

New low-melting cadmium precursors for the detailed study of texture effects in MOCVD derived CdO thin-films.

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Abstract

A new series of low-melting, highly volatile, thermally and air-stable cadmium MOCVD precursors have been synthesized and characterized. $\text{Cd}(\text{hfa})_2(\text{N,N-DE-N',N'-DMEDA})$ has been successfully utilized in the growth of highly conductive and transparent CdO thin films. Hall measurements conducted on films deposited simultaneously on MgO (100) single crystal and Corning 1737F glass substrates reveal that the films on MgO have significantly enhanced carrier mobilities. Owing to similar grain sizes and carrier concns. we attribute this effect to improved texture and assocd. improvements cryst. order. Conductivities as high as 8,590 S/cm are obtained which is to our knowledge the highest value reported to date for CdO films without aliovalent dopants.