Influence of Two-source Aqueous Solution on $CuInS_2$ Thin Films Prepared by Aerosol Jet Deposition

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Fabrication of thin film $CuInS_2$ (CIS) solar cells has drawn considerable attention in recent years. CIS is one of I-III-VI_2 type semiconductors, which crystallizes in the chalcopyrite structure. Its direct band gap of 1.5 eV with high absorption coefficient and environmental viewpoint that $CuInS_2$ does not contain any toxic constituents make it suitable for terrestrial photovoltaic applications.

Various techniques have been used for deposition of CIS films, such as single/double source evaporation, rf sputtering, electrochemical deposition, chemical vapor deposition and chemical spray pyrolysis. In this study, we introduce Aerosol Jet Deposition (AJD) method for preparation of CIS thin film. AJD technique is a novel and attractive method because the thin films with high deposition rate can be grown at very low cost.

In this research, optical and electrical properties of $CuInS_2$ thin films deposited by AJD method in terms of influence on one source and two-source aqueous solution will be studied.