CONTENTS

	AC	KNOWLEDGEMENTS	i
	AB	STRACT	ii
	AB	STRAK	iii
	CO	NTENTS	iv
1.	Introduction		
	1.1	Introduction	1
	1.2	Brief history of fiber Bragg gratings	3
	1.3	Photosensitivity	5
	1.4	Content of dissertation	6
	Ref	erences	7
2.	The	ory	
	2.1	Introduction	10
	2.2	Resonant wavelength for grating diffraction	12
	2.3	Coupled mode theory	13
	2.4	Fiber Bragg gratings	15
	2.5	Two modes coupling in non-uniform grating	22
	Ref	erences	27
3.	Fabrication of Fiber Bragg Grating		
	3.1	Introduction	29

3.2	2 Experimental set up		29
3.3	Alignment method		34
3.4	Advantages of high-germania boron codoped fiber		41
3.5	The	The phase mask	
3.6	Lase	Laser source	
3.7	3.7 Growth characteristics of FBG		47
3.8	Clad	lding modes	55
3.9	Side	lobes	59
3.10 Apodization		60	
References			64
Characterization and Measurement of Fiber Bragg Grating			
4.1	Intro	duction	68
4.2	.2 Measurement of transmission and reflection spectra of Bragg gratings		
	4.2.1	Transmission and reflection	70
	4.2.2	Fiber amplifier for characterization	71
	4.2.3	Tunable laser source for characterization	77
	4.2.4	Discussion	82
	4.2.5	Fresnel reflection and calibration of the reflected light	85
4.3	Tem	perature dependence	
	4.3.1	Experimental configurations	87
	4.3.2	Result and discussion	89
	4.3.3	FBG packaging	93

3.2	Exp	erimental set up	29
3.3	Alignment method		34
3.4	Advantages of high-germania boron codoped fiber		41
3.5	The	The phase mask	
3.6	Lase	Laser source	
3.7	3.7 Growth characteristics of FBG		
3.8	Clad	lding modes	55
3.9	Side	lobes	59
3.10 Apodization			60
References			64
Characterization and Measurement of Fiber Bragg Grating			
4.1	Intro	duction	68
4.2	1.2 Measurement of transmission and reflection spectra of Bragg gratings		
	4.2.1	Transmission and reflection	70
	4.2.2	Fiber amplifier for characterization	71
	4.2.3	Tunable laser source for characterization	77
	4.2.4	Discussion	82
	4.2.5	Fresnel reflection and calibration of the reflected light	85
4.3	Tem	perature dependence	
	4.3.1	Experimental configurations	87
	4.3.2	Result and discussion	89
	4.3.3	FBG packaging	93

4.4 Relia	ability	96	
References			
Application	on of fiber Bragg grating		
5.1 Intro	duction	100	
5.2 Gain	-clamped erbium-doped fiber amplifier		
5.2.1	Experimental set up	101	
5.2.2	Pump power	103	
5.2.3	Input signal power	106	
5.2.4	Effect of feedback laser power attenuation	110	
5.3 Fiber Bragg grating laser			
5.3.1	Experimental set up	112	
5.3.2	Fiber laser characterization	113	
5.3.3	Fiber laser tuning	119	
Reference	121		
Summary and Conclusion			

5.