**Deposition of Erbium Containing Film in Porous Silicon from Ethanol Solution of Erbium Salt**

**V. Petrovich 1**

**S. Volchek 2**

**L. Dolgyi 3**

**N. Kazuchits «Foreign» 4**

**V. Yakovtseva 5**

**V. Bondarenko 6**

**L. Tsybeskov «Foreign» 7**

**P. Fauchet «Foreign» 8**

1, 2, 3, 5, 6 Belarussian State University of Informatics and Radioelectronics

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**Abstract.** Electrochemical treatment of porous silicon (PS) in ethanol solution of Er(NO3)3 was investigated to obtain material suitable for optoelectronic application. The voltammograms of n+-type and p-type PS vs. an Ag/AgCl reference electrode were examined and compared with these of a Pt electrode. The basic cathode reactions were marked out the voltammograms: (i) the formation and the adsorption of atomic hydrogen; (ii) the formation of molecular hydrogen; (iii) the electrolysis of water and ethanol. No zones relating to on electrochemical transitions of Er ions were revealed on the voltammograms. Nevertheless, with the cathode polarization, the formation of an Er-containing deposit was observed at the surface of the cathode. The IR and SIMS analysis were used to study the composition of the deposits. The scheme of the electrochemical and chemical reactions at the cathode is discussed.

**Keywords:** porous silicon, erbium containing films, electrochemical cathode treatment.

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