

# Crystallization of a-Si by selective area heating

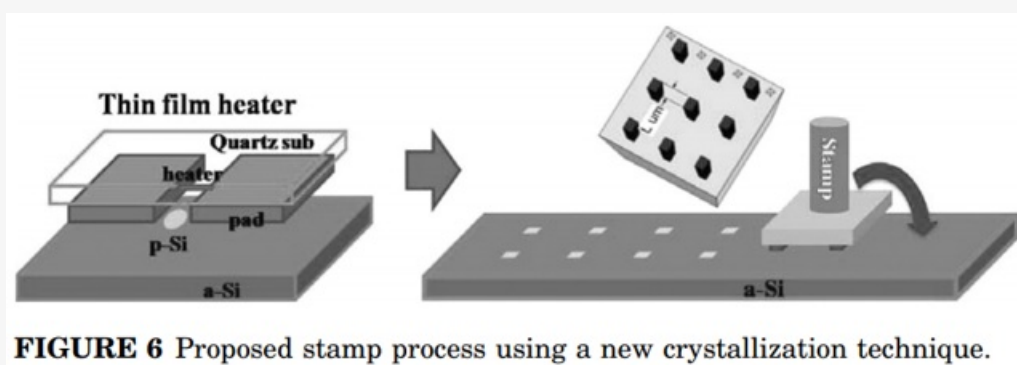
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## New Crystallization Method of Amorphous Silicon by Selective Area Heating for Stamp Process

We propose a new crystallization technique called selective area heating. In this study, we investigated a new technique for high-reliability selective area crystallization of a-Si films that does not cause thermal damage to glass substrates. We reduced the crystallization time as compared to the conventional solid phase crystallization method using a stamp-type isolated thin heater. The thin heater was fabricated with a layer of Pt on a quartz substrate via Ta adhesion and capping layers. A crystalline transverse optic phonon peak at about  $519\text{ cm}^{-1}$  was seen in Raman scattering spectra, showing that the films were crystallized. The poly-Si grain size was found to be smaller than 100 nm, and the dendritic structure was found using scanning electron microscopy.

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**FIGURE 6** Proposed stamp process using a new crystallization technique.

Figure 6 shows the proposed stamp process using a new crystallization technique. With this technology it is possible to crystallize effectively and repeatedly in the active area only. SAH (selective area heating) is considered to be a promising technology for the creation of large area display panels using a low cost process.

### Keywords

Crystallization; Poly crystalline; Selective area heating; Solid phase crystallization; Stamp process; Thermal budget

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