

## Ultrasensitive Sensors Based on Liquid Crystal-integrated-Organic Field-Effect Transistors

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Organic electronics have become one of the promising categories, compared to conventional inorganic devices, because they benefit low temperature processes leading to easy fabrication of large-area modules using flexible plastic thin film substrates. Of various organic electronic devices, organic field-effect transistors (OFETs) have been extensively studied because of their roles as a basic logic device. Although the charge carrier mobility in OFETs has been gradually improved, there are a lot of hurdles to be overcome toward commercialization. On this account, OFETs have been spotlighted as another platform for a variety of applications including sensors because such a high charge mobility is not necessary for application bases. Our group has recently demonstrated that liquid crystal-integrated-OFETs (LC-i-OFETs) could sensitively detect external physical stimulations and their sensitivity was better than human skins. In this presentation, the basic concept and sensing performance of LC-i-OFETs will be discussed together with our very recent progress in soft sensors for artificial skins.