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Title:Mg-induced terahertz transparency of indium nitride films
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Abstract:Terahertz time-domain spectroscopy (THz-TDS) has been used to investigate electrical properties of Mg-doped indium nitride (InN). Mg-doping in InN was found to significantly increase terahertz transmittance. THz-TDS analysis based on the Drude model shows that this high transmittance from Mg-doped InN is mainly due to the reduction in mobility associated with ionized dopants. The Hall-effect-measured mobility is typically lower than the THz-TDS-measured mobility for the same samples. However, the results of both measurements have the same slope in the linear relation between mobility and density. By introducing a compensation ratio of ~0.2, an excellent agreement in mobilities of two methods is obtained.
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