

PECULIARITIES OF CURRENT TRANSPORT
IN TITANIUM OXIDE-SILICON
HETEROSTRUCTURES

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S u m m a r y

The mechanisms of charge carrier injection into Ti–TiO₂–(*n,p*)-Si heterostructures have been studied. The influence of the porous TiO₂ structure and the silicon substrate type on the electrical characteristics of heterostructures is analyzed. The charge transfer is shown to be accompanied by the appearance of a compensating polarization charge on the surface of TiO₂ nanoparticles. Correlations between the type of adsorbed molecules and the conditions of the current flow have been determined. In Ti–TiO₂–*p*-Si heterostructures, a change of the ratio between the numbers of injected electrons and holes can lead to the negative-conductivity effect.