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## The charge carriers responsible for the photoelectric effect and photovoltaic effect in ZnS crystals of the cubic modification

**Magomadov Rukman Masudovich**

Chechen State University, Russia

Photovoltaic current in ZnS crystals observed in the absence of voltage in an electrical circuit and only in linearly – polarized light, and the direction and magnitude of the photovoltaic current depends on the orientation of the plane of polarization of the exciting light relative to the crystallographic axes of the crystal and the photocurrent is observed both in the linearly - polarized light and in unpolarized light, and only when a circuit voltage source. With decreasing temperature the magnitude of the photovoltaic current increases, and the magnitude of the photocurrent decreases. Study of Hall effect in ZnS crystals, showed that the photovoltaic current in the crystal is due to nonequilibrium determinovanii holes and their mobility does not depend on temperature, whereas the experimental mobility of equilibrium charge carriers responsible for the photocurrent depends on temperature. The different behavior

of the temperature dependencies of the mobility of nonequilibrium eternalizing and experimental equilibrium charge carriers in the ZnS crystals, could be explained by different mechanisms of excitation of these carriers. The energy of non-equilibrium holes eternalizing responsible for the photovoltaic current in the ZnS crystals of the cubic modification of the order of  $E = 4,5 \cdot 10^{19} \text{ Дж}$  and much more energy of the charge carriers responsible for the pictures in the ZnS crystals . It should be noted, the type of charge carriers which gives the contribution to the photocurrent in crystals of ZnS depends on the wavelength of incident light and temperature of the crystal, and the type of charge carriers responsible for the photovoltaic current depends on the wavelength and chip temperature.

Rukman20031@yandex.ru