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Tri-crystalline 실리콘 태양전지의 고효율화 기법에 관한 연구

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This paper presents a proper condition to achieve high conversion efficiency using PC1D simulator on tri-crystalline Si solar cells. Various efficiency influencing parameters such as rear surface recombination velocity and minority carrier diffusion length in the base region, front surface recombination velocity, junction depth and doping concentration in the Emitter layer, BSF thickness and doping concentration were investigated. Optimized cell parameters were given as rear surface recombination of 1000 cm/s, minority carrier diffusion length in the base region 200 μm , front surface recombination velocity 100 cm/s, sheet resistivity of emitter layer 100 Ω/\square , BSF thickness 5 μm , doping concentration $5 \times 10^{19} \text{ cm}^{-3}$. Among the investigated variables, we learn that a diffusion length of base layer acts as a key factor to achieve conversion efficiency higher than 19 %.

[참고 문헌]

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