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**Exploring the Use of Graphene Oxide as Imaging/Sensing/Delivery Platform** ELIZABETH SIZEMORE, M.T. HASAN, G. AKKARAJU, A.V. NAUMOV, Texas Christian University — Graphene oxide (GO) is a functional derivative of graphene that possesses a number of exceptional properties beneficial for molecular drug delivery/imaging/sensing applications. Those include pH-dependent fluorescence emission, water solubility and large platform for functionalization with drug molecules. In our work, we utilize these properties to yield a multifunctional transport/imaging/sensing platform for the delivery and analysis of cancer treatment within cells. GO serves as an imaging agent due to its intrinsic fluorescence in the visible, and as a pH-sensor due to its pH-dependent emission. In order to provide the ideal conditions for cellular imaging and sensing fluorescence of individual GO flakes was assessed for a variety of pH levels, and the sizes of GO flakes were adjusted for optimal internalization. In-vitro fluorescence microscopy with healthy (HEK-293) and cancer (HeLa and MCF-7) cells shows successful internalization of GO into cytoplasm and characteristic pH-dependent response of GO emission in the acidic environments of cancer cells. The results of this work suggest GO as an innovative multifunctional delivery/imaging/cancer sensing platform for cancer therapeutics.

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