

# Nanooptics and nanophotonics

## Heterostructures based on films of poly-N-epoxypropylcarbazole and organic dyes for photovoltaic converters of solar energy

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Hybrid heterostructures based on inorganic and organic materials are used presently for development of new photovoltaic converters of solar energy. Organic dyes possessing high extinction coefficient in wide spectral rang can serve as the centers of light absorption and photogeneration of electric charge carriers. In the excited state these ones are able either for reception or for return of electron interrupting with neighbouring donors or acceptors.

Photovoltaic characteristics of film heterostructures from poly-N-epoxypropylcarbazole (PEPC) layer of merocyanine dye (glass substrate/ITO/PEPC/dye layer/Al) are investigated in the present work. The dye layers were evaporated on the surface of PEPC films in vacuum chamber.

Photoconducting, photodielectric and photovoltaic properties has been investigated. As it follows from the results of carried out experiments, the film heterostructured possess characteristics of photodiode and photoelectric converter. It was concluded, that p-n-transition in the heterostructures is ensured by hole type of the polymer conductivity and bipolar conductivity of evaporated dye film.

The film heterostructures in spite of quite high valued of photoelectric-voltage as compare to known materials for photoelectric converters.