556
标题: Terahertz Emission of Ferromagnetic Ni-Fe Thin Films Excited by Ultrafast Laser Pulses
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摘要: It is believed that the ultrafast demagnetization process in ferromagnetic film is intrinsically a thermal effect, which is induced by ultrafast laser pulses. We present experimental evidence that such ultrafast demagnetization of the NiFe thin film can radiate electromagnetic waves in the terahertz range. We also demonstrate that the magnitude of the terahertz electromagnetic pulse emitted from ferromagnetic films after pulsed laser excitation can be tuned by the Gilbert damping factor alpha, which is conventionally used to describe damping of GHz precession motion of magnetization. Different damping factors are obtained by varying the normal metal film adjacent to the magnetic film via spin pumping. The measured radiated electric field in the far field is found to be proportional to the Gilbert damping factor.
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