

**Abstract Number:** S7.9**Day / Time:** Thursday, Apr. 16, 8:00 PM - 11:00 PM

## Photoluminescence and Thermoluminescence of n - type CdS Thin Films for Solar Energy Conversion.

S.Erat<sup>1,2</sup>; H.Metin<sup>3</sup>; A.Braun<sup>1</sup>; M.Emen<sup>4</sup>; N.Kulcu<sup>4</sup>; T.Graule<sup>1,5</sup>. 1. Empa, - Swiss Federal Laboratories for Materials Testing & Research, Dübendorf, Switzerland; 2. Department for Nonmetallic Inorganic Materials, ETH Zurich, Zurich, Switzerland; 3. Department of Physics, University of Mersin, Mersin, Turkey; 4. Department of Chemistry, University of Mersin, Mersin, Turkey; 5. Technische Universität Freiberg, Freiberg, Germany.

For increased efficiency of solar cells, absorption needs to be maximized while the reflection and recombination needs to be decreased. The optical properties of thin CdS films, which are a prospective n-type window material for solar cells, are investigated with respect to film thickness and annealing temperatures. The optical band gap decreases with increasing annealing temperature, irrespective the thickness of the films. The photoluminescence of 0.3  $\mu\text{m}$  and 0.4  $\mu\text{m}$  thick CdS film were measured using Argon laser ( $\lambda = 457.9 \text{ nm}$ , and under 25  $\text{mW/cm}^2$  applying power). It is observed that there is a 0.1 eV shift with decreasing the thickness. We will also present some thermoluminescence results of CdS films and compare them with the changes in the structural properties depending on the temperature.

**Citation:** S.Erat, H.Metin, A.Braun, M.Emen, N.Kulcu, T.Graule. Photoluminescence and Thermoluminescence of n - type CdS Thin Films for Solar Energy Conversion.. Abstract No. S7.9. 2009 *Abstract Viewer*. San Francisco, CA: Materials Research Society

**Application Design and Programming Copyright ScholarOne, Inc. All Rights Reserved. Patent Pending.**