

Principal Researcher	Masayuki Matsumoto			Number of Researchers	5	
Research Institution · Department · Title	Associate Professor, Department of Communications Engineering, Graduate School of Engineering, Osaka University			Location of Institution	Suita, Osaka	
Title of Project	Ultrahigh-speed optical transmission and signal processing utilizing nonlinear effects in fibers					
Abstract of Research Project	In large-capacity fiber transmission systems, nonlinear effects in fibers are considered to be avoided because of their harmful effects such as inter-channel crosstalk in wavelength-division multiplexed systems. The nonlinear effects, on the other hand, can be applied to a number of high-speed optical signal processing by virtue of their very short response time. Since the nonlinear effects become more significant in systems with higher speed, suitably coping with and making use of them will be important in developing ultrahigh-speed optical fiber systems. In this study we focus on (1) effective utilization of fiber nonlinearity in high-speed and long-distance transmission systems and (2) application of fiber nonlinearity to ultrahigh-speed optical signal processing in network nodes such as all-optical signal regeneration and wavelength conversion.					
References	M. Matsumoto and O. Leclerc, "Analysis of 2R optical regenerator utilizing self-phase modulation in highly nonlinear fibre", Electronics Letters, vol.38, pp. 576-577 (2002). M. Matsumoto, "Analysis of optical regeneration utilizing self-phase modulation in a highly nonlinear fiber", IEEE Photonics Technology Letters, vol.14, pp. 319-321 (2002). A. Hasegawa and M. Matsumoto, <i>Optical Solitons in Fibers</i> , Springer-Verlag, Berlin (2002, in press).					
Term of Project	Fiscal years 2001-2005 (5 years)					
Budget Allocation	FY2001	FY2002	FY2003	FY2004	FY2005	Total
(in thousand of yen)	9,500	20,900	15,200	15,200	15,200	76,000