	21
Chapter 1B: Design, Synthesis and Reactivity of C₂-Symmetric Azobenzene-based Amino Acid-Bispropargyl Sulfones	23-52
Section 1B.1 Introduction	25

Section 1B.2	Objective	26
Section 1B.3	Synthesis	27
Section 1B.4	Spectral Characterization	29
Section 1B.5	Isomerization Study	31
Section 1B.6	Chemical Reactivity Under Basic Conditions	33
Section 1B.7	Docking Study	35
Section 1B.8	DNA Cleavage Experiments	36
Section 1B.9	DNA Binding Study	37
Section 1B.10	Conclusion	39
Section 1B.11	General Experimental	40
Section 1B.11.1	General procedure for the synthesis of the compounds and their spectral data	40
Section 1B.12	Selected NMR Spectra	44
Section 1B.13	Reference	50
Chapter 2: C₂-symmetric Azobenzene-Amino acid Conjugates and Their Inhibition of SKI-1		53-82
Section 2.1	Introduction	55
Section 2.2	Objective	56
Section 2.3	Synthesis	58
Section 2.4	Spectral Characterization	60
Section 2.5	Isomerization Study	62
Section 2.6	Enzyme Kinetics and Inhibition Study	64
Section 2.7	Results of Inhibition Study	65
Section 2.8	Docking Study	67
Section 2.9	Conclusion	68
Section 2.10	Experimental	69
Section 2.10.1	General procedure for the synthesis of the compounds and their spectral data	69
Section 2.10.2	Enzyme Kinetics and Inhibition Study	73
Section 2.11	Selected NMR Spectra	74
Section 2.12	Reference	81

Chapter 3: Asymmetric Cyclopropanation of N-Cinnamoyl Amino Acid Benzyl Ester	83-118
Section 3.1 Introduction	85
Section 3.2 Objective	85
Section 3.3 Synthesis	87
Section 3.4 Determination of diastereoselectivity in Cyclopropanation	88
Section 3.5 Explanation of the Observed Distereoselectivity	89
Section 3.6 Spectral Characterization	90
Section 3.7 Conclusion	91
Section 3.8 Experimental	92
Section 3.8.1 General procedure for the synthesis of the compounds and their spectral data	92
Section 3.9 Selected NMR Spectra	101
Section 3.10 Reference	117
List of Publications and Symposia Attended	119