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Widely tunable Terahertz wave photomixer based on uni-traveling-carrier photodiode

Hiroshi Ito

Kitasato University, Japan

The generation of continuous Terahertz (THz) waves using photonics technology is promising for various applications since it offers extremely wide frequency tunability, the capability of long-distance signal transmission through low-loss fibers, and a very simple configuration. Especially, the use of long-wavelength (1.55 μm band) lights is important because we can use various optical components developed for optical communications systems. The uni-traveling-carrier photodiode (UTC-PD) is a promising solution for such requirements. The UTC-PD has a unique mode of operation where only electrons are the active carriers. This is the key to achieving high frequency operation and high saturation output powers simultaneously. We present our recent results on THz-wave generation using UTC-PDs.

Biography

Hiroshi Ito is currently a Professor at Kitasato University. His current research involves semiconductor-based ultrafast photonic and electron devices, and their applications to millimeter-/sub-millimeter-wave (THz-wave) systems. He has authored or co-authored more than 300 scientific publications.

h.ito@kitasato-u.ac.jp