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标题: Terahertz photoconductive antenna with metal nanoislands

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摘要: This work presents a nanoplasmonic photoconductive antenna (PCA) with metal nanoislands for enhancing terahertz (THz) pulse emission. The whole photoconductive area was fully covered with metal nanoislands by using thermal dewetting of thin metal film at relatively low temperature. The metal nanoislands serve as plasmonic nanoantennas to locally enhance the electric field of an ultrashort pulsed pump beam for higher photocarrier generation. The plasmon resonance of metal nanoislands was achieved at an excitation laser wavelength by changing the initial thickness of metal film. This nanoplasmonic PCA shows two times higher enhancement for THz pulse emission power than a conventional PCA. This work opens up a new opportunity for plasmon enhanced large-aperture THz photoconductive antennas. (C) 2012 Optical Society of America

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