



The amount and the change of communication traffic continue to grow year by year. In order to meet such growing demands for future network, further capacity increase is indispensable as well as flexibility and efficiency.

In our group, we study integrated-optic devices and all-optical systems without converting to electric signals as follows so that flexible, efficient, higher-capacity network is realized by improving spectral efficiency with effective use of limited wavelength resources.

- Modulation format conversion systems

Are studied to establish adaptive modulation and demodulation technologies that adaptively choose a modulation format by considering desired capacity and optical reach, especially in quadrature amplitude modulation (QAM) suitable for future 400Gb/s and 1Tb/s transport systems.

- All-optical high-speed wavelength-selective switching

Technologies are studied to equip the optical switch with faster operating speed and wavelength selectivity as well as lower power consumption by using Raman amplification and saturable absorption in nonlinear medium such as graphene.

Keywords: photonic routing, photonic switching, all-optical signal processing, modulation format conversion

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