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Title:Terahertz and infrared photodetectors based on multiple graphene layer and nanoribbon structures

Authors:Ryzhii, V. (1); Ryabova, N. (1); Ryzhii, M. (1); Baryshnikov, N.V. (2); Karasik, V.E. (2); Mitin, V. (3); Otsuji, T. (4)

Author affiliation:(1) Comput. Nanoelectron. Lab., Univ. of Aizu, Aizu-Wakamatsu, Japan; (2) Centre for Photonics & Infrared Eng., Bauman Moscow State Tech. Univ., Moscow, Russia; (3) Dept. of Electr. Eng., Univ. at Buffalo, Buffalo, NY, United States; (4) Res. Inst. for Electr. Commun., Tohoku Univ., Sendai, Japan

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Abstract:We consider new concepts of terahertz and infrared photodetectors based on multiple graphene layer and multiple graphene nanoribbon structures and we evaluate their responsivity and detectivity. The performance of the detectors under consideration is compared with that of photodetectors made of the traditional structures. We show that due to high values of the quantum efficiency and relatively low rates of thermogeneration, the graphene-based detectors can exhibit high responsivity and detectivity at elevated temperatures in a wide radiation spectrum and can substantially surpass other detectors. The detector being discussed can be used in different wide-band and multi-colour terahertz and infrared systems.

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Inspec controlled terms:graphene - infrared detectors - nanoribbons - photodetectors - terahertz wave detectors

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