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Power dependence of Raman spectrum of graphene HYERIM MOON, DUHEE YOON, SEOUNGWOO WOO, Department of Physics, Sogang University, Seoul 121-742, Korea, YOUNG-WOO SON, Korea Institute for Advanced Study, Seoul 130-722, Korea, HYEONSIK CHEONG, Department of Physics, Sogang University, Seoul 121-742, Korea — Raman spectroscopy has been a useful tool to indentify the number of graphene layers. The thermal conductivity of graphene, the influence of the substrate, and the doping effect have been investigated by using Raman spectroscopy. Although Raman spectroscopy is widely used as a standard characterization tool, the excitation laser power varies for each experiment. In this work, we investigated the variation of the Raman spectrum of single-layer graphene as a function of the excitation laser power. Graphene samples were isolated from natural graphite flakes using mechanical cleavage. The 514.5 nm (2.41 eV) line of an Ar ion laser was used as the excitation source. The power was varied from 0.2 mW to 20 mW. Micro-Raman spectroscopy was performed with a 0.6 N.A. objective lens. The frequency and the full-width-at-half-maximum (FWHM) of Raman G and 2D bands were found to vary significantly as a function of the laser power.

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