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E.I. Zubko, graduate student
E.Ya. Shvets, acting rector, c.t.s., professor

THE ANALYSIS OF TECHNOLOGIES FOR MULTICOMPONENT ELECTRONIC INSTRUMENT COMPOSITIONS ON THE BASIS OF THE POROUS SILICON

The Zaporozhe state engineering academy, Ukraine

The modern condition of the information sources devoted to development of manufacturing techniques of multicomponent electronic instrument compositions on the basis of porous silicon, filled with polymers, metals, liquid, halogens, organic and segnetoelectric materials is described. The simplified technological scheme of formation of compositions is presented.

Keywords: composition, porous silicon, technology, adsorption, polymerization, self-organizing, derivational strategy, electric precipitation

The analysis of researches is executed in work [1]. It is connected with technology of formation for multicomponent electronic instrument compositions (MEIC) on the basis of porous silicon (por-*Si*). This message is continuation of a cycle of works on this theme.

Considerable interest of researchers is directed on working out of the compositions filled with organic materials. They allow receiving high-sensitivity gas analyzers, lithium-ionic batteries, and sensors of medical application. A new techniques of marking such structures is exists. There are adsorption, polymerization and electropolymerization. Scientists incorporated on technology of adsorption with infiltration polyaniline (PS), polytiofene (PT), poly(3-methylthiophene) (P3MT), polyfenil acetilene (PFA), polyfenilen vinilen (PFV), polymethyl methacrylate (PMMA), polyacrylonitrile (PAN), polyvinylidene fluoride (PVF), polyepoksipropil carbazol (PEPC), fluorene, ferocene [2-5].

The technology of polymerization is known thanks to penetration into the sample por-*Si* of the conjugated polymers. It is polyethylene (PE), polypropylene (PP), polystirene (PS), polyvinylchloride (PVC), polyamide (PA), polyprol (PPy) [6-9]. There are known also technologies adsorption from a gas phase [10], pyrolysis [11], derivational strategy [12].

Necessity of researches of the structures filled with metals is a priority direction of a photo- and nanoelectronics. There are created on technology of sedimentation from a gas phase (PVD) and electrolytic metal displacement during a time of the por-*Si* [13]. Group R. Herino filling of a pores with gold, nickel and copper by a method electrolytic displacement in 1998 [14] has been executed. Also publications on displacement of iron [15]; indium, aluminium [16]; copper [17,18]; gold, platinum and palladium [19] are known.

The mechanism of metal displacement forms Shottka barrier between silicon and electrolyte. It takes place when electrochemical function of metal works above, than silicon of *n*-type and has less in case of *p*-type. Entering of precious metals into the por-*Si* at electronic transfer through a valence zone above also takes place kernel

formation in the basis pore. For less precious metals sedimentation precipitation should be involved by photoexcitation [20-22]. At nickel displacement in the por-*Si* additional illumination of the sample for the further formation of metal micropipes of nickel is necessary [21].

Group M. Jeske makes connections *Si*/metal and *Si*/SiO_2/metal for creation two-layer and three-layer nanostructure with isolation of layers and without isolation [23]. In work [24] by repeated repetition of cycles of impregnation of a plate by the sated solution of ethanol and six-water chloride of cobalt with the subsequent drying, removal of chloride from a surface plate and its drying on air composite structures a magneto-sequenced material - semiconductor on the basis of porous silicon and cobalt which can be used for storage of the information of new generation have been received.

Structures segnetoelectric compositions are made by technology of mixes. They include seignettesol, nitrate of sodium and threeglichin sulphate [25]. In work [26] the technology of iodine adsorption in the por-*Si* is developed for reception halogen containing MEIC. There are the works devoted to composite systems a «porous matrix-liquid». Such systems contain the por-*Si* ethyl spirit or oil [27].

Conclusions. The techniques of marking compositions filled with polymers, metals, liquid, organic and segnetoelectric materials are considered. The main advantage of marking of such structures is simplicity of formation, and it is necessary to carry complexity of the control for reactions from presence of a considerable quantity of components in a composition.

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