

On the origin of photocurrents in pristine graphene

© Yu.B. Vasilyev

Ioffe Institute,
194021 St. Petersburg, Russia
E-mail: yu.vasilyev@mail.ioffe.ru

Received June 23, 2020

Revised July 23, 2020

Accepted for publication July 27, 2020

Recently Ma et al. (*Nature Nanotech.*, **14**, 145, 2019) reported an intrinsic photocurrent in graphene, which occurs as the authors believe „in a different parameter regime from all the previously observed photothermoelectric or photovoltaic photocurrents in graphene“. Here we present an alternative — obvious and transparent explanation of such experiments. We demonstrate that the photo effect occurs in the $p-n$ junctions formed in graphene samples containing two regions of different widths with different particle concentrations. This difference in concentration for various sample widths is found to result from edge doping of samples.

Keywords: graphene, photocurrents, $p-n$ junctions.

Full text of the paper will appear in journal SEMICONDUCTORS.