

ANALYTICAL AND NUMERICAL CALCULATIONS OF PHOTOCONDUCTIVITY IN POROUS SILICON

L.S. Monastyrskii, B.S. Sokolovskii, M.R. Pavlyk

Ivan Franko National University of Lviv
(50 Dragomanov Str., Lviv 79005, Ukraine;
e-mail: *m.pavlyk@meta.ua*)

S u m m a r y

The results of analytical and numerical calculations of photoconductivity in porous silicon with spherical and cylindrical pores are reported. The dependence of photoconductivity on the surface recombination rate has been analyzed for various pore radii, r_0 , and various average distances between pores, $2R$. The photoconductivity of porous silicon increases with the distance between pores and decreases, as the pore radius or the surface recombination rate grows. In the case of small R/r_0 ratios, there is a significant discrepancy between the results of analytical calculations and those obtained numerically within the finite element method. The discrepancy was reduced to 1% by introducing a correction coefficient into the analytical expression.