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
Chemically Synthesised $Cd_{(1-x)}Zn_x$ Se thin films: Spectro-structural and microscopic studies

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Abstract: This paper presents information pertaining to the chemo-mechanical synthesis of (Cd,Zn) Se thin films with a variable composition which has been brought about with the objective to study deposition history and growth kinetics, as well as structural changes and the optical properties. The effect of various process parameters, such as deposition time and temperature, concentration of species, speed of the substrate rotation, pH etc., on the growth and quality of the films is studied experimentally. At first sight, mechanistic interpretation of the reaction mechanism is given based on the influence of the process parameters on the film growth and the compositional, structural, microscopic and optical characteristics of $Cd_{1-x}Zn_x$ Se thin films. The films are crystalline over the whole range studied with a predominant wurtzite structure for $0 \leq x < 0.2$ and a zinc blende structure (solid solution) for $0.7 < x \leq 1$. The film compositions in the middle of the range ($0.2 \leq x < 0.7$) include both the cubic and the hexagonal structures. The crystal size determined from XRD and SEM micrographs, is observed to decrease with increasing x (up to $x=0.5$). The optical gap determination showed a non linear increase in the band gap with increasing Zn content in the film.

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