АНОТАЦІЯ

Роботу викладено на 48 сторінках , вона містить 4 розділи, 14 ілюстрацій , 4 таблиці і 60 джерел в переліку посилань.

Об'єктом дослідження є пластини (*d=76.2 mm*)легованого бором (100) *p*-Si отримані методом Чохральського.

Предмет дослідження є зміни структурних , оптичних, електрофізичних властивостей (100) *p*-Si підданого дії ультразвукової кавітації в кріогенному середовищі.

Метою цієї роботи було показати, на прикладі базового матеріалу мікро- та наноелектроніки Si, що обробка напівпровідникового кристалу ультразвуком (кавітаційна обробка в УЗ реакторі) має потужний технологічний потенціал.

Отримана композитна структура $Si/SiO_2/(CaO\text{-}SiO_2)$, яка демонструє властивість біосумісності, що підтверджено утворенням гідроксиапатиту на поверхні Si після зберігання в розчині, що імітує плазму крові людини.

У першому інформаційно- аналітичному розділі роботи визначено коло питань які дозволяють розробити сучасний спосіб синтез силікатів кальцію на поверхні кремнієвої підкладки для біосумісного матеріалу

У другому розділі роботи наведено сучасний стан розвитку біотехнології та ролі сонохімічного синтезу в отриманні композитних та гібридних матеріалів

У третьому розділі наведено основні методики роботи . Коротко надано інформацію про зразки

У четвертому розділ вивчається композитна структура $Si/SiO_2/(CaO\text{-}SiO_2)$на поверхні кремнію яка була синтезована методом сонохімічного синтезу та подальшим утворенням апатиту при вимочуванні зразка в SBF

ABSTRACT

The work is presented on 48 pages, it contains 4 sections, 14 illustrations, 4 tables and 60 sources in the list of references.

The object of the study is plates (d = 76.2 mm) doped with boron (100) p-Si obtained by the Czochralski method.

The subject of the study is the change in the structural, optical, and electrophysical properties (100) of p-Si subjected to the action of ultrasonic cavitation in the cryogenic area

The purpose of this work was to show, on the example of the base material of micro and nanoelectronics Si, that the processing of a semiconductor crystal by ultrasound (cavitation processing in the ultrasonic reactor) has a powerful technological potential.

The Si / SiO2 / (CaO-SiO2) composite structure was obtained, which demonstrates the property of biocompatibility, which is confirmed by the formation of hydroxyapatite on the Si surface after storage in SBF.

The first information-analytical section of the work defined a range of questions that allow us to develop a modern way of synthesizing calcium silicates on the surface of a silicon substrate for biocompatible material.

The second section of the paper presents the current state of biotechnology development and the role of synchamic synthesis in obtaining composite and hybrid materials.

The third section gives you the basic methods of work. Brief information about samples.

In the fourth section, the Si / SiO2 / (CaO-SiO2) composite structure on the silicon surface is studied, which was synthesized by the synchimic synthesis method and the subsequent formation of apatite during sample softening in SBF.

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