
Oral Presentation

[FLX2]Stretchable and Flexbile Devices

Chair: Manabu Ito (Toppan Printing Co.)

Co-Chair: Mitsuru Nakata (NHK)

Thu. Nov 28, 2019 5:20 PM - 6:30 PM Mid-sized Hall B (1F)

5:45 PM - 6:10 PM

[FLX2-2(Invited)]High Performance IGTO Transistors with Stretchable Gate Dielectric Layer

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Keywords:Stretchable Electronics, Polymer Dielectric, TFT, Bendable, IGTO

Flexible/stretchable active-matrix electronics strongly demand the design of new concept material, which should have the good electrical properties and mechanical durability. In this paper, we will address the design of hybrid dielectric film, which consists of the polymer-based backbone and high permittivity additive. By virtue of smart cross linker selection, we are able to achieve the high performance oxide transistor with the hybrid polymer gate dielectric film. The fabricated transistors can withstand the 100 times mechanical bending stress under an extremely small curvature radius of 1mm. Simultaneously, they exhibit the high mobility of $>20 \text{ cm}^2/\text{Vs}$ and $I_{\text{ON/OFF}}$ ratio of $>10^7$, indicating that this approach can be one of the ways for the highly mechanically stable electronics.