

Neutral Beam assisted Chemical Vapor Deposition at Low Temperature for n-type Doped nano-crystalline silicon Thin Film

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A novel deposition process for n-type nanocrystalline silicon (n-type nc-Si) thin films at room temperature has been developed by adopting the neutral beam assisted chemical vapor deposition (NBa-CVD). During formation of n-type nc-Si thin film by the NBa-CVD process with silicon reflector electrode at room temperature, the energetic particles could induce enhance doping efficiency and crystalline phase in polymorphous-Si thin films without additional heating on substrate; The dark conductivity and substrate temperature of P-doped polymorphous~nano crystalline silicon thin films increased with increasing the reflector bias. The NB energy heating substrate (but lower than 80°C) and increase doping efficiency. This low temperature processed doped nano-crystalline can address key problem in applications from flexible display backplane thin film transistor to flexible solar cell.

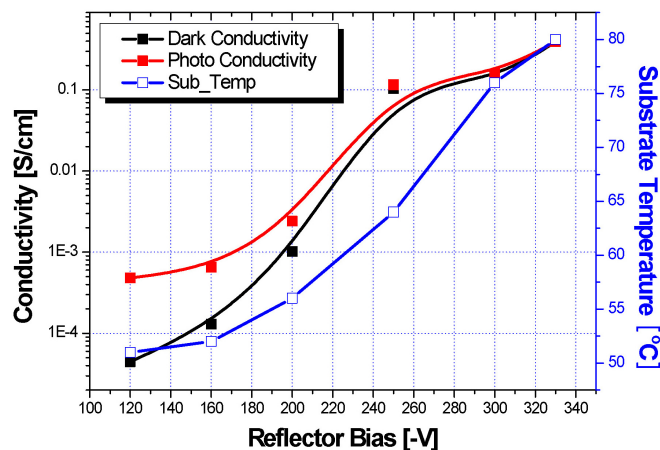


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