

Microcutting of Polymer Films for the Fabrication of Thin Film Transistors

Abstract. Embossing of active polymer films was investigated with the objective of structuring source and drain electrodes of all-polymer thin film transistors. Silicon anisotropic etching with subsequent thermoset pattern transfer proved to be a suitable method of producing embossing masters with high accuracy. Hot-embossing was then successfully applied to microcut conducting poly(3,4-ethylenedioxythiophene) (PEDOT) layers on a flexible substrate, defining source and drain electrodes. Devices were completed with semiconducting and isolating polymer layers and a gold gate electrode. Basic field-effect-transistor characteristics were observed. Further, high-temperature thermoset replicas of an optical grating were produced, as possible templates for the alignment of semiconducting, liquid crystalline polymers.

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