

Abstract Submitted
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A low cost construction method for Graphene based resistive chemical sensors¹ SILPA KONA, CINDY K. HARNETT, University of Louisville — Graphene is a 2D material with distinctive properties and a large surface area that can be exposed to surface adsorbates from a target gas, making it attractive as a sensing material. This enables studies on the interaction of gas molecules with the graphene surface and subsequent changes in its properties. Due to its high electron mobility at room temperature, graphene exhibits high sensitivity, making it a good candidate for environmental and industrial sensing applications. Several models of graphene based sensors have been put forth previously based on high-resolution lithographic techniques and for individual electrode attachment to the sensing film with e-beam lithography. These techniques can produce small numbers of devices that explore the limits of molecular scale sensing, but the methods are currently impractical for large scale production of low cost sensors. We present our graphene based sensor with the focus on designing small, cost effective and reliable sensors with high sensitivity towards the target gas, detailing the assembly of graphene/acrylic devices, their characterization and investigation of their performance as resistive chemical sensors using differential voltage measurements.

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