

Formation of Silicon Nanocrystallites on Amorphous Hydrogenated Silicon Thin Film Using Dense Plasma Focus Device

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Dense Plasma Focus (DPF) is a device that can generate a short-lived hot and dense plasma column. The pinching of the plasma column can give rise to radiation such as X-ray. The disruption of the plasma column will generate a strong electric field that accelerates the ions in the end on direction of the coaxial electrodes forming an ion beam. The beam with average energy of about hundreds of keV can be used to irradiate material surface and induce phase changes. In this work we demonstrate the effect of ion beam irradiation on hydrogenated amorphous silicon (a-Si:H) thin film leading to the formation of nanosilicon crystallite embedded in the amorphous matrix. The film is studied with FESEM and Raman Spectroscopy to confirm the presence of the nano crystallite.