PREPARATION OF CHALCOGENIDE FILMS BY THIN LAYER THERMOCHEMICAL CONVERSION (TLTC) PROCESS FROM NONAQUEOUS SOLUTION

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Films of metal chalcogenides are useful as absorbers and windows in thin film photovoltaics (PV). These films can be deposited by chemical solution deposition (CSD) processes, such as, chemical bath deposition (CBD), successive ion layer adsorption and reaction (SILAR) and ion layer gas reaction (ILGAR). There is another, little known, CSD process called Thin Layer Thermochemical Conversion (TLTC) which has the potentiality of becoming an industrial one with superior features. The TLTC process consists of dip-coating a substrate with a layer of metal ion – thiourea complex from methanolic solution and thermally decomposing it to form sulphide. Films of PbS, Sb_2S_3 and $Bi_{2-x}Sb_xS_3$ has been deposited using the TLTC process. This paper describes in detail the TCTL method and discusses its advantages and potential applications. The main advantages of this method are capability of preparing solid solutions and low material loss. Potential applications in preparation of newer and nanostructured materials are also discussed.