

In this research work, green synthesis of 2D Copper-Bipyridine metal organic framework was executed using hydrothermal milieu. The structure and porous nature of the copper-bipyridine mof was confirmed by single crystal X-Ray diffraction analysis. Graphene quantum dots were efficiently synthesized using glucose and starch precursor. The post-synthetic modification of MOF was completed to give rise to guest induced luminescent s-GQDs@MOF and g-GQDs@MOF composites. The synthesis of QD@MOF composites were successfully accomplished using bottom around the ship approach and by conventional stirring method. The synthesized s-GQDs@MOF and g-GQDs@MOF were characterized by FTIR spectroscopy, UV-Visible spectroscopy and Photoluminescence spectroscopy. The findings of photoluminescence spectroscopy supported the successful tuning of luminescent properties of composite materials in comparison to the parent pristine material. These s-GQDs@MOF and g-GQDs@MOF composites were further explored to assess their potential as Chemosensor and Photocatalyst. These composites exhibited Chemosensing applications against Picric Acid and 4-Nitrotoluene with the k_{sv} constant of 0.98mM^{-1} and 1.055mM^{-1} . These composites also showed their potential as photocatalyst and efficiently degrade methylene blue dye with the %age degradation efficiency of 69.3%.