Polarization Rotation of Visible Light by Graphene Stacks at Room Temperature

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Graphene, an atomically thin active layer, shows excellent electronic and optical properties with linear energy band dispersion, such as high electron mobility and light polarization rotation by Kerr effect and Faraday rotation. Presently the research of the light polarization rotation by graphene is mainly limited in far-infrared range as well as at extremely low temperatures. In this study, we investigated the Faraday rotation of graphene in the wavelength of visible light range at room temperature with applied low magnetic fields. We identified the large Faraday rotation in visible range at room temperature by stacked graphene, which is synthesized by chemical vapor deposition (CVD) method, on glass.

Figure 1 shows the polarization rotation of light (λ = 458nm) as a function of the number of stacked graphene layers on glass (0.4T) measured at varying magnetic field. The polarization rotation linearly increases with applied magnetic field and the number of graphene layers.

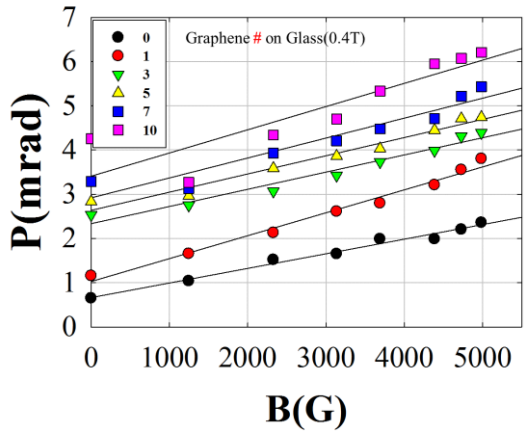

Fig. 1. Light polarization rotation of blue light.

References

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