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The Effect of the Annealing in Nitrogen Atmosphere on the Photoconductivity of Chemically Deposited Cadmium Selenide Thin Films for Solar Energy Conversion.

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The II-VI compounds (CdSe, CdS, etc.) have been attracted a major attention because of their photovoltaic, photoelectrochemical, and electroluminescent applications which are important for solar energy conversion. The photoconductivity of the chemically deposited and annealed CdSe (n-type) thin films in nitrogen atmosphere at different temperatures was measured. The as-grown film where the bimolecular recombination is dominant shows a linear relation between photoconductivity and applied voltage as well as the films annealed at 100 °C, 400 °C, and 500 °C assuming that neither the life time nor the mobility is voltage dependent [1]. In contrast, interestingly the films annealed at 200 °C and 300 °C show an exponential relation. In order to understand why the photoconductivity of the films changes drastically, possible explanations depending on the structural and morphological properties will be discussed.

[1] D. P. Amalnerkar, J. Materials Chemistry and Physics, 60, (1999), 1-21.

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