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标题: Carrier multiplication in bulk indium nitride
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摘要: Carrier multiplication (CM) is the process of generating multiple electron-hole pairs from one absorbed photon. Narrow-gap InN is a material that has been proposed for achieving efficient CM. We quantify the CM efficiency in bulk InN using terahertz time-domain spectroscopy. While the CM onset occurs at relatively low photon energies in InN (1.7 +/- 0.2 eV), corresponding to 2.7 +/- 0.3 times its bandgap, the excitation efficiency above the onset increases linearly with a slope of only similar to 13%/E-g. Based on these numbers, the efficiency increase of an InN based photovoltaic device owing to CM is limited to maximum 1% point. (C) 2012 American Institute of Physics. [http://dx.doi.org/10.1063/1.4766738]
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