143. Title: Terahertz radiations from narrow band gap of semiconductor irradiated by femtosecond pulses with different pump intensities

Author: Wang, HY; Zhao, GZ; Wang, XQ

Source: ACTA PHYSICA SINICA

Volume:60

Issue:4

Pages:043202

Publication year: 2011

Document type:Journal article (JA)

Abstract: The characteristics of terahertz (THz) radiations from the surfaces of two kinds of narrow-band semiconductors InN and InAs excited by femtosecond laser pulses with different pump powers (from 10 to 320mW) are investigated experimentally. The results show that InAs can irradiate a stronger THz signal than that of InN under the same pump power so its radiation efficiency is higher. However, the spectral widths of THz radiations from these semiconductor surfaces increase with the increase of pump power. When the intensity of pump laser is high enough, the spectral Half-Maximum-Full-Width (HMFW) of THz radiation tends to be a constant. Compared with InAs, InN can reach this constant HMFW THz spectrum at a lower pump power. This research is significant for investigating the THz radiation mechanism from semiconductor surfaces, and it is also a good reference for exploring a THz radiation source with low cost and high efficiency.