ADSORPTION SENSIYIVITY OF MICROPOROUS SILICON TO ORGANIC AND BIOMOLECULES WITH HIGH DIPOLE MOMENT.

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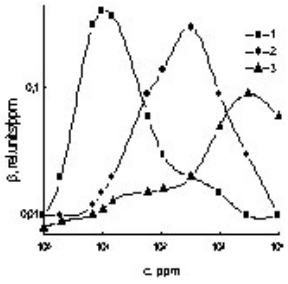
The samples of porous silicon were received by a method of an electrochemical etching. Follow-up this samples were processed by plasma chemical methods in fluorine and hydrogen [1]. At study of electronic properties of porous silicon (Por-Si) was is remarked that on contacts of a slotted type of some samples there is an electromotive force (EMF) U. Magnitude and sign U depend also on geometry of contacts and their disposition on a surface of a material.



Experimentally registered magnitude the EMF on contacts is equal to the total of interior microfields structure of a porous silicon. The magnitudes of interior electrical microfields and their signs depend on adsorption of polar molecules and illumination.

In a figure the data of gauging of adsorption sensitivity $\beta_U=U^{-1}dU/dc$ represented depending on concentration of polar gas ammonium. The maximum of dependence $\beta_U(c)$, measured in darkness, lies in the area of 10 ppm (curve 1). The illumination of a surface of a semiconductor under a light by intensity 65 lx moves a maximum of adsorption sensitivity in area 330 ppm (curve 2). The heightening of light intensity up to 95 lx results in shear of a maximum of sensitivity up to 2700 ppm (curve 3). Simultaneously to it there is a diminution of magnitude of adsorption sensitivity. The received experimental result has the important practical value- during functioning of a sensor it is possible to run by magnitude of a maximum of its adsorption sensitivity.

[1] Vashpanov Yu.A., Smyntyna V.A. Adsorption sensitivity of porous silicon //1-st the Ukrainian scientific conference on physics of semiconductors, Odessa, 2002, Plenary reports, vol. 1, p. 40-41.