

## Surface Dimer Model in the Theory of Adsorption on Graphene

S.Yu. Davydov<sup>1,\*</sup>, A.A. Lebedev<sup>1</sup>, O.V. Posrednik<sup>2</sup>

<sup>1</sup> Solid State Electronics Department, Ioffe Physical Technical Institute, Russian Academy of Sciences, St. Petersburg, Politekhnicheskaya street 26, 194021 Russia

<sup>2</sup> Faculty of Electronics, St. Petersburg Electrotechnical University (“LETI”), prof. Popova street 5, St. Petersburg, 197376, Russia

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Corresponding author: S.Yu. Davydov

**Abstract.** Model of the surface dimer formed by coupling adsorbing atom and surface substrate atom by covalent bond is proposed. This model is used for the calculations of the charge transfers between dimer’s atoms and between dimer and graphene substrate. Effects of Coulomb and electron-phonon interaction on charge transfers are thoroughly studied. Role of inter-adatoms dipole-dipole repulsion and exchange interactions are examined. Adsorption on epitaxial graphene is briefly discussed.

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