

SINTESIS IN SITU TiO₂/CH₃NH₃PbI₃ DENGAN FILD (FUNCTIONALIZED IONIC LIQUID-DOPANT) UNTUK APLIKASI SEL SURYA PEROVSKITE

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ABSTRACT

Organometallic halide based perovskite solar cells have played significant role in the development of photovoltaic technology. The synthesis of the perovskite usually should be done under specific atmosphere, especially controlled humidity. Here, we demonstrate the synthesis of compact methylammonium lead iodide perovskite (MAPbI₃) on TiO₂ under ambient condition through one- and two-step spin coating deposition methods, which both resulted in some PbI₂ left on the films. The two-step method resulted in a higher amount of unformed PbI₂ regarding to reaction of methyl ammonium iodide (MAI) with outer layer of the first bonded PbI₂ hindered the inner layer to interact with MAI. The Ostwald ripening process that applied to the thin film resulted from one-step deposition has successfully convert the unformed PbI₂ to MAPbI₃ with a more uniform, lower void, and higher crystal size as confirmed by XRD and SEM analysis results. The uncontrolled humidity highly influences the quality of perovskite layer on TiO₂ regarding to lower crystallinity and the existence of pinhole.

Kata Kunci: *sel surya perovskite, FILD, fotovoltaiik, CH₃NH₃PbI₃*