Abstract Submitted
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Photoresponse and light trapping in nanowire array-graphene interfaces[1] TITO HUBER[2], SCOTT JOHNSON, QUINTON BARCLIFT, TINA BROWER, Howard University, JEFFREY H. HUNT[3], JOHN H. BELK[4], The Boeing Company — Graphene is emerging as an optical material that features tunability by electrostatic doping and a photothermoelectric response, however it features low optical absorption. We studied interfaces between nanowire arrays and graphene and also other transparent electrodes such as indium tin oxide films. The nanowire arrays were fabricated using a template method. Graphene was transferred from copper substrates. The interfaces were characterized with a number of tools including Scanning Electron microscopy, Raman spectroscopy and optical reflectance. We also studied the photocurrent through the interface in particular the temporal and wavelength dependence that are revealing of the characteristic thermoelectric origin of the signal. In the photocurrent tests we employed devices composed of nanowire arrays which are capped with the transparent electrode. Interestingly, we observed that the interface has low optical reflectivity and high optical absorption, which we will discuss in terms of enhanced optical trapping.

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