

Abstract Submitted  
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**Surface Functionalization of Graphene Field Effect Transistors with Polyhistidine-Tagged Proteins<sup>1</sup>** YE LU, JOSEPH MITALA, JONG-HSIEN LIM, MITCHELL LERNER, ZHENG TANG LUO, NICHOLAS KYBERT, BRETT GOLDSMITH, BOHDANA DISCHER, A.T. CHARLIE JOHNSON, University of Pennsylvania, PHYSICS AND ASTRONOMY TEAM, BIO-CHEMISTRY AND BIOPHYSICS TEAM — We have developed a facile and reliable method to covalently functionalize the surface of graphene field effect transistors (FETs) with polyhistidine-tagged proteins. We demonstrated success of chemical functionalization by both atomic force microscopy (AFM) and Raman spectroscopy. Additionally, we characterized the electronic properties of graphene FETs at successive functionalization stages. The specificity enabled by such functionalization, along with the two dimensional nature and intrinsic high sensitivity of graphene, facilitates the emergence of graphene as a promising candidate in surface biochemistry research as well as graphene-based biosensor applications.

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