## CONTENT

Chapter One :	Introduction.			
1.1	Introduc	ction.		1
1.2	Thesis C	Outline.		1
Chapter Two :	Introduction to Non Linear effects in optical fibre.			
2.1	Stimulat	ted Raman Scattering.		4
2.2	Four Ph	oton Mixing.		5
2.3	Stimula Scatteri	ted Brillouin ng.		6
2.4	Continu	um Generation.		7
2.5	Second	harmonic generation.		10
Chapter Three:				
3.1	Introduction.			12
3.2	Raman	Raman scattering.		14
	3.2.1	Spontaneous Raman Scattering.		14
	3.2.2	Stimulated Raman Scattering.		15
	3.2.2.1	Amplification of Stokes and absorption of Anti-Stokes.		. 17
	3.2.3	Barrara Gaila Sanataran		19
	3.4.3	Raman Gain Spectrum.		19
3.3		noton Mixing.		22

	3.3.1.1	modes.		23	
	3.3.1.2	Phase matching using birefringence.		24	
	3.3.1.3	Phase matching by divided pump.		24	
. *	3.3.1.4	Phase matching by small frequencies shift.		24	
	3.3.1.5	Phase matching near the zero dispersion region.		24	
Chapter Four:	Stimulated Raman scattering in pure silica fibre.				
4.1	Experir	mental set up.		26	
4.2		d and backward stimulated scattering in pure silica fibre.		28	
	4.2.1	Stimulated Raman scattering threshold.		30	
	4.2.2	Polarisation dependence.		40	
4.3	Dispers	sion Measurement in pure bre.		46	
	4.3.1	Experimental results.		47	
Chapter Five :	Ramar	ı Fibre amplifier.			
5.1	Introdu amplifi	action to Raman fibre er.		52	
5.2		mental set up - Backward fibre amplifier.	•	54	
	5.2.1	Experimental results.		57	
	5.2.1.1	Raman Gain .		59	

		5.2.1.2	Raman fibre amplifier.		62
	5.3	Experin fibre am	nental set up - Forward Raman plifier.		68
		5.3.1	Experimental results.		69
		5.3.1.1	Raman Gain .		70
		5.3.1.2	Pump depletion in forward Rar fibre amplifier.	man	72
	5.4		ison between forward and rd Raman fibre amplifier.	<u>.</u>	75
		5.4.1	Efficiency comparison between forward and backward Raman fibre amplifier.		78
		5.4.2	Raman Gain.		80
Chapter Si	ix :	Genera	l conclusion.		
	6.1	Advanta amplifie	ages of a Raman fibre r.		82
	6.2	Disadvantages of a Raman fibre amplifier.			84
	6.3	Suggest	tion for further work.		85
Appendix .	<b>A</b> :	Error (	Calculation.		87
Appendix 1	В :	Fibre P	arameters.		92
Appendix	<b>C</b> :	Publica	ations.		94
References	:			•	95