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Abstract:

Carbon nanotube (CNT) are recognized originally by Sumio lijima in 1991. Graphene sheets are rolled up to prepare CNTs. CNTs have large variety of physical properties due to having different individual graphene layer. Due to having large choice of mechanical and optical properties CNTs have shown many potential applications. Okawara et al. investigated the CNT film surface grown on SiO_2 substrate by SHG technique. They used 1064 nm wavelength of laser light as fundamental radiation and observed the alignment of the grown CNT film after analyzing the SHG signal. Some other researchers found that the SHG signal generated from CNT due to having local imperfections, deformation, chirality that resulted from nonracemic assembly at the internal structure of CNT. L. De Dominicis et al. investigated single-walled carbon nanotube surface by SHG technique and found that the main source of SHG generation is the structural defects or chirality. Therefore, we intended to fabricate carbon nanotubes (CNT) on the Si/SiO_2/Co substrate by chemical vapor deposition (CVD) technique and dropped the variant concentration of peptide molecules to make peptide aptamer. Then we measured the SHG intensity from the CNT/PEP interface as a function of manually tuned wavelength and variant concentration of peptide molecules. We also conducted the SEM analysis to verify the fabrication of CNTs on Si/SiO_2/Co substrate. From the SHG measurement, we found highest SHG signal at the wavelength of 532 nm when used 1064 nm light as an incident and it was observed that, the SHG intensity was increased with the increase of peptide concentrations on the surface of CNTs. This is due to the presence of different kinds of chemical bonds. These chemical bonds may create chirality and may be the responsible candidate for generating SHG signal. In this research, measurement of SHG intensity from CNT/PEP interface as a function of variant concentrations of peptide molecules and tunable wavelength was our physical interest only.