The influence of potassium intercalation on the electronic properties of layered carbon materials

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The influence of intercalation upon the surface energy responsible for the capillary properties of layered carbon materials is investigated. The intercalation of highly oriented pyrolytic graphite by potassium atoms was carried out using the two-zone method. According to the data from Raman spectra, namely the process of splitting of the G peak, the electronic properties of graphene-like structures intercalated with metal atoms, in particular, charge transfer from the intercalate to the graphene layers, have been studied [1]. The effect of electron density transfer from intercalate atoms to graphene layers also was studied using the Quantum Espresso program. The electronic band structure of multilayer graphene is constructed depending on the intercalation stage applying the density functional theory and programs for quantum chemical calculations. This work was supported by grant No. MK-927.2022.1.2 from the President of the Russian Federation.

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