

Web of Science

Search

Search Results

My Tools

Search History

Marked List



Save to EndNote online

Add to Marked List

49 of 179

The Effect of Power Density on Diffusion Length and Energy Gap of a-Si:H and nc-Si:H Thin Films Prepared by PECVD Technique

By: [Badran, RI](#) (Badran, R. I.)^[1]; [Al-Amodi, H](#) (Al-Amodi, H.)^[2]; [Yaghmour, S](#) (Yaghmour, S.)^[2]; [Shaklan, SH](#) (Shaklan, S. H.)^[2]; [Bruggemann, R](#) (Bruggemann, R.)^[3]; [Han, X](#) (Han, X.)^[4]; [Xiong, S](#) (Xiong, S.)^[4]

[View ResearcherID and ORCID](#)

ACTA PHYSICA POLONICA A

Volume: 122 Issue: 3 Pages: 576-580

Published: SEP 2012

[View Journal Impact](#)

Conference

Conference: 12th International Symposium on Physics of Materials (ISPMA)

Location: Charles Univ, Fac Math & Phys, Prague, CZECH REPUBLIC

Date: SEP 04-08, 2011

Sponsor(s): Charles Univ, Dept Metal Phys

Abstract

The increase in power density of 0.3, 0.5, 0.6, and 0.7 W cm⁻² for hydrogenated amorphous and nanocrystalline silicon (a-Si:H and nc-Si:H) thin film samples prepared by plasma enhanced chemical vapor deposition technique causes an increase in crystalline volume fraction when the silane concentration is fixed. This increase in crystalline volume fraction is correlated to the absorption coefficient and refractive index which are determined from ellipsometric measurements. The crystallinity of samples is studied by both Raman and X-ray diffraction techniques. A mild change in the optical energy gap around an average value of 1.8 eV is noticed due to the observed change in the degree of crystallinity of the samples when power density increases. Moreover, the ambipolar diffusion length measured by the steady-state photocarrier grating technique is found to change with the increase in power density. The values of some obtained optical parameters are compared to a standard crystalline sample.

Keywords

KeyWords Plus: MICROCRYSTALLINE SILICON; OPTICAL-PROPERTIES; AMORPHOUS-SILICON; SURFACE-ROUGHNESS; PHOTOLUMINESCENCE; DEPOSITION

Author Information

Reprint Address: Badran, RI (reprint author)

+ Hashemite Univ, Dept Phys, POB 150459, Zarqa, Jordan.

Addresses:

+ [1] Hashemite Univ, Dept Phys, Zarqa, Jordan

+ [2] King Abdulaziz Univ, Dept Phys, Jeddah 21413, Saudi Arabia

+ [3] Carl von Ossietzky Univ Oldenburg, Inst Phys, D-26111 Oldenburg, Germany

+ [4] Nankai Univ, Inst Optoelect, Tianjin 300071, Peoples R China

E-mail Addresses: rbadran@hu.edu.jo

Publisher

POLISH ACAD SCIENCES INST PHYSICS, AL LOTNIKOW 32-46, PL-02-668 WARSAW, POLAND

Categories / Classification

Research Areas: Physics

Citation Network

0 Times Cited

21 Cited References

[View Related Records](#)

[Create Citation Alert](#)

(data from Web of Science Core Collection)

All Times Cited Counts

0 in All Databases

0 in Web of Science Core Collection

0 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: 4

[Learn more](#)

This record is from:

Web of Science Core Collection
- Science Citation Index Expanded
- Conference Proceedings Citation Index- Science

Suggest a correction

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

Web of Science Categories: Physics, Multidisciplinary

Document Information

Document Type: Article; Proceedings Paper

Language: English

Accession Number: WOS:000309019200039

ISSN: 0587-4246

Journal Information

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

Impact Factor: [Journal Citation Reports](#)

Other Information

IDS Number: 009IJ

Cited References in Web of Science Core Collection: **21**

Times Cited in Web of Science Core Collection: **0**