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Photovoltaic characteristics of Si quantum dots solar cells

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The effect of Si quantum dots for solar cell appications was investigated. The 5 ~ 10 nm Si nanoparticle was fabricated on p-type single and poly crystalline wafer by magnetron sputtering and laser irradiation process. Scanning electron microscopy (SEM), atomic force measurement (AFM) and transmission electron microscopy (TEM) images showed that the Si QDs array were clearly embedded in insulating layer (SiO_2). Photoluminesence (PL) measurements reliably exhibited bandgap transitions with every size of Si QDs. The photo-current measurements were showed different result with size of QD and number of superlattice.

Keywords: Solar Cell, Photovoltaic, Quantum Dot