Characterizations of Low-Temperature Polycrystalline Silicon Thin-Film Fabricated by Metal-Induced growth

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ABSTRACT

Nickel (Ni) metal-induced growth of polycrystalline Silicon thin films has been investigated by rapid thermal chemical vapor deposition (RTCVD) technique. Various Ni thickness (15-30nm) and hydrogen content in a Si:H films were discussed. The 20nm Ni-induced growth of crystalline Si exhibits an excellent crystallinity in-situ H2 gas with a flow rate of 30sccm. To reduce the metal contamination, we choose a appropriate etching solution with a ratio of HNO3：HCl=5：1 and a suitable etching time of 3min. Also, Ni thickness is lower to 5nm. For several hours of annealing time, the grain size of crystalline Si and sheet resistance are hundreds of nm and ~100Ω/sq., respectively.

Keywords : polycrystalline silicon ; rapid thermal chemical vapor deposition (RTCVD) rapid thermal chemical vapor deposition (RTCVD)

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