

Abstract Submitted
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Photoconductivity of electro-oxidized epitaxial graphene¹ FEIHU WANG, MIKHAIL ITKIS, ELENA BEKYAROVA, ROBERT HADDON, University of California, Riverside, HADDON RESEARCH GROUP TEAM — We report the enhanced photosensitivity of epitaxial graphene (EG) after electrochemical oxidation in nitric acid. The onset of photoconductivity appears at a photon energy of ~ 1.7 eV while the responsivity reaches 200 A/W in the UV spectral range (3.5 eV, 350 nm). The observed photoresponse is attributed to the formation of deep traps at the electro-oxidized EG interface, which release charge carriers under illumination and a significantly prolonged life time of photoexcitations due to the effect of the traps on the recombination dynamics. The enhanced photosensitivity and high selectivity in the UV spectral range make electro-oxidized EG an interesting alternative to the less spectrally selective Si for UV detection, although further optimization of the chemistry is required to shorten the photoresponse time while preserving the high sensitivity.

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