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EFFECT OF SUBSTRATE BIAS ON THE OPTICAL, BONDING AND ELECTRICAL PROPERTIES OF a-CN$_x$ DEPOSITED BY rf PECVD

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ABSTRACT
Hydrogenated amorphous carbon nitride (a-CN$_x$:H) thin films were deposited using rf PECVD technique. The effects of negative dc substrate biasing on formation of these films were studied. UV-Vis-NIR spectroscopy was used to obtain the deposition rate (D) and optical energy gap (E_{04}). Bonding properties were studied by means of FTIR spectroscopy while the I-V characteristics were measured by using two probes I-V. The results show a significant change in deposition at a substrate bias of -120 V with an increase in the deposition rate and E_{04}. Effects of the substrate biasing on the optical, bonding and electrical properties are discussed.

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