

Electrical characterization of ink-jet printed polymer based dielectric and electrode thin film metal-insulator-semiconductor device

김형준, 김용상, 김재경, 이현호*
명지대학교
(hyunho@mju.ac.kr*)

Organic electronics has been in a tremendous progress over the last decades. Especially, all-solution-based processes are believed to be one of the key routes to ultra low-cost device and circuit fabrication. In this regard a variety of functional materials has been successfully designed for inkjet printing technique in this paper. Electrode polymer/ dielectric polymer thin films were fabricated to make MIS(metal-insulator-semiconductor) device using an inkjet printing technique. PANI(polyaniline) works as electrode material with their good conductivities. In addition, metallic inkjet-printable silver was fabricated for the electrode by the inkjet printer. PVP(poly-4-vinylphenol) and PVA(polyvinyl alcohol), an insulating polymer with a high dielectric constant, operates as the dielectric layer. All the polymers are diluted with deionized water or PGMEA(propylene glycol monomethyl ether acetate), and can be printed with a piezoelectric inkjet printing system. Capacitance-voltage(C-V) and current-voltage(I-V) behaviors of PANI/PVP/p-Si, Silver/PVP/p-Si and PANI/PVA/p-Si, Silver/PVA/p-Si were characterized and compared respectively.