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# Optimizing Vertical Organic Field Effect Transistors

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## Abstract

Organic switchable resistors such as field effect transistors (OFETs) are important to realize future flexible electronic devices. In order to reach the needed switching speeds (e.g. for logic applications) and current densities (e.g. for display pixel driving) it is most important to overcome the low charge carrier mobilities and large channel lengths. In this sense, optimizing the geometry is a key element which is done by the novel approach of vertical organic field effect transistors (VOFETs). Here, the vertical channel length where the electric field driven charge carrier drift takes place can easily be scaled down into the sub 100 nm regime. However, a lateral charge diffusion component limits scooping the full potential of the short vertical channel length which is accessible in this device geometry. Here several approaches to surmount this difficulty are presented.

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