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Title:Terahertz generation by optical rectification in uniaxial birefringent crystals
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Abstract:The angular dependence of terahertz (THz) emission from birefringent crystals can differ significantly from that of cubic crystals. Here we consider optical rectification in uniaxial birefringent materials, such as chalcopyrite crystals. The analysis is verified in (110)-cut ZnGeP2 and compared to (zincblende) GaP. Although the crystals share the same nonzero second-order tensor elements, the birefringence in chalcopyrite crystals cause the pump pulse polarization to evolve as it propagates through the crystal, resulting in a drastically different angular dependence in chalcopyrite crystals. The analysis is extended to {012}-and {114}-cut chalcopyrite crystals and predicts more efficient conversion for the {114} crystal cut over the {012}-and {110}-cuts. ©2012 Optical Society of America.
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