

ORGANIC THIN FILM TRANSISTOR GATE DIELECTRICS BY UTILIZATION OF DIFFERENT ALUMINIUM OXIDE GROWTH METHODS

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Organic thin film transistor is one possible building block for ultra-low cost electronics. There is a possibility to produce different layers in the component by mass production methods (e.g. printing soluble electronic materials). Problems related to OTFTs have been large dimensions, relatively poor materials, material compatibility, and sensitivity to air. One of the tasks to improve the transistor characteristics is to produce thinner gate dielectrics. That would lower the necessary operating voltages.

Anodization of aluminium is very well known method to produce thick protective layers of aluminium oxide on aluminium metal. Characteristics of produced aluminium oxide layer depend strongly of anodization parameters (acid, acid concentration, anodizing current, and temperature) [1-3]. We have produced thin (5-50 nm), insulating layers, with different acids and acid concentrations. We have also used ALD and plasma oxidation methods to produce aluminium oxide layers with similar thicknesses.

Quality of the insulating layers produced by different methods is compared, as well as the operation as gate dielectric in finished TFT.

[1] L. Majewski et al., [J. Phys. D: Appl. Phys. 37 \(2004\) 21-24.](#)

[2] L. Majewski et al., [J. Phys. D: Appl. Phys. 37 \(2004\) 3367-3372.](#)

[3] S. Abdel Rehim et al., [J. Appl. Electrochem. 32 \(2002\) 1257-1264.](#)