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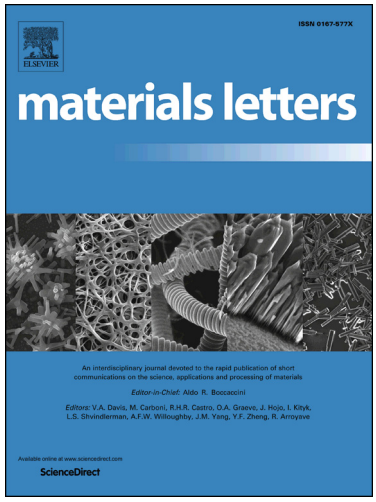

Strong reverse saturable absorption and negative nonlinear refractive index in S and N co-doped GQDs at 532 nm CW laser

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Strong reverse saturable absorption and negative nonlinear refractive index in S and N co-doped GQDs at 532 nm CW laser

Commented [KKk1]: Nonlinear is added to differentiate it from the linear refractive index

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Abstract

In this study, a bottom up pyrolysis approach is pursued in the preparation of sulphur: nitrogen co-doped graphene quantum dots (SN-GQDs). For the first time, 5V direct current light emitting diode (LED) is used as an excitation source and the influence of solvent's nature such as dipole moment and polarity on fluorescence is studied. The investigated third order nonlinear optical behaviour reveals a strong reverse saturable absorption (RSA) and negative nonlinear refractive (NLR) index at 532 nm wavelength of continuous wave (CW) laser. The thermal nonlinearity in closed aperture is addressed employing thermal lens model.

Keywords: Carbon materials, LED, Luminescence, Optical materials and properties, NLO.

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