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The Determination of Thermal Annealing Effect on the DOS Profile of a-Si:H Film

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Abstract: In this study the aim was to investigate the effect of thermal annealing on the density of states (DOS) of hydrogenated amorphous silicon (a-Si:H) by means of a Schottky structure. In order to realize that goal the sandwich structured Au/a-Si:H/a-Si:H(n⁺-type)/Cr Schottky diode was fabricated. The junction capacitance of the samples were measured as a function of the amplitude of alternating voltage in the frequency range of 500 Hz - 100 KHz and in the annealing temperature range of 23 - 175°C. The density of states profile as a function of both annealing temperature and energy were plotted. The effect of the annealing on the density of states (DOS) is discussed.

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