



## Luminescence and electrophysical characteristics of ZnSe implanted with acceptor impurities

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### Abstract

The investigation of traps and recombination centres in structures based on ZnSe single crystals by means of the deep level transient spectroscopy, photoluminescence and electroluminescence methods are presented. The implantation of Ag<sup>+</sup>, Au<sup>+</sup> and N<sup>+</sup> ions was used for the creation of these centres. The activation energies equal to 0.26, 0.35 and 0.86eV were determined from the temperature dependencies of the carriers emission rate from DLTS spectra for majority carriers (electrons). The levels 0.42 and 0.26eV were observed only in the samples implanted with Ag and Au, respectively. In the case of minority carriers (holes), in all the diodes produced by Ag<sup>+</sup> ions implantation, the depth of the trap was 0.30eV. Traps with a depth of about 0.72eV were observed independently on various kind of impurities. In all the cases when these impurities are used together with nitrogen a hole trap with a depth of 0.47eV is observed. The concentrations and capture cross-sections of the centres were calculated photo- and electroluminescence spectra of the implanted samples and structures are presented.