

## **AFM and FTIR characterization of microcrystalline Si obtained from isothermal annealing of Al/a-Si:H**

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Atomic force microscopy and Fourier transform infrared spectroscopy were used to investigate the morphology of the microcrystalline surface, and also the amorphous-crystalline structural transformation of a-Si:H films, isothermally annealed during several hours. Crystallization process was strongly influenced by the deposition of an Al layer on the surface of a-Si:H samples. Representative AFM images show the presence of grains, which increase in diameter with the annealing time. Relative crystallized fraction as a function of the annealing time can be described adequately by using the Avrami equation. The kinetic of this crystallization process suggest a two-dimensional growth of the Si nuclei. Fourier transform infrared measurements show the presence of an intense band near  $512\text{ cm}^{-1}$  associated to Si-Si bonding. We observed the relative diminishing of the intensity of the Si-H wagging mode at  $694\text{ cm}^{-1}$  with annealing time, suggesting effusion of hydrogen to the surface of microcrystalline films.