

Nanostructured indium phosphide used in electrowetting system for biosensor applications

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Abstract

We demonstrated the fabrication of complex nanostructured InP membranes with porous compact packed structure that have been cut during electrochemical etching in the same anodic process. The membranes were filled with optically transparent compounds. We considered the covering of the nanoporous film and filling the pores with polymers imprinted with nano metallic particles in order to stabilize and adjust the sensor characteristics for specific biological samples. Also we designed and fabricated lab-on-a-chip devices based on Si which can be used for transporting bio-samples to the detector by means of electrowetting method. The experimental study and emulations based on Finite Element Model (FEM) show also that the obtained materials are promising for nonlinear optical applications, in particular for the development of electrowetting systems for MEMS, MOEMS, etc.

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