

Interaction of small dye molecules with graphene studied by Surface Plasmon Resonance

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Studying binding interactions of small compounds will give an insight for examination of more complex compounds. However, small substances are more difficult to detect as compared to complex substances^{1,2}. Surface Plasmon Resonance (SPR) has been used widely to study molecular interactions. Due to sensitivity issues, different methods have been experimented to improve the sensitivity³. Graphene (Gr) has been studied to modify the Au surface to have better SPR signal^{4,5} due to optical and electronic properties⁶. However, there is limited information about the interaction between biological materials and graphene. In this study, we examine the binding interaction between methylene blue (MB) and graphene as analyte and ligand, respectively. MB is an absorbing material and used here as a model for small molecule interactions. We show here that MB has higher affinity to graphene than gold. Moreover, we demonstrate that variations in intensity is more reliable to interpret binding interactions for absorbing materials.

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