DOUBLE-GATE ORGANIC FIELD EFFECT TRANSISTORS

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We have realized organic field effect transistor using pentacene or dihexylsexithiophene as the organic semiconductor. The geometry of the transistor consists of a source, a drain and two gates: the typical back gate and a local gate used to fine tune the width of the current path between source and drain. I will present results showing that the fine tuning of the current path is not controlled at scales smaller than 10 µm. Two phenomena can explain this result : either the injection dominates the electronic transport through the channel, either a parasitic parallel channel, which is not sensitive to the local gate width, dominates.