

Abstract Submitted
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Shape Control of Doctor blade coated Polymer Electrodes via Microflow Control in a Drying Droplet¹ YUNSEOK JANG, JEONGDAI JO, SEUNG-HYUN LEE, Korea Institute of Machinery & Materials, PEMS TEAM — We demonstrated a simple patterning method for polymer electrodes such as poly(3,4-ethylenedioxythiophene)/poly(styrenesulfonate) (PEDOT/PSS) by using the doctor blade coater. We controlled the surface tension for controlling the polymer electrodes shape. We made use of the difference in wettability between hydrophobic surfaces and hydrophilic surfaces to make the polymer electrodes patterns. However, the polymer electrodes patterns made with our patterning method created undesirable ring-like stains, which were caused by the outward flow of the solute within the PEDOT/PSS solution drop. To achieve homogenous device performance, we proposed a simple process for removing this ring-like stain by making the surface tension gradient in the PEDOT/PSS solution drop. Because this surface tension gradient causes the inward flow of the solute within the PEDOT/PSS solution drop, the ring-like stain is removed. Finally, we confirmed the potential of our patterning method for polymer electrodes such as the PEDOT/PSS by fabricating pentacene thin-film transistors (TFTs) and measuring the electrical properties of the pentacene TFTs.

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