Contents

Abbreviations			01
Chapter 1.		**Introduction**	
	1.1	History of Liquid Crystals	02
	1.2	Classification of Liquid Crystals	03
	1.3	Thermotropic Liquid Crystals	04
	1.3.1	Smectic Liquid Crystals	06
	1.3.2	Nematic Liquid Crystals	08
	1.3.3	Cholesteric Liquid Crystals	09
	1.3.4	Blue Phases	10
	1.3.5	Twist grain boundary [TGB] phases	10
	1.3.6	Ferroelectric and Anti-ferroelectric Liquid Crystals	11
	1.3.7	Discotic Liquid Crystals	11
	1.3.8	Sanidic Liquid Crystals	12
	1.4	Lyotropic Liquid Crystals	12
	1.5	Influence of Molecular structure on mesomorphism	13
	1.5.1	Effect of terminal substituents on mesomorphism	14
	1.5.2	Effect of lateral substituents on mesomorphism	14
	1.6	Mesomorphism in homologous series	16
	1.7	Banana-shaped Liquid Crystals	16
	1.7.1	Structural Property relationship of Banana mesophases	18
	1.7.2	Electro-optical properties	19
	1.7.3	Classification of Banana phases	22
	1.8	Mesogenic oligomers having flexible spacers	29
	1.8.1	Mesogenic Dimers	30
	1.8.2	Mesogenic Trimers	30
	1.8.3	Mesogenic Tetramers	30
	1.9	Polymer Liquid Crystals	30
	1.9.1	Main Chain Polymer Liquid Crystals (MC-PLCs)	31
	1.9.2	Side Chain Polymer Liquid Crystals (SC-PLCs)	31
	1.10	Metallomesogens	32
	1.11	Mixed mesomorphism	32
	1.12	Physical properties of Liquid Crystals	33
	1.13	Biological System	34
	1.14	Applications of Liquid Crystals	34
	1.14.1	Display applications for Liquid Crystals	34
	1.14.2	Non-display applications of Liquid Crystals	35
Chapter 2.		**Aims & Objectives**	38
Chapter 3.		**Mesogenic homologous series having ester and azo central linkages**	40
	3.1	Introduction	40
	3.2	Experimental	41

	3.3	Results and Discussion	100
Chapter 4.		**Mesogens having ester and ethylideneamino central linkages**	122
	4.1	Introduction	122
	4.2	Experimental	123
	4.3	Results and Discussion	140
Chapter 5.		**Heterocyclic Bent-shaped mesogens**	147
	5.1	Introduction	147
	5.2	Experimental	148
	5.3	Results and Discussion	166
Chapter 6		**Banana-shaped mesogens**	174
	6.1	Introduction	174
	6.2	Experimental	175
	6.3	Results and Discussion	195
Chapter 7		**Mixed Mesomorphism**	204
	7.1	Introduction	204
	7.2	Experimental	205
	7.3	Type I	208
	7.4	Type II	217
Chapter 8		**References**	231
Summary			254
List of Presentations & workshop			262
Research publications			263