

Abstract Submitted
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Spatial Self-Phase Modulation in Graphene and Graphene Oxide Water Suspensions YANAN WANG, Institute of Fundamental and Frontier Sciences, University of Electronic Science and Technology of China, ZHUAN ZHU, Department of Electrical and Computer Engineering, University of Houston, XIAOXIANG WANG, DA LIN, DONG LIU, Department of Mechanical Engineering, University of Houston, XUFENG ZHOU, Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences, ZHIMING WANG, Institute of Fundamental and Frontier Sciences, University of Electronic Science and Technology of China, JIMING BAO, Department of Electrical and Computer Engineering, University of Houston, UESTC & UH COLLABORATION — With promising potential in photonic and optoelectronic applications, nonlinear optical properties of graphene based materials have attracted enormous interest. In this work, we observed spatial self-phase modulation (SSPM) of propagating laser beams in both graphene and graphene oxide (GO) water suspensions. The formation and temporal evolution of far-field diffraction rings have been investigated systematically. It is found that alignment of graphene or GO flakes is controlled by water convection rather than the polarization of laser. We further discovered that SSPM can be mainly attributed to the thermo-optic effect of water instead of graphene or GO.

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