Corrections to “Low-Voltage IGZO TFTs Using Solution-Deposited OTS-Modified Ta2O5 Dielectric”

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Corrections to "Low-Voltage IGZO TFTs Using Solution-Deposited OTS-Modified Ta_2O_5 Dielectric"

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***Abstract*—Unfortunately, there are few typographical errors in the above paper. First of all, the Equation (4) is incomplete and the corrected formula is given here. Secondly, the unit of the interfacial trap density (N_{it}) is corrected in three places. Thirdly, the caption of Fig. 6 is corrected to accurately reflect the device structure. The corrections have no influence on the discussion and conclusions of the paper.**

***Index Terms*—Anodization, indium gallium zinc oxide (IGZO), low-voltage thin film transistors (TFTs), self-assembled monolayer (SAM), tantalum pentoxide.**

There are few typographical errors in our paper [1]. Firstly, the Equation (4) that allows calculation of the interfacial trap density (N_{it}) should be written as [2, 3]:

$$N_{\mathrm{it}} = \left(\frac{\mathrm{SS}\log(e)}{kT/q} - 1\right)\frac{C_G}{q^2} \qquad (4)$$

where C_G is the gate capacitance density, q is the electron charge, k is the Boltzmann's constant, T is the temperature, and SS is subthreshold swing. The N_{it} values given in [1] were calculated using the above formula and are correct.

Secondly, the unit of N_{it} on page 4 of [1] should be $cm^{-2}\,eV^{-1}$. Accordingly, N_{it} was calculated to be 4.1×10^{12} $cm^{-2}\,eV^{-1}$, 4.4×10^{12} $cm^{-2}\,eV^{-1}$, and 2.1×10^{12} $cm^{-2}\,eV^{-1}$ for devices A, B, and C, respectively.

Thirdly, the description of the device structure in the caption of Fig. 6 is not accurate and is different from the description of the device structure used in the text. Fig. 6 with the correct caption is shown below.

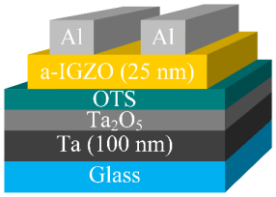

Fig. 6. 3-D schematic of the fabricated Ta/Ta_2O_5/OTS/IGZO/Al TFTs using SAM-modified Ta_2O_5 gate dielectric.

The corrections have no influence on the discussion and conclusions of the paper.

REFERENCES

[1] N. Mohammadian, B. C. Das, and L. A. Majewski, "Low-Voltage IGZO TFTs Using Solution-Deposited OTS-Modified Ta_2O_5 Dielectric," *IEEE Trans. on Electron Devices*, vol. 67, no. 4, pp. 1625-1631, April 2020, doi: 10.1109/TED.2020.2976634.

[2] W. Cai, S. Park, J. Zhang, J. Wilson, Y. Li, Q. Xin, L. Majewski, and A. Song, "One-Volt IGZO Thin-Film Transistors With Ultra-Thin, Solution-Processed AlxOy Gate Dielectric," *IEEE Electron Device Letters*, vol. 39, no. 3, pp. 375-378, March 2018, doi: 10.1109/LED.2018.2798061.

[3] S. M. Sze, and K. K. Ng, "Physics of Semiconductor Devices," John Wiley & Sons, 2007, doi: 10.1002/0470068329

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