

Abstract: Silicon carbide (SiC) is a wide band gap semiconductor with high thermal, chemical and mechanical resistance. By thermal decomposition of silicon from SiC, it is possible to grow high quality epitaxial graphene on the surface. This production can be industrially scaled. This work investigates whether it is possible to optically gate epitaxial graphene and what effect the surrounding environment has on the electrical stability of epitaxial graphene. The experimental part of the work consists of optimizing preparation of the sample contacts using electron beam lithography. Further investigates the influence of surrounding atmosphere on the electrical properties of graphene, measuring the dependence of photocurrent on optical power and spectral dependence of photoconductivity of graphene. The significant effect of adsorption of molecules from the environment on the electrical properties of graphene has been demonstrated.