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Fabrication of Pressure Sensitive Organic Field Effect Transistor.

ABSTRACT - Masterthesis

A pressure sensor based on Organic Field-Effect Transistor (OFET) has been fabricated. Pentacene acts as both semiconducting active layer and as sensing layer due to their exceptional combination of electrical conductivity, mechanical flexibility and low cost deposition. It was formed under high vacuum by thermal evaporation and was characterized by Scanning Electron Microscopy (SEM). The results show that the film is uniform and has a polycrystalline morphology. The electrical characteristics of the OFET was also measured. The pressure dependence of the drain-source current has been investigated by applying constant as well as varying pressure on the device. Experimental results show that the drain-source current is reversibly affected when the pressure was induced. Previous studies suggest that decrease in the current was due to the variations in the mobility, contact resistance and threshold voltage. Hence miniaturized OFET sensor is a promising device for the pressure sensing applications.