

Engineering of Semiconductor Compounds via Electrochemical Technologies for Nano-Microelectronic Applications

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ABSTRACT

The paper is focused on electrochemical approaches for nanostructuring of semiconductor compounds with further applications in micro-nanoelectronic devices. A cost-effective technology for nanowires and nanotubes obtaining by pulsed electrochemical deposition is presented. Functionalization of elaborated nanostructures with gold or platinum via electroplating improve the properties of the nanostructures.

A varicap devise based on Pt/porous GaP with a capacitance density variation of about 6×10^{-3} pF/V for $1 \mu\text{m}^2$ of surface is presented. An optimization of the varicap design to increase the capacitance is proposed and discussed.

In this work we report on the fabrication on GaAs nanowires and elaboration of the electrical contacts via different approaches for photoelectrical investigations. Accordingly, to the obtained results it was established that contacts manufacturing with Laser Beam Lithography is feasible for photodetector fabrication at characterization.