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摘要: This paper describes the plasmon resonances in AlN/GaN high electron mobility transistors. It is shown that wide tunable resonances with the frequency located at terahertz band can be obtained in this material system. The results originate from the ultra-high electron density induced by the polarization effect and higher order plasmon excitation. At room temperature, the dielectric response caused by phonon-polariton interactions obliterates the higher order plasmon resonances at frequency higher than 10 THz. However, the viscosity contribution to the damping of plasmons is very small in these devices. Our results also show the potential of this device for terahertz applications. (C) 2012 American Institute of Physics. [http://dx.doi.org/10.1063/1.3695154]
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