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SYNTHESIS AND CHARACTERIZATION OF METHYL AMMONIUM LEAD IODIDE BROMIDE PEROVSKITES

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Now, the research field of perovskite based solar cells has recently been developed as the most promising candidate for next-generation because of their high efficiency solar cell technology that is compatible with low-cost, low-temperature processing, long-term stability and simple structure of solar cells production such as the hybrid halide perovskite CH3NH3PbI3 in solar cells have high power conversion efficiency exceeding 22%. But, the unstable nature of perovskite was observed when exposing it to continuous moisture, illumination and high temperature obstructing the commercial development in the long run and thus becoming the main problem that needs to be solved immediately. In this work, the preparation of organic –inorganic halide perovskite by mixing halide group between iodide with bromide in this compound, CH3NH3PbIxBr3-x compound under the annealing temperature condition was investigated. The structure of the product was identified by X-ray diffraction (XRD) and Wide Angle X-ray Scattering (WAXS). In addition, High Resolution TEM was used to study the presence morphology of crystalline domains within the sample. We examine the thermal properties of samples using Thermogravimetric analysis (TGA) and Simultaneous Thermal Analyzer (STA). To check the variation of optical properties in these compound, we measured the UV- visible absorption spectroscopy and X-ray Photoelectron Spectroscopy (XPS) shown the survival of organic group. It is concluded that the annealing affects phase formation and thermal stability of CH3NH3PbIxBr3-x. A small powder amount of lead bromide (PbBr2), a product of the degradation, was observed with increasing annealing temperature. Accordingly, appropriate annealing temperature should be chosen to produce a high efficiency photovolt

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