MECHANISM OF TIN-INDUCED CRYSTALLIZATION IN AMORPHOUS SILICON

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S u m m a r y

Formation of Si nanocrystals in amorphous Si-metallic Sn film structures has been studied experimentally, by using the Auger spectroscopy, electron microscopy, and Raman scattering methods. The results are analyzed in comparison with recent results on the crystallization of tin-doped amorphous Si. A mechanism of silicon transformation from the amorphous to the nanocrystalline state in the eutectic layer at the Si–Sn interface is proposed. The mechanism essence consists in a cyclic repetition of the processes of formation and decay of the Si–Sn solution. The application aspect of this mechanism for the fabrication of nanosilicon films used in solar cells is discussed.