In the present investigation, low resistive transparent nanocrystalline cadmium oxide thin films were deposited by chemical spray pyrolysis technique. The effect of deposition temperature on structural, electrical and optical properties is studied. The X-ray diffraction patterns revealed that, the CdO films are nanocrystalline in nature having cubic structure and highly oriented along (111) plane. Scanning electron micrograph images of films showed smooth and dense spherical grains of CdO deposited onto entire glass substrate. The XRD and SEM results showed that the film grown on 350°C exhibits better crystallinity with well-defined grains. The optical band gap energy of CdO varied between 2.46 to 2.71 eV depending on deposition temperature. The resistivity measurement showed that films are semiconducting in nature with very low resistivity of the order of $10^{-4}$ to $10^{-5}$ ohm-cm. The estimated activation energy was in the range of 0.07 to 0.03 eV.

**Keywords:** Cadmium oxide, Chemical spray, Nanocrystalline

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