

PHOTOACOUSTIC TECHNIQUE FOR MEASURING BAND-GAP ENERGY OF POROUS SILICON LAYER ON n-Si SUBSTRATE.

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ABSTRACT

The porous silicon layer was prepared on n-type Si wafers using electrochemical-etching method. The current density was varied from 16 mA/cm² to 40 mA/cm². The surface morphology measured using SEM confirms the formation of porous layer on the silicon substrate. The photoacoustic (PA) absorption band and optical band gap energy were determined from PA signal intensity spectra measured at three different modulation frequencies (i.e. 15 Hz, 23 Hz and 33 Hz). The absorption band and energy gap of porous silicon gradually shifted towards higher energy region as the increase of current density thus confirming the porosity dependence of band gap on sample porosity.

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