Surface electrical conductivity variations induced by ultrashort laser pulses in wide bandgap semiconductors

Alessandro Bellucci[1], Patrizia Dolce[2], Enzo Lucia[2], Matteo Mastellone[2], Donato Mollica[2], Stefano Orlando[2*], Andrea Orsini[1], Maria Lucia Pace[2], Fabrizio Pallotta[1], Antonio Santagata[2], and Daniele Maria Trucchi[1]

[1] CNR-ISM, 00016 Montelibretti (Roma), Italy
[2] CNR-ISM, 85050 Tito Scalo (PZ), Italy
[*]Corresponding author email: stefano.orlando@cnr.it

Ultrashort laser pulses have been applied on wide bandgap semiconductors to evaluate and grasp the changes in the electrical surface conductivity when the laser treatments occurred in presence of different buffer gas and vacuum. The experiments were performed also at various substrate temperatures in order to evaluate the experienced differences among transient temperature gradients and diverse stationary temperatures. Conductivity measurements were provided for extracting important operating information on electric carrier dynamics on the time scales induced by ultrashort laser pulses.