

Monoatomic layer transition metal dichalcogenides as a way to improve the conversion of spin-polarized current

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In the present paper, we study hybrid spintronic Co/WSe₂(MoSe₂) emitters and consider the effect of the transition metal dichalcogenides (TMDs) type on the efficiency of THz radiation generation, similar to the article [1]. Monolayer TMDs films were grown by gas-phase deposition on Al₂O₃ substrates. A cobalt film with a thickness of 3 nm was applied to the surface of TMDs films by magnetron sputtering. The study was carried out by the method of terahertz spectroscopy in the time domain (THz-TDS) in transmission geometry, the technique of which is described in detail in [2]. During the experiment, time profiles of THz signals were obtained, on the basis of which frequency spectra were obtained using the Fourier transform. From the time profiles, a weak influence of a certain type of TMD (3–5%) on the magnitude of the induced THz signal was established. The optical absorption of the studied structure was also simulated in the COMSOL Multiphysics software package. The study was supported by the Russian Science Foundation (grant No. 22-12-00334).

- [1] Khusyainov D, Guskov A, Ovcharenko S, Tiercelin N, Preobrazhensky V, Buryakov A, Sigov A and Mishina E 2021 *Materials* **14** 6479
- [2] Khusyainov D, Ovcharenko S, Gaponov M, Buryakov A, Klimov A, Tiercelin N, Pernod P, Nozdryn V, Mishina E, Sigov A *et al* 2021 *Sci. Rep.* **11** 697