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**InGaZnO4 based thin film transistors with sputter-deposited PMMA/ BaSrTiO3 stacked gate dielectrics on flexible substrate** DONG HUN KIM, Massachusetts Institute of Technology, IL-DOO KIM, Korea Advanced Institute of Science and Technology — This study reports the enhanced electrical properties of InGaZnO4 TFTs with sputter-deposited PMMA/BST stacked gate dielectrics. A noticeable reduction in the leakage current density was achieved by coating a PMMA over-layer. With the introduction of sputter-deposited PMMA film with a high electrical breakdown strength and a smooth surface morphology, the leakage current characteristics were greatly enhanced. The calculated field effect mobility of the InGaZnO4 TFTs with the PMMA (30 nm)/BST (270 nm) and PMMA (50 nm)/BST (250 nm) gate dielectrics were 10.2 cm2/V·s and 7.4 cm2/V·s, respectively. The noticeable increase of the field effect mobility is thought to have stemmed from an interface improvement that was caused by the addition of the smooth sputter-deposited PMMA layer. The threshold voltages of the InGaZnO4 TFTs with the PMMA (30 nm)/BST (270 nm) and PMMA (50 nm)/BST (250 nm) gate dielectrics were reduced to 1.1 V and 1.6 V compared to that (1.8 V) of the TFTs with the pure BST gate dielectric. The InGaZnO4 TFTs using only sputter-deposited PMMA (300 nm) gate insulators exhibited an on/off current ratio of 4.1 $\times$ 106, field effect mobility of 36.1 cm2/V·s at 10 V of VDS, and a relative large threshold voltage of 3.1 V.

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