

Abstract Submitted
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Atmospheric Pressure Micro-Thermal-Plasma-Jet Crystallization of Amorphous Silicon Strips for High-Performance Thin Film Transistor Fabrication¹ SELJI MORISAKI, TAICHI NAKATANI, RYOTA SHIN, SEIICHIRO HIGASHI, Graduate School of Advanced Sciences of Matter, Hiroshima University — Zone melting recrystallization (ZMR) of amorphous silicon (a-Si) strips by micro-thermal-plasma-jet (u-TPJ) irradiation is quite effective to suppress grain boundaries (GBs) except sigma 3 coincidence site lattice (CSL). Intra-grain defects in 1 μm wide strips were significantly reduced by suppressing the agglomeration of molten Si with low temperature condition around melting point of crystalline Si. Thin film transistors (TFTs), using optimized ZMR condition by scanning speed of 1500 mm/s demonstrated extremely high performance with field effect mobility (u_{FE}) of 443 cm^2/Vs and swing factor (S) of 210 mV/dec.

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