

Characterization of Rapid Thermal and Micro-wave Annealed Germanium Thin
Films Grown by E-beam Evaporation on Glass Substrates

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Abstract

In this paper, we used the electron beam (e-beam) evaporation to deposit Ge thin film on glass, and used microwave annealing (MWA) system of 5.8 GHz frequency for thin film crystallization. Then, we compared the MWA experiment results of sample sheet resistance (R_s), crystallization strength and cross section with those using traditional rapid thermal annealing (RTA) equipment. We found that MWA can get poly-Ge thin film with (111), (220) and (311) crystallization directions and optimal R_s at a temperature of about 450 ° C without affecting the film thickness. By comparison, RTA equipment can only reduce the sample R_s at least temperature of 550oC

Keyword : Electron Beam (e-beam) evaporation, poly-germanium (poly-Ge) thin film, amorphous