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Influence of current density on porous silicon characteristics

Abstract

Porous silicon structures have been fabricated by electrochemical etching using different current density. From field emission scanning electron microscope images (FE-SEM) it was observed that more uniform distribution of pores is obtained when the current density was increased from 20mA/cm2 to30 mA/cm2. The porosity is estimated based on the analysis of FE-SEM and gravimetric analysis, the results were confirmed by reflectivity measurements which show that the high current density and porous samples have low reflection for wide spectrum. Results show good improvement in the solar cell efficiency.

Keywords

Electrochemical etching; FE-SEM; Photoluminescence; Porous silicon; Surface roughness