

Abstract Submitted
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Large-area Graphene-PDMS Hybrid Structures for Multifunctional Applications¹ SWASTIK KAR, Physics, Rensselaer Polytechnic Institute, XIAOHONG AN, Physics, Rensselaer Polytechnic Institute, EDWARD JOSEPH, Shaker High School, Latham, NY 12110, TREVOR SIMMONS, Chemistry and Chemical Biology, Rensselaer Polytechnic Institute, SAIKAT TALAPATRA, Physics, Southern Illinois University, Carbondale, MORRIS WASHINGTON, SAROJ NAYAK, Physics, Rensselaer Polytechnic Institute — We report on the fabrication, characterization and applications of flexible, transparent, electrically conducting hybrid structures using thin films of functionalized graphene and PDMS. These structures can be directly used as conductometric sensors for organic vapors and thin-film atmospheric pressure sensors. The graphene present in the hybrids are pre-functionalized by 1-Pyrenecarboxylic acid, which is a known fluorophore that exhibits strong absorbance peaks even at trace amounts in the UV regions. As a result, these flexible membranes are nearly transparent in the visible region, but absorb a significant amount of UV light, rendering them useful as flexible UV filters. Their conductance was also found to be quite sensitive to the presence of light, and hence can be used as flexible photodetectors.

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