Role of Contacts in Metal/Semi-Insulating GaAs/Metal Structures: Symmetrical Geometry

František Dubecký[1, a)], Dobroslav Kindl[2], Pavel Hubík[2], Matej Mičušík[3], Pavol Boháček[1], Bohumír Zaťko[1], Enos Gombia[4], Jaroslav Kováč[5], and Vladimír Nečas[5]

[1] *Institute of Electrical Engineering, Slovak Academy of Sciences, Dúbravská cesta 9, 84104 Bratislava, Slovakia*
[2] *Institute of Physics, v.v.i., Academy of Sciences of the Czech Republic, Cukrovarnícka 10, 16200 Praha 6, Czech Republic*
[3] *Institute of Polymers, Slovak Academy of Sciences, Dúbravská cesta 9, 84541 Bratislava, Slovakia*
[4] *IMEM-CNR, Parco Area delle Scienze 37/A, 43010 Parma, Italy*
[5] *Slovak University of Technology, FEEIT STU, Ilkovičova 3, 81219 Bratislava, Slovakia*

[a)]Corresponding author: elekfdub@savba.sk

Abstract. Comparative study of AuGeNi, Pt, Nd and Gd contacts on semi-insulating (SI) GaAs with respect to the backside quasi-ohmic AuGeNi contact in symmetrical geometry is investigated. Fabricated diode structures are characterized by the current- and capacitance-voltage dependencies. Each of contacts gives an original set of characteristics and current lower that corresponding to the ohmic, bulk limited transport in the initial, low bias (<0.02 V) region. Observed increase of UV photosensitivity in the structure with Gd contact is explained by the formation of a heterojunction Au/Gd_2O_3/SI-GaAs.