

THE EFFECTS OF ION DOPING ON AMORPHOUS SILICON  
DEPOSITED BY AP-CVD.

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Ion shower has been studied as doping technique of silicon film for thin film transistors. Because of no ion separation and no beam scanning, this technique can reduce the doping process and the number of mask align and make it possible to large area process.

For ion doped RP-CVD a-Si:H, the dark conductivity at room temperature and conductivity activation energy of  $10^{-3}\text{S/cm}$  and  $0.27\text{eV}$ , respectively were obtained. And the characteristics of a-Si:H TFT fabricated by this technique shows the similar behavior of a-Si:H TFT using conventional deposited  $n^+$ -layer, resulting in the effective doping of  $n^+$ -layer. For a-Si deposited by AP-CVD, we examined the P ion doping and hydrogenation. And We have made poly-Si films by RTA from a-Si deposited by RP-CVD, LP-CVD and AP-CVD, and obtained sheet resistance of  $10^3\Omega/\square$  by ion shower P doping and subsequent activation. After ion doping, the crystallinity of the poly-Si films increases.

From these results, ion doped poly-Si films can be applied to ohmic contact layer of poly-Si TFT-LCD's.