

Abstract

in this study laser with 532 nm wavelength is used to illuminate silicon wafers dip in HF solution, These wafers are etched at different illumination times (5 -25) min.

PSi/c-Si structure is obtain to formed heterojunction. Study its electrical characteristics such as current density – voltage (J-V) and capacitance voltage (C-V), then calculate and find the ideality factor which ranged between (6.5-7.03), and built in potential. Key word; photo-electrochemical etching; porous silicon; morphological properties; electrical properties Introduction Over many years PSi attracted attention of researchers to investigate its different properties, due to its use in many industrial and science areas specially its photoluminescence (PL) property at room temperature and developing PS based devices [1,2], such as optical devices [3], sensors [4] and optoelectronic light-emitting devices [5]. Structurally, PS is very complicated. Some published papers indicate that PS layers consist of Si columns and pores or isolated nanocrystallites [6]. On the other hand, PS may be considered as a system of interconnected quantum wells, the so-called quantum sponge [7]. Due to this interesting structure of PSi and in order to integrate PS into electronic circuits or to develop PS based devices, the electrical properties of this material must 402