

Abstract Submitted  
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**Photo Induced Fluorescence Enhancement and Correlated FTIR of Single Layer Graphene Oxide** CHARUDATTA GALANDE, Rice University, SIBEL EBRU YALCIN, AKHILESH SINGH, GAUTAM GUPTA, Los Alamos Natl Lab, RAJESH KAPPERA, Rutgers University, ANDREW M. DATTELBAUM, Los Alamos Natl Lab, MANISH CHHOWALLA, Rutgers University, STEPHEN K. DOORN, Los Alamos Natl Lab, PULICKEL M. AJAYAN, Rice University, ADITYA D. MOHITE, Los Alamos Natl Lab, LOS ALAMOS NATIONAL LABORATORY COLLABORATION, RICE UNIVERSITY COLLABORATION, RUTGERS UNIVERSITY COLLABORATION — Ultrafast recombinations of photo-excited electron-hole pairs and low absorption in graphene have prevented its use for several low light applications. However, graphene oxide (GO) is a wide band gap material with emission in the visible spectrum. For optoelectronic applications, it is desired to have a material with good optical absorption and electrical transport. We report the in-situ photo induced observation of functional groups in progressively reduced GO due to the presence of intercalated water. We perform correlated fluorescence and FTIR spectroscopy on an individual GO flake and we assign the formation of a specific functional group(s) to the observed increase in the fluorescence intensity. This provides insights into tuning the band structure of graphene via controlled oxidation for relevant applications.

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