

③⑥ Arbitrary wavelength generation/conversion using periodically poled LiNbO₃ waveguides

Motivation

- ◆ Transparent wavelength converters, which are independent of the signal format, are required for future photonic networks.
- ◆ Wavelength conversion of telecom laser diodes enables us to generate new visible or mid-infrared wavelength, which can not be generated from laser diodes directly.

Originality

LiNbO₃ is one of the most prominent nonlinear optical crystals. We developed a new LiNbO₃ waveguide method using direct bonding technique. This method does not induce unwanted absorption caused by impurities and enables efficient conversion between various wavelengths.

Impact

- ◆ Batch conversion of wavelength-multiplexed signal group enables routing of large capacity signals. This function is the key to realizing future economical and flexible optical networks.
- ◆ The new wavelength laser source will be useful for several applications like gas sensing with very high sensitivity.

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