

EUV/FUV polarimetric study of Single layer graphene/SiO₂ (285nm)/silicon

Nadeem Ahmed Malik
University of Padova, Italy

Studied for its unique electrical properties, graphene is the most investigated 2D material. Its chemical inertness, thermal and chemical stability in harsh environments, mechanical strength and impermeability to ion diffusion promote graphene as promising candidate between the optical coatings for harsh environments. However, the optical and polarimetric properties of the graphene were not been studied in the EUV spectral range. We investigated the angular reflective phase retarder properties of single layer graphene/SiO₂ (285nm)/silicon in the 123–127 nm spectral range. It was found that graphene over SiO₂ introduces a phase retard between s- and p- polarization components depending on the incidence angle. Reflectance of SiO₂ with and without graphene was also studied and an increase in the reflectance was found in case of single layer graphene on top of the sample. The experimental results and analysis suggest many applications for graphene/SiO₂/Si thin film reflector.