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Title:THz generation using extrinsic photoconductivity at 1550 nm

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Abstract:1550-nm pulses from a fiber-mode-locked laser are used to drive an ErAs:GaAs photoconductive switch, resulting in easily measured THz radiation with average broadband ( $\sim$ 0.1 to 1.0 THz) power of  $\sim$ 0.1 mW. The new THz switching mechanism is attributed to fast extrinsic photoconductivity that generates photocarriers (probably electrons) from the ErAs nanoparticles embedded in the material with a lifetime of  $\sim$ 0.45 ps (354 GHz bandwidth). This is the first known demonstration of useful THz power generation by extrinsic photoconductivity. © 2012 Optical Society of America.

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