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Polarization dependence of Raman 2D band in bilayer graphene JAE-UNG LEE, NGOR MBAYE SECK, Department of Physics, Sogang University, Seoul, Korea, DUHEE YOON, Electrical Engineering Division, Engineering Department, University of Cambridge, Cambridge, UK, HYEONSIK CHEONG, Department of Physics, Sogang University, Seoul, Korea — The Raman intensity of the double-resonance 2D band in sigle-layer graphene has a strong polarization dependence(Yoon et al. Nano Lett.). The intensity is maximum when the excitation and detection polarization are parallel and minimum when they are orthogonal, whereas that of G band is isotropic. This strong polarization dependence is the consequence of inhomogeneous optical absorption and emission mediated by electron-phonon interactions. Here, the polarization dependence of the Raman 2D band in bilayer graphene. The 2D band of bilayer graphene can be decomposed to 4 Lorentzian peaks corresponding to different scattering process involving 2 conduction and 2 valence bands. The 2D band in bialyer graphene shows a similar polarization dependence as that of single layer. Furthermore, the excitation energy dependence was investigated by using 4 different excitation laser wavelengths. The polarization ratio of each of the 4 Lorentizan peaks seems to reflect the features of the electronic band structure of bilayer graphene in the energy range of the excitation laser.

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