

Abstract Submitted
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Laser-Induced High Harmonic Generations in Nano-Graphene Molecules¹ MINGQIANG GU, Nanjing University and Indiana State University, GUOPING ZHANG, Indiana State University, XIAOSHAN WU, Nanjing University — Nano graphene molecules is a promising material for the non-linear optical devices. We performed a first-principles calculation on Graphene Molecules. Two distinct signals are noticed: the integer higher-order harmonic generation (HHG) and the intrinsic emissions. Due to the small gap between HOMO and LUMO of graphene molecule, the HHG can be generated for the infrared laser pulse with the photon energy ranging from 20 meV to 1 eV. The intrinsic emission corresponds to the electron excitation between eigen states. They can be generated using a relatively low intensity laser pulse (0.05 eV/Å) through the multiphoton process. Moreover, these signals are very sensitive to the molecule size and the hydrogen passivation. They can be the fingerprints for detecting the product in fabrication.

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Mingqiang Gu
Nanjing University and Indiana State University

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