

**A THERMAL INVESTIGATION ON JOULE-HEATING INDUCED CRYSTALLIZATION
PROCESS OF AN AMORPHOUS SILICON THIN FILM**

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ABSTRACT

Large area crystallization of amorphous silicon thin-films on glass backplanes is one of key technologies in manufacturing flat panel displays. Among various crystallization technologies, the Joule-heating induced crystallization (JIC) is recently introduced and considered as the highly promising one in the OLED fabrication industries, since the whole film of amorphous silicon on glass can be crystallized within tens of microsecond, minimizing the thermally and structurally harmful influence on the glass. In this study we have investigated the temperature variation during the phase transformation theoretically and experimentally. Temperatures critical to crystallization are clarified for both solid-solid and solid-liquid-solid transition, based on in-situ measurements of temperature and numerical analysis during the JIC process.