

## Abstract

Practical application of graphene require accurate determination of the number of layers. In this paper we demonstrate a reliable and efficient approach for determining the number of graphene layers. Plots of contrast spectra against number of graphene layers transferred on Borosilicate glass substrates for RGB image, R, G, and B channels were found to increase linearly. The R channel contrast values for one to four graphene layers were found to be 0.076(R), 0.083(R), 0.090(R), and 0.097(R) respectively. Similarly, the G contrast channel values were obtained as -0.032(G), -0.023(G), -0.015(G), and -0.007(G) whereas B channel gives 0.004(B), 0.011(B), 0.019(B), and 0.026(B) for SLG, BLG, Tri-layer and Tetra-layer graphene respectively. The contrast values for SLG in RGB transmission regions were found to be 0.076(R), -0.032 (G), and 0.004(B). Our experimental results deviate from theoretical contrast of SLG transferred on SiO<sub>2</sub> (285 nm)/Si, Quartz, Al<sub>2</sub>O<sub>3</sub> (72 nm)/Si and Hexagonal-BN crystal substrate. This deviation is shown to arise from the unappreciable optical absorption of the Borosilicate substrate in the visible spectrum range. Contrast imaging is therefore a reliable method with the R contrast channel providing the highest contrast leading into increased resolution of the detection level of samples.