

The Sb₂S₃ Single Source Precursor Spin & Heat treatment method이민호, 허진혁, 임상혁^{1,†}경희대학교 결정기능화공정센터; ¹경희대학교(imromy@khu.ac.kr[†])

Sb₂S₃ is appealing as an efficient light absorber among metal chalcogenides. Because it has suitable properties for adapting solar cells like band gap (1.7eV), strong absorption coefficient (1.8×10^5 in visible region) and large dipole moment which enable separate charge easily. The deposition methods of Sb₂S₃ light absorber are spin coating deposition, successive ionic layer adsorption and reaction (SILAR), and chemical bath deposition (CBD). Although the SILAR and CBD in aqueous phase can form conformal thin film, it is difficult to avoid the antimony oxide which acts as a trap site, so that the Sb₂S₃ light absorber reveals deep traps within bandgap. Therefore, additional healing process is required to eliminate/reduce the trap sites. So we synthesized Sb(TA)2Cl3 single source precursor which can convert Sb₂O₃ into the pure Sb₂S₃ by heat treatment. And we fabricated Sb₂S₃ sensitized solar cells by spin & heat treatment using Sb(TA)2Cl3 single source precursor after CBD method. By adopting this method, we can heal Sb₂O₃ trap site and roughness surface which translate charge more efficiently. From this view, spin coating and atomic layer deposition by Sb(TA)2Cl3 can be a great method for deposit pure, lough Sb₂S₃ film.