

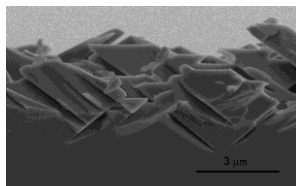
- **Nanocomposites and nanomaterials**

Surface-barrier heterostructures on the base of nanoporous GaAs

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In this work Schottky barrier structures based on nanoporous GaAs and evaporated semitransparent Au film have been made. Some electrical studies have already carried out [1] for structures of this type. We combined photoelectric and electrical studies namely the spectra of short-circuit photocurrent in the visible range and current-voltage characteristics to understand the recombination properties of Au/*por*-GaAs interface and current transport mechanism. To fabricate porous material we use electrochemical method [2] which give us the possibility to vary properties of porous layers in wide regions. Also we investigated the influence of additional surface treatments such as sulfidation and nanoinclusions of metal in the pores. It was shown for III-V semiconductors [3] that such nanocomposites are promising for photonics and sensorics. Prepared barrier structures are characterized by increased photocurrent due to microrelief interface and light trapping effect



as well as increased surface recombination which is most significant in the short wavelength region.

Figure 1: SEM image of cross-section of the typical porous GaAs layer.

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2. *Dmitruk N., Barlas T., Serdyuk V.* A³B⁵ Porous Semiconductors: Electrochemical Technology, Structure and Optical Properties // *Physics and Chemistry of Solid State*.-2010.-**11**.-P. 13-33.

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