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Atmospheric Pressure Plasma aided a-Si Etching for Large Area TFT_LCD Manufacturing[1] TAIHYEOP LHO, DONG-CHAN SEOK, SEUNG-REUL YOO, BONG-JU LEE, NFRI, APPLICATION AND TECHNOLOGY TEAM — Atmospheric Pressure plasma aided a-Si etching for large area TFT-LCD manufacturing has been developed. DBD (Dielectric Barrier Discharge) was used for plasma generation. SF_6 gas is used as etchant gas with N_2 as a carrier gas. The plasma etcher is configured in-line system which is the glass moving system under the fixed plasma source. The maximum etch rate reaches almost 500 nm/min which is based on the plasma contact time. Hydrogen gas has been adopted for selectivity of a-Si to SiN_x. The dramatic enhancement of selectivity by addition of H2 is shown. The temperature of glass is a critical parameter for the a-Si etching at atmospheric pressure.

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