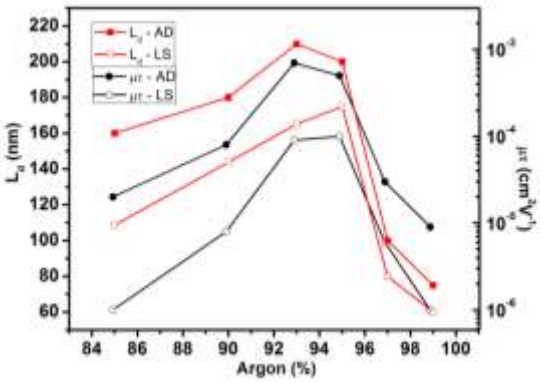

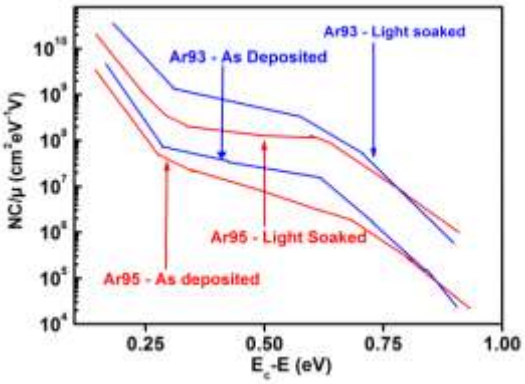

Fig. 1: Evolution of L_d and μτ product with flow variation Fig. 2: DOS data of Ar93 and Ar95 in AD and LS state

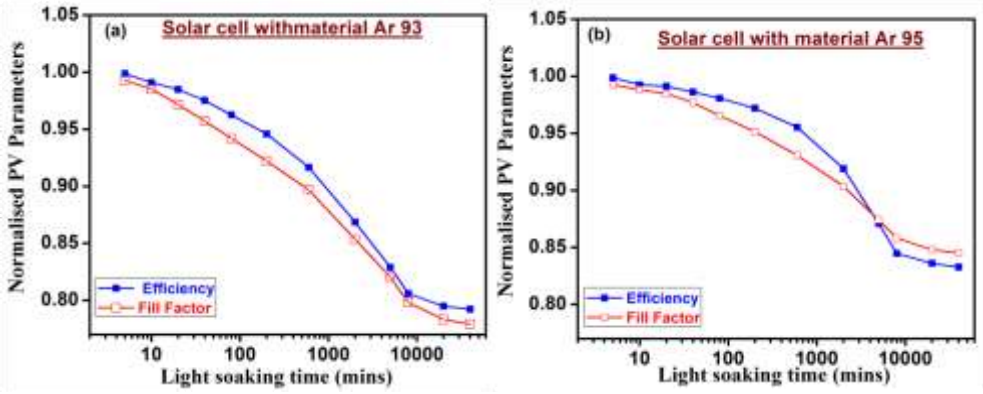

Fig. 3: Evolution of conversion efficiency and fill factor with time for the solar cells fabricated with (a) Ar93 and (b) Ar95

References:

1. C. Knights, R.A. Lujan, M.P. Rosenblum, R.A. Street, D.K. Beiglese., Appl Phys Lett. **38** (1981) 131.
2. C. Longeaud and J. P. Kleider, Phys. Rev. B **45** (1992) 11672.

152

The performance optimization of thin-film solar converters based on *n*-ZnMgO / *p*-CuO heterojunctions

O.V. Diachenko[1], A.S. Opanasyuk[1], D.I. Kurbatov[1], Patel P.B.[2], Panchal C. J.[3], Priya Suryavanshi[3], Kheraj V.A.[4]

[1]Dept. of Electronics and Computer Technology, Sumy State University, Sumy, Ukraine
Email: alexey.dyachenko@ukr.net, opanasyuk_sumdu@ukr.net
[2]Department of Electronics, Sardar Patel University, Vallabh Vidyanagar-388120, Gujarat, India
[3]Applied Physics Department, The M.S. University of Baroda, Vadodara-390001, India
Email: cjpanchal_msu@yahoo.com
[4]Department of Applied Physics, S. V. National Institute of Technology, Surat 395007, India

In this paper, we present the results of the calculations of optical losses in the solar cells layers based on heterojunction n-ZnMgO / p-CuO with ZnO and ITO frontal contacts. The calculations were carried out taking into account a light absorption in the auxiliary layers

of the device. As a result, the spectral dependencies of transmittance T(λ) in the absorber layer of solar cell were defined. It is made possible to optimize the design of the solar cells based on such heterojunctions.

179

Diamond-like Nanocomposite Thin Film as a Promising Anti-Reflecting Coating for Silicon Based Solar Cell

Sukhendu Jana[1,3], Sayan Das[1,2], Debasish De[1], Anup Mondal[2,3] and Utpal Gangopadhyay[1]*

[1]Advanced Research in Renewable Energy and Sensor System Laboratory, Meghnad Saha Institute of Technology, Techno India Group, Kolkata-150, India
[2]Dept. of Chemistry, Bengal Engineering and Sciences University, Shibpur-103, Howrah, India
[3]Centre of Excellence for Green Energy and Sensor System, Bengal Engineering and Sciences University, Shibpur-103, Howrah, India
*Email: sukhendu123@gmail.com Tel. +919433130733, Fax. +91-03324431754

In the present study, the anti-reflection property of diamond-like nanocomposite (DLN) thin film on silicon based solar cell has been investigated. The film has been deposited by plasma assisted chemical vapor deposition (PACVD) method and characterized by FTIR, Raman spectroscopy and FESEM. The performance of the DLN thin film as antireflection coating (ARC) on c-textured silicon has been analyzed by measuring the average reflection in the spectral range of 300 to 1100 nm. The result shows that, the average reflection from texture silicon reduces from 13.55 % to 4.58 %, which is significantly lower than conventional SiNx ARC. Moreover, the average EQE of the solar cell increases by 18% after coating with DLN thin film. The film thickness and refractive index were 86 nm and 1.89 respectively. The optical band gap of the film has been estimated using Tauc relation and it was 3.18 eV. The DLN thin film has a great potential to use as anti-reflection coating for silicon based solar cell.

184

CBD Zinc Sulfide Film Using Non-Toxic Complexing Agent as Low Cost Antireflection Coating On Multi-Crystalline Silicon Solar Cell

Kaustuv Dasgupta[1,2], Soma Ray[1,2], Baishakhi Pal[1,3], Subhadeep Nandy[1], Sayan Das[1,2], Sukhendu Jana[1,2] , Anup Mondal[2] and Utpal Gangopadhyay[2]*

[1]Advanced Research in Renewable Energy and Sensor System Lab, Meghnad Saha Institute of Technology, Nazirabad,Uchhepota, Kolkata-700 150, West Bengal, India
[2]Centre of Excellence of Green Energy and Sensor System, Shibpur, Howrah – 711 103, West Bengal, India
[3]Department of Physics, Jadavpur University, Kolkata – 700 032, West Bengal, India
*Email: kaustuvdasgupta83@gmail.com

In the present study, the anti-reflection property of diamond-like nanocomposite (DLN) thin film on silicon based solar cell has been investigated. The film has been deposited by plasma assisted chemical vapor deposition (PACVD) method and characterized by FTIR, Raman spectroscopy and FESEM. The performance of the DLN thin film as antireflection