

# Web of Science

[Full Text from Publisher](#) | 
 [Look Up Full Text](#) | 
 | 
 Save to EndNote online | 
 [Add to Marked List](#)

473 of 491

## Controlling the structural and optical properties of nanostructured ZnO thin films by cadmium content

By: El Sayed, AM (El Sayed, A. M.)<sup>[1,2]</sup>; Taha, S (Taha, S.)<sup>[1]</sup>; Said, G (Said, G.)<sup>[1]</sup>; Yakuphanoglu, F (Yakuphanoglu, F.)<sup>[3,4]</sup>  
[View ResearcherID and ORCID](#)

### SUPERLATTICES AND MICROSTRUCTURES

Volume: 65 Pages: 35-47  
 DOI: 10.1016/j.spmi.2013.10.041  
 Published: JAN 2014  
[View Journal Impact](#)

### Abstract

Thin films of Cd(ZnO) (with Cd content ranged from 0.0 and 10.63 wt.%) were grown onto glass substrate using sol-gel spin coating technique. The XRD patterns of the films indicate the formation of ZnO as a single phase with a hexagonal wurtzite structure. The crystallinity is gradually deteriorated with increasing the Cd content. AFM images of the films show that the surface of the undoped ZnO film is consisted of nanorods turned into nanoclusters after Cd incorporation leading to an increasing in the surface roughness. The optical band gap is red-shifted from 3.3 eV to 3.18 eV. This is attributed to that the ionic nature of ZnO is larger than that of CdO and to the formation of Cd 5s state below the CB edge. The Urbach energy values changed inversely with optical band gaps of the films. The optical constants of the films are changed with the Cd content. The correlation between the structural modifications and the resultant optical properties are reported. Results of the present system are compared with those of similar materials. (C) 2013 Elsevier Ltd. All rights reserved.

### Keywords

**Author Keywords:** Spin coating; ZnO; thin films; nanoclusters; Roughness; Refractive index; Optical conductivity  
**KeyWords Plus:** DOPED ZNO; SUBSTRATE-TEMPERATURE; ELECTRICAL-PROPERTIES; ZINC-OXIDE; CD; ABSORPTION; CONSTANTS; THICKNESS; SYSTEMS; GROWTH

### Author Information

**Reprint Address:** El Sayed, AM (reprint author)  
 Fayoum Univ, Fac Sci, Dept Phys, Al Fayyum 63514, Egypt.  
**Addresses:**  
 [ 1 ] Fayoum Univ, Fac Sci, Dept Phys, Al Fayyum 63514, Egypt  
 [ 2 ] Northern Border Univ, Fac Sci, Dept Phys, Arar, Egypt  
 [ 3 ] Firat Univ, Fac Sci, Dept Phys, TR-23169 Elazig, Turkey  
 [ 4 ] King Abdulaziz Univ, Fac Sci, Dept Phys, Jeddah, Saudi Arabia  
**E-mail Addresses:** [ad\\_286@yahoo.com](mailto:ad_286@yahoo.com)

### Publisher

ACADEMIC PRESS LTD- ELSEVIER SCIENCE LTD, 24-28 OVAL RD, LONDON NW1 7DX, ENGLAND

### Categories / Classification

**Research Areas:** Physics  
**Web of Science Categories:** Physics, Condensed Matter

### Document Information

## Citation Network

11 Times Cited  
 56 Cited References  
[View Related Records](#)  
[Create Citation Alert](#)  
*(data from Web of Science Core Collection)*

**All Times Cited Counts**  
 11 in All Databases  
 11 in Web of Science Core Collection  
 1 in BIOSIS Citation Index  
 0 in Chinese Science Citation Database  
 0 in Data Citation Index  
 0 in Russian Science Citation Index  
 0 in SciELO Citation Index

**Usage Count**  
 Last 180 Days: 0  
 Since 2013: 17  
[Learn more](#)

**Most Recent Citation**  
 Huang, Bo. Crystallization kinetics evaluated by the modified formula and optical properties of CdO and ZnO in 0.5ZnO-0.5CdO thin films . JOURNAL OF ALLOYS AND COMPOUNDS, APR 25 2017.  
[View All](#)

**This record is from:**  
**Web of Science Core Collection**  
 - Science Citation Index Expanded

**Suggest a correction**  
 If you would like to improve the quality of the data in this record, please [suggest a correction](#).

**Document Type:** Article

**Language:** English

**Accession Number:** WOS:000330820100005

**ISSN:** 0749-6036

**Journal Information**

**Table of Contents:** [Current Contents Connect](#)

**Impact Factor:** [Journal Citation Reports](#)

**Other Information**

**IDS Number:** AA0XG

**Cited References in Web of Science Core Collection:** **56**

**Times Cited in Web of Science Core Collection:** **11**

