SF-P001

Crystallographic study of in-plane aligned hybrid perovskite thin film

이린, 김세준, 성명모

한양대학교 화학과

Lead halide perovskites CH3NH3PbX3 (X=Cl, Br, I) have received great interest in the past few years because of their excellent photoelectronic properties as well as their low-cost solution process. Their theoretical efficiency limit of the solar cell devices was predicted around 31% by a detailed balance model for the reason that exceptional light-harvesting and superior carrier transport properties. Additionally, these excellent properties contribute to the applications of optoelectronic devices such as LASERs, LEDs, and photodetectors. Since these devices are mainly using perovskite thin film, one of the most important factor to decide the efficiency of these applications is the quality of the film. Even though, optoelectrical devices are composed of polycrystalline thin film in general, not a single crystalline form which has longer carrier diffusion length and lower trap density. For these reasons, monodomain perovskite thin films have potential to elicit an optimized device efficiency.

In this study, we analyzed the crystallography of the in-plane aligned perovskite thin film by X-ray diffraction (XRD) and selected area electron diffraction (SAED). Also the basic optic properties of perovskites were checked using scanning electron microscopy (SEM) and UV-Vis spectrum. From this work, the perovskite which is aligned in all directions both of out-of-plane and in-plane was fabricated and analyzed.

Keywords: Perovskite, single crystal, crystallography, thin film

SF-P002

탄소를 도입한 산화타이타늄의 합성과 촉매 활성 연구

김영용, 권기영

경상대학교

타이타늄과 탄소의 비율이 서로 다른 조건에서, 탄소가 도입된 산화타이타늄 (TiO2)을 수열합성법을 이용하여 합성하였다. TEM 이미지를 통하여 일정한 형태의 산화타이타늄이 합성된 것과, XRD 패턴 분석을 통하여 Anatase 형태임을 확인하였다. 본 연구에서는 탄소가 도입된 산화타이타늄을 이종상촉매로 사용하여 일차 및 이차 알코올 산화반응과 메틸렌 블루 분해 실험에 응용하였다.

Keywords: 산화타이타늄(TiO_2), 탄소, 수열합성법, 이종상 촉매