

**DEPOSITION OF HYDROGENATED NANOCRYSTALLINE SILICON (nc-Si:H) FILMS BY PLASMA ENHANCED CHEMICAL VAPOUR DEPOSITION**

Shi Chee Han, Goh Boon Tong, Richard Ritikos, Siti Meriam Ab. Gani,  
Muhamad Rasat Muhamad and Saadah A. Rahman.  
Solid State Research Laboratory,  
Physics Department, University of Malaya,  
50603 Kuala Lumpur

**ABSTRACT**

In this work, hydrogenated nanocrystalline silicon (nc-Si:H) thin films were deposited by radio-frequency Plasma Enhanced Chemical Vapour Deposition (rf-PECVD) technique on crystal silicon (c-Si) substrate at different rf power with a constant silane to hydrogen partial pressure ratio. The effects of rf power on the structural properties of nc-Si:H films deposited on c-Si substrate were studied using Fourier transform infrared spectroscopy (FTIR), x-ray diffraction (XRD), micro-Raman spectroscopy and scanning electron microscopy (SEM). The rf power showed influence on the structural properties of nc-Si:H films. The presence of nanocrystallites clusters in the film structures was observed strongly at low rf power.

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