

CONDUCTIVITY OF GRAPHENE ON FERROELECTRIC PVDF-TrFE

A.I. Kurchak, M.V. Strikha

V.E. Lashkaryov Institute of Semiconductor Physics,
Nat. Acad. of Sci. of Ukraine
(41, *Prosp. Nauky, Kyiv 03680, Ukraine;*
e-mail: maksym_strikha@hotmail.com)

S u m m a r y

The theory of conductivity in graphene grown by the chemical vapor deposition on a poly[(vinylidene-fluoride-co-trifluoroethylene) (PVDF-TrFE) ferroelectric film has been developed with regard for the charge carrier scattering at large-scale potential nonuniformities created by both the domain structure of the ferroelectric and a nonuniform distribution of chemical dopants over the graphene surface. As the correlation length of nonuniformities increases, the graphene resistivity has been shown to decrease, and, in the case of a sufficiently uniform distribution of chemical dopants and the sufficiently large domain sizes, to achieve values of 100Ω and less. Such values make the “graphene on PVDF-TrFE” system competitive with standard conductive and transparent indium tin oxide coverings for photovoltaics. The theoretical results have been compared with experimental data.