Development of High Performance Organic Thin Film Transistor

이상윤*
삼성종합기술원
(sangyoon.lee@samsung.com*)

To realize the commercial applications of high performance and low coat OTFT, one of the key issues is to identify solution processible gate dielectric materials. Gate dielectric materials in OTFT should be pinhole free, long term stability, good insulation properties and also be compatible with organic semiconductors.
In this work, organic-inorganic hybrid type materials such as mixture of organosilane and low temperature curable polymer are used as gate dielectrics. This material is solution processible. It has low leakage current since inorganic part forms oxidic networks, but still compatible with organic semiconductor due to organic constituent. Furthermore, dielectric properties including dielectric constant is controllable by adding Ti, Zr based organo-metals as third component.
Pentacene based OTFTs were fabricated on gate insulator described above, and electrical characteristics were evaluated and discussed.