

金屬輔助蝕刻製作矽奈米結構之研究
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摘要

Porous silicon has great potential to be applied to optoelectronic and sensing field due to its special optical and electrical properties. This study aims to enhance light trapping efficiency for silicon solar cell through nanostructure surface engineering on silicon. The metal assisted chemical etching technique was utilized to produce porous nanostructure on silicon. The results show that the morphologies of porous nanostructure strongly depend on particle size of Au and etching duration, which leads to different light trapping or reflection behaviour. The measured reflectivity of nanostructured silicon below 1 can be achieved when the average inter-spacing of silicon nanorods or nanowires approaches the wavelength of incident light.

關鍵字：porous silicon、reflectivity、metal-assisted、chemical etching