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TOP-CONTACT ORGANIC THIN FILM TRANSISTOR USING 6,13-BIS(TRIISOPROPYLSILYLETHYNYL) PENTACENE

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For organic thin film transistor (OTFT), the top-contact devices show better performance than the bottom-contact ones, due to the less contact resistance between source-drain electrodes and active layer. We fabricated the OTFT using soluble TIPS pentacene with top-contact Au electrodes, as shown in Fig.1. The devices was fabricated by using the poly (3,4-ethylenedioxythiophene) (PEDOT) as a gate electrode, PVCN as a gate insulator, and TIPS pentacene as an active layer. The top surface of the TIPS pentacene active layer of the devices was treated with low energy ion beam. The ion-beam treatment induces the enhancement of adhesion between electrodes and active layer [1]. We measured electrical characteristics of the OTFT devices such as field-effect mobility (μ_{FE}), on-off current ratio ($I_{ON/OFF}$), and threshold voltage (V_{th}).

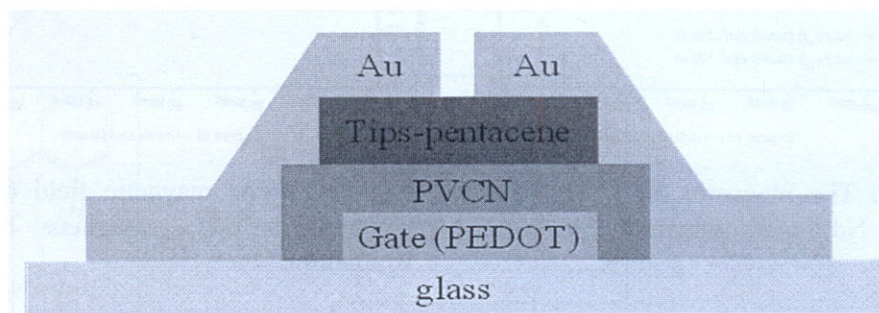


Figure 1. Structure of OTFT device

Reference

1. S. Han, W. K. Choi, K. H. Yoon, and S. K. Koh, *J. Appl. Polym. Sci* **72**, 41 (1999).