

Amorphous silicon (a-Si) and hydrogenated amorphous silicon (a-Si:H) films were deposited by DC magnetron sputtering technique with argon and hydrogen plasma mixture on Al deposited by thermal evaporation on glass substrates. The a-Si/Al and a-Si:H/Al thin films were annealed at different temperatures ranging from 250 to 550 °C during 4 h in vacuum-sealed bulb. The effects of annealing temperature on optical, structural and morphological properties of as-grown as well as the vacuum-annealed a-Si/Al and a-Si:H/Al thin films are presented in this contribution. The averaged transmittance of a-Si:H/Al film increases upon increasing the annealing temperature. XRD measurements clearly evidence that crystallization is initiated at 450 °C. The number and intensity of diffraction peaks appearing in the diffraction patterns are more important in a-Si:H/Al than that in a-Si/Al layers. Results show that a-Si:H films deposited on Al/glass crystallize above 450 °C and present better crystallization than the a-Si layers. The presence of hydrogen induces an improvement of structural properties of poly-Si prepared by aluminium-induced crystallization (AIC)