

Abstract Submitted  
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**Transient lateral photovoltaic effect in patterned metal-oxide-semiconductor films.**<sup>1</sup> JUAN PEDRO CASCALES, ISIDORO MARTINEZ, DAVID DIAZ, Universidad Autonoma de Madrid, Spain, JOSE RODRIGO, Universidad Complutense de Madrid, ARKADI LEVANYUK, Universidad Autonoma de Madrid, Spain, CHRIS VAN HAESSENDONK, Katholieke Universiteit Leuven, Belgium, FARKHAD ALIEV, Universidad Autonoma de Madrid, Spain — Time dependent transient lateral photovoltaic effect (T-LPE) has been studied in lithographically patterned thin Co films grown over naturally passivated p-type Si (100) substrates. Investigation has been done at room temperature in 21 nm thick, 5 and 10 microns wide and 700 microns long Co films as a function of the position of the laser focused spot with respect to the contacts, pulse frequency (in kHz range) and up to few mW (at wavelength 405 nm or 487 nm) laser power with the spot diameter ranging between 1 and 10 microns. The observed abrupt (faster than in 5 microsecond) change in sign of the T-LPE after the laser is switched off was qualitatively explained by the model which considers redistribution of the life time of non-equilibrium carriers in the electric field due to charged local centres formed during the previous illumination. Exponential relaxation in the inverted T-LPE allows the characterization of the relaxation process as a function of the spot position with respect to the contacts. Numerical simulations satisfactory reproduce the observed unusual time dependence of the T-LPE.

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