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## Transient phenomena in Schottky Au / CdZnTe interface

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CdTe optoelectronic based devices has been extensively studied during last decade due to their multiple applications. The time change in the physical properties due to the charge dynamics in these devices is the main reason of the degradation of their performances.

In this contribution, we present a study of the current transients and polarization phenomena [1, 2] in n-type CdZnTe material with Au contacts that showed upwards bending of the bands near the metal-semiconductor (M-S) interface. The transient of the electric field along the sample due to the accumulation of positive space charge below the cathode at the M-S interface was studied by means of the Pockels effect. The analysis of the time and temperature variation of the electric field values at the M-S interface has provided the parameters of the deep donor responsible for the polarization mechanisms in the n-type CdZnTe. We explain the change of the current with time as a result of changing electric field at the interface. The field dependence of barrier height due to the formation of interfacial layer at the M-S interface is the mechanism responsible for the current transient with no more assumption. Model to explain the transient phenomena in the studied structure has been proposed based on our findings, Fig.1.

Fig. 1. Illustrates the energy bands bending of Au-CZT at 200V. De- trapping of electrons from deep donor level and transitions from the metal to CZT conduction band are shown based on values extracted from our experimental data.

[1] H Elhadidy, V Dedic, J Franc and R Grill, J. Phys. D: Appl. Phys. 47 (2014) 055104.

[2] V. Dēdič, M. Rejhon, J. Franc, A. Musiienko, and R. Grill, Appl. Phys. Lett. 111, 102104 (2017)

**Primary authors:** Dr ELHADIDY, Hassan (, Institute of Physics of Materials, Academy of Sciences of the Czech Republic); Prof. FRANC, Jan (Faculty of Mathematics and Physics, Institute of Physics, Charles University, )

**Presenter:** Dr ELHADIDY, Hassan (, Institute of Physics of Materials, Academy of Sciences of the Czech Republic)

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