Contents

A hcti	ract	puge
Absti Ackn	owledgements	ii
Cont		\
	of Figures	vi
	of Tables	X
	of Symbols	xii
LIST C	of Abbreviations The Control of the	ΧV
Chap	pter 1: Introduction	
1.1	Metamaterials and Metasurfaces: A brief overview]
1.2 1.3	Motivation and Objectives Contribution of the Thesis	2
1.4	Outline of the Thesis	4
2.1	pter 2: Literature Review Metamaterials	
2.1	A Brief History of Metamaterials	5
2.3	Applications	
2.4	Metamaterial Perfect Absorbers	8
	2.4.1 Narrow Band Metamaterial Perfect Absorbers	9
	2.4.2 Broadband Metamaterial Perfect Absorbers	
2.5	2.4.3 Disordered Metamaterials Metasurfaces	16 18
ر.2	2.5.1 Working Principle	19
	2.5.2 Metasurfaces for RCS Reduction	20
2.6	Summary	23
Char	oter 3: Numerical Investigation of Disordered Patch Resonator Absorbers	25
3.1	Introduction	25
3.2	Periodic Circular Patch Resonator Absorbers	25
3.3	Disordered Patch Absorber Structure	29
	3.3.1 Effect of Position Disorder	29
	3.3.2 Effect of Increasing Filling Fraction 3.3.3 Effect of Oblique Incidences	30 32
	3.3.4 Effect of Patch Resonator Shape	
3.4	Summary	33 34
Char	otor 4. Evansimontal Validation of Dispudered Batch Becompton Based Absorbous	
4.1	pter 4: Experimental Validation of Disordered Patch Resonator Based Absorbers Introduction	37 37
4.2	Experimental Validation	37
1	4.2.1 Sample Fabrication	37
	4.2.2 Experimental Setup and Measurements	37 38
4.3	Results and Discussion	
	4.3.1 Effect of Filling Factor 4.3.2 Effect of Oblique Incidences	39
	4.3.3 Numerical Validation	40 41
4.4	Summary	43
Char	otow 5. Motosumfosos for Widohand DCS Dodustion	4.5
5.1	pter 5: Metasurfaces for Wideband RCS Reduction Introduction	45 45
5.2	Random Checkerboard Metasurfaces	45
-	5.2.1 Working Principle	45
	5.2.2 Design	47
	5.2.3 Results	48
5.3	Random Phase Gradient Metasurfaces 5.3.1 Working Principle	50
	5.3.1 Working Principle 5.3.2 Design	50 52
	5-32 Design 5-32 Results)2 53

5.4 Summary	55
Chapter 6: Conclusions and Future Scope of The Wo 6.1 Conclusions 6.2 Future Scope of The Work	57 57 58
References	61