

Characteristics of Perovskite solar cells with different synthesis time of photoactive layer

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The Perovskite solar cell was fabricated by controlling the synthesis time of the photoactive layer at intervals of 15 seconds for 15 to 90 seconds. The structure of the device is FTO / TiO₂(electron transfer layer) / Perovskite (CH₃NH₃PbI₃, photoactive layer) / P3HT(hole transfer layer) / Ag(electrode). The morphology of the photoactive layer was confirmed by SEM, and it was confirmed that lots of rod structures were formed as the synthesis time increased. The crystal structure of the photoactive layer was cubic structure measured by XRD. The electrical characteristics of the Perovskite solar cell were measured with a solar simulator. As the photoactive layer synthesis time increases, the photoelectric conversion efficiency continues to increase, until 45 seconds. After 45 seconds, a constant efficiency of 10.9% was obtained.