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Near-infrared photodetector based on Schottky junctions of monolayer graphene/GeOI

Anli Xu^a, Siwei Yang^c, Zhiduo Liu^{d,e}, Gongjin Li^b, Jiurong Li^a, Ya Li^a, Da Chen^{a,*},
Qinglei Guo^{b,*}, Gang Wang^{a,*}, Guqiao Ding^{a,c}

^aDepartment of Microelectronic Science and Engineering, Faculty of Science, Ningbo University, Ningbo 315211, P. R. China.

^bDepartment of Materials Science, Fudan University, Shanghai 200433, P. R. China.

^cState Key Laboratory of Functional Materials for Informatics, Shanghai Institute of Microsystem and Information Technology, CAS, Shanghai 200500, P. R. China.

^dState Key Laboratory of Integrated Optoelectronics, Institute of Semiconductors, CAS, Beijing 100083, P. R. China.

^eUniversity of Chinese Academy of Sciences, Beijing 100049, P. R. China.

*Corresponding authors: chenda@nbu.edu.cn (D.C); guoqinglei@fudan.edu.cn (Q.L.G); gangwang@nbu.edu.cn (G.W);

ABSTRACT

The peculiar properties of the large absorption coefficient at near-infrared frequencies as well as their high mobility in germanium enable promising applications in photodetection. Schottky junctions based near-infrared photodetectors were fabricated by integrating monolayer graphene film with germanium membranes stacking on silicon oxide substrates (i.e., GeOI). The device exhibits a strong photovoltaic behavior, giving rise to high responsivity and detectivity of ~ 62.1 mA W^{-1} and $\sim 2.1 \times 10^{11}$ $\text{cm Hz}^{1/2} \text{W}^{-1}$, respectively. Time-response results indicate that

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