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Charge transient spectroscopy measurements of GaAs metal–insulator–semiconductor structures

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Abstract

The Au/Pd/Ti–SiO_2–(n)GaAs structures with and without $(NH_4)_2S_x$ treated gallium arsenide surface, previously analysed by impedance spectroscopy (IS) method, have been investigated using charge transient spectroscopy (QTS) technique. The isothermal QTS spectra of MIS structures kept at room temperature under set of quiescent biases have been recorded in response to both negative and positive pulses of fixed small amplitudes. Two types of charge relaxation characterized by time constant values have been evidenced. The attempt to compare QTS results with ones obtained by impedance spectroscopy method has been presented.

Keywords: Gallium arsenide; Metal–insulator–semiconductor structure; Charge transient spectroscopy; Electrical properties and measurements

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