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DNA-decorated graphene chemical sensors BRETT GOLDSMITH, YE LU, University of Pennsylvania, Department of Physics and Astronomy, NICHOLAS KYBERT, University of Warwick, Department of Physics, A.T. CHARLIE JOHNSON, University of Pennsylvania, Department of Physics and Astronomy
— We measure the sensing response of DNA functionalized graphene to various analytes. Graphene is the current flagship nanomaterial and has been actively studied as a chemical sensor since shortly after it was isolated. Increasingly sophisticated device processing has revealed that some early measurements of graphene chemical sensing have been amplified by unintentional functionalization. We start with chemically clean graphene transistors and purposefully functionalize them to allow chemical sensing responses not found using pristine graphene. By using different DNA sequences during our functionalization, we are able to change the chemical sensitivity of the graphene. The resulting devices show fast response times, complete recovery at room temperature and discrimination between several similar analytes.
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