

Improved Electrical Properties of Indium Gallium Zinc Oxide Thin-film Transistors by AZO/Ag/AZO Multilayer Transparent Electrode

노영수^{1,2}, 양정도¹, 박동희¹, 위창환¹, 조세희¹, 김태환², 최원국¹

¹한국과학기술연구원 한국과학기술연구원 미래융합기술연구본부장실,

²한양대학교 전기전자 컴퓨터공학부

We fabricated a-IGZO TFT with AZO/Ag/AZO transparent multilayer source/drain contacts by rf magnetron sputtering. Enhanced electrical device performance of a-IGZO TFT with AZO/Ag/AZO multilayer S/D electrodes (W/L = 400/50 nm) was achieved with a sub-threshold swing of 3.78 V/dec, a minimum off-current of 10⁻¹² A, a threshold voltage of 1.80 V, a field effect mobility of 10.86 cm²/Vs, and an on/off ratio of 9x10⁹. It demonstrated the potential application of the AZO/Ag/AZO film as a promising S/D contact material for the fabrication of the high performance TFTs.

Acknowledgements

This work was supported by both KIST Future Resource Program and the Converging Research Center Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education, Science, and Technology (grant number 2011K000592).

Keywords: Ohmic contact, Dielectric-metal-dielectric multilayer, Indium Gallium Zinc Oxide, Source-drain current, Thin film transistor