

<b>TABLE OF CONTENTS</b>	
Preface	xvi
Abstract	xvii-xviii
List of Tables	ix
List of Schemes	x-xiv
List of Figures	xiv-xv
List of Appendices	xix-xx
Appendix A: List of Research Publications	xx
Appendix B: Oral & Poster Presentations	xx
Abbreviation	1-2
<b>CHAPTER I</b>	
<b>A brief review on C-H activation and a literature study on the synthesis of 4H-pyrido[1,2-a]pyrimidin-4-one derivatives</b>	
I.A. Introduction	3-4
I.A.1: Reason of choosing 4-pyrimidone as my research work	5-7
I.B. Importance and challenges of C-H functionalization	8
I.B.1: Importance of C-H functionalization	8
I.B.2: Challenges of C-H functionalization	8-9
I.C: Classification of C-H functionalization	9
I.C.1. Metal catalysed C-H functionalization	9

I.C.1.1 Direct C-H functionalization	9-17
I.C.1.2 Directed C-H functionalization	17-19
I .C.2. Metal free C-H functionalization	20-24
I.D : Synthetic background of 4-Pyrimidone	24-26
I.E : Synthesis of 4H-pyrido[1,2-a]pyrimidin-4-one skeletons	26-31
I.F: Functionalization of pyrimido[1,2-b]pyridazine-4-one via C-H Activation	31-32
I.G: Conclusion	33
<b>CHAPTER II</b>	
<b>Microwave-assisted straightforward synthesis of 2-substituted alicyclic fused pyrimidine</b>	
II.A. Introduction	35-36
II.B. Result and Discussion	37-43
I.B.1: Comparison of reaction profile using PCl <sub>5</sub> and POCl <sub>3</sub> as chlorinating agent	38-39
I.B.2: TLC comparison and optimization	39-42
II.C: Application.	43
II.D. Conclusion:	43
II.E: General Information	44
II.E.1: Reaction Procedure	44
II.E.1.1: General procedure for 3-substituted ethyl 3-aminoacrylate (1)	44-45

II.E.1.2: Microwave-assisted general procedure for pyrimidinones (3)	45
II. F. Characterization data of pyrimidone (as per condition A)	45-51
II.F.2: Representative characterization data of uncyclised product	51
II.F.3. Representative Characterization data of ring chlorination	51-52
II.G: X-ray crystal structure of compound <b>6a</b>	52-53
II. H: Representative <sup>1</sup> H and <sup>13</sup> C spectral data	54-63
<b>CHAPTER III</b>	
<b>Regioselective C(sp<sup>2</sup>)3–H thiocyanation of substituted 4<i>H</i>-Pyrido[1,2-<i>a</i>]pyrimidin-4-ones and its late-stage derivatization</b>	
III.A. Introduction	65-67
III.B. Result and Discussion	67
III.C. Conclusions	75
III.D. Experimental Section	75
III.D.1. Gram-scale experiment	76
III.D.2: Complete analytical data	76-85
III.D.3. Procedure for the synthesis of <b>5a</b>	85
III.D.4. Procedure for the synthesis of <b>6a</b>	85
III.D.5. Procedure for the synthesis of <b>7a</b>	85
III.F: Representative Spectroscopic data	87-94
<b>CHAPTER IV</b>	

<b>Regioselective C(SP<sup>3</sup>)-H selenylation of alicyclic fused 4-pyrimidone under ambient condition</b>	
<b>IV.A. Introduction</b>	96-98
IV.B. Result and discussion:	99-103
IV.C: Mechanistic outline:	103
IV.D: Conclusion	104
IV.E: General Information	105
IV.E.1: Gram-scale synthesis	105
IV.F: Representative characterization data	106-113
IV.F.1: Procedure for the synthesis of compound <b>3</b>	112
IV.F.2: Procedure for the synthesis of compound <b>4</b>	112
IV.G: Representative <sup>1</sup> H NMR and <sup>13</sup> C spectral data	114-121
<b>Bibliography</b>	122-141
References for Chapter I	122-134
References for Chapter II	134-136
References for Chapter III	136-138
References for Chapter IV	139-141