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**Interference effect on Raman spectrum of single layer graphene on SiO<sub>2</sub>/Si** DUHEE YOON, HYERIM MOON, Department of Physics, Sogang University, Seoul 121-742, Korea, YOUNG-WOO SON, Korea Institute for Advanced Study, Seoul 130-722, Korea, JIN SIK CHOI, BAE HO PARK, Department of Physics, Konkuk University, Seoul 143-701, Korea, YOUNG HUN CHA, YOUNG DONG KIM, Department of Physics, Kyunghee University, Seoul 130-701, Korea, HYEONSIK CHEONG, Department of Physics, Sogang University, Seoul 121-742, Korea — We studied the dependence of the Raman spectrum of graphene on the thickness of the SiO<sub>2</sub> layer. We prepared the single layer graphene samples with the various SiO<sub>2</sub> layer thicknesses ( $\sim 240$  to  $\sim 388$  nm) using micro-mechanical cleavage from the natural graphite and observed a strong variation of the Raman spectrum as a function of the thickness of SiO<sub>2</sub> layer. It is found that the intensity of Raman signal is strongly influenced by the interference due to multiple reflections in the graphene and SiO<sub>2</sub> layers. The Raman enhancement factor was calculated by taking into account the interference effect. The model calculation fits well with the experimental data. The interference also affects the Raman intensity ratio of the *2D* band to the *G* band due to the difference in the wavelength of these signals. Moreover, we calculated the Raman enhancement factor as a function of the SiO<sub>2</sub> thickness and the excitation laser wavelength.

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