

Abstract Submitted
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Terahertz modulators based on multiple non-Bernal graphene layers IOANNIS CHATZAKIS, ZHEN LI, University of Southern California Electrical Engineering, ALEXANDER BENDERSKII, University of Southern California Department of Chemistry, STEPHEN CRONIN, University of Southern California Electrical Engineering — We investigate a THz modulator based on a stack of disoriented the non-Bernal stacks graphene layers (GLs) grown by chemical vapor deposition method (CVD) on SiO₂ substrate [1]. The non-Bernal stacking GLs results in the electron decoupling of the GLs, [1,2] higher interband absorption and exhibit the same energy spectrum of the charge carriers to that in individual GLs. The detection efficiency in room temperature is high due low probability of the high energy of the optical phonons (~ 0.2 eV) absorption. Using terahertz time- domain spectroscopy, we show that the multi graphene layers exhibit fairly high responsivity due to high quantum efficiency.

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