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Spectral Ellipsometry and Electron Backscatter Diffraction Analyses of Silicon Surfaces Implanted with Silver Ions

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Abstract

© 2016, Springer Science+Business Media New York.Amorphous silicon (a-Si) produced on surfaces of single-crystal substrates (c-Si) by low-energy low-dose implantation of silver ions is studied by spectral ellipsometry and electron backscatter diffraction. Implantation was done with an ion energy of 30 keV at a constant ion beam current density of 2 μA/cm2 and doses of 6.24·1012–1.25·1016 ions/cm2 on room temperature substrate targets. Irradiation was carried out with a current density of 0.1–5 μA/cm2 for implantation doses of 6.24·1013 and 1.87·1014 ions/cm2. It was found that spectral ellipsometry is an accurate andreliable method for monitoring low-dose ion implantation processes.

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Keywords

electron backscatter diffraction, ion implantation, porous silicon, spectral ellipsometry