

Abstract

PLIE was used for rapid crystallisation of a-SiGeC films deposited by LCVD on Si (100) substrates. HRTEM study of thin films grown with several laser energies shows that the combination of the two laser techniques gives an almost completely crystallised alloy, even for the lowest laser fluence. Island formation is observed below a certain threshold of fluence (about 450 mJ/cm²). In the case of the lowest energy (100 mJ/cm²) the material was partially crystallised (with the crystalline material being the predominant state), to a nanocrystalline alloy with a considerable amount of epitaxially grown grains and with grain sizes of several tens of nanometers. Above the threshold of 450 mJ/cm² a rather smooth thin film is grown. The crystallisation is almost complete and the alloy is grown in an almost perfect epitaxial way.