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Title:Efficiency enhancement of emission of terahertz radiation by optical excitation from dual grating gate HEMT

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Abstract:We investigated the emission of terahertz radiation from a doubly interdigitated grating gates high electron mobility transistor. The experiment was performed using Fourier spectrometer system coupled with high sensitive 4 K Silicon bolometer under the vacuum. The observed emission was explained as due to the excitation of the plasma waves by means of hot 2D plasmons. We also investigated the optical stimulation of the plasma waves by subjecting the device to a CW 1.5 um laser beam. Dependence of the emission on the gate bias (i.e. on electron density) was observed and interpreted as due to the self oscillation of the plasma waves.

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