

## Defect Induced Enhanced Photoresponse in Graphene

**Authors :** Prarthana Gowda, Tushar Sakorikar, Siva K. Reddy, Darim B. Ferry, Abha Misra

**Abstract :** Graphene, a two-dimensional carbon allotrope has demonstrated excellent electrical, mechanical and optical properties. A tunable band gap of grapheme demonstrated broad band absorption of light with a response time of picoseconds, however it suffers a fast recombination of the photo generated carriers. Many reports have explored to overcome this problem; in this presentation, we discuss defect induced enhanced photoresponse in a few layer graphene (FLG) due to exposure of infrared (IR) radiation. The two and four-fold enhancement in the photocurrent is achieved by addition of multiwalled carbon nano tubes (MWCNT) to an FLG surface and also creating the wrinkles in the FLG (WG) respectively. In our study, it is also inferred that the photo current generation is highly dependent on the morphological defects on the graphene. It is observed that the FLG (without defects) generates the photo current instantaneously, and after a prolonged exposure to the IR radiation decays the generation rate. Importantly, the presence of MWCNT on FLG enhances the stability and WG presented both stable as well as enhanced photo response.

**Keywords :** graphene, multiwalled carbon nano tubes, wrinkled graphene, photo detector, photo current

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