

Potential solution-induced HfAlO dielectrics and their applications in  
low-voltage-operating transistors and high-gain inverters

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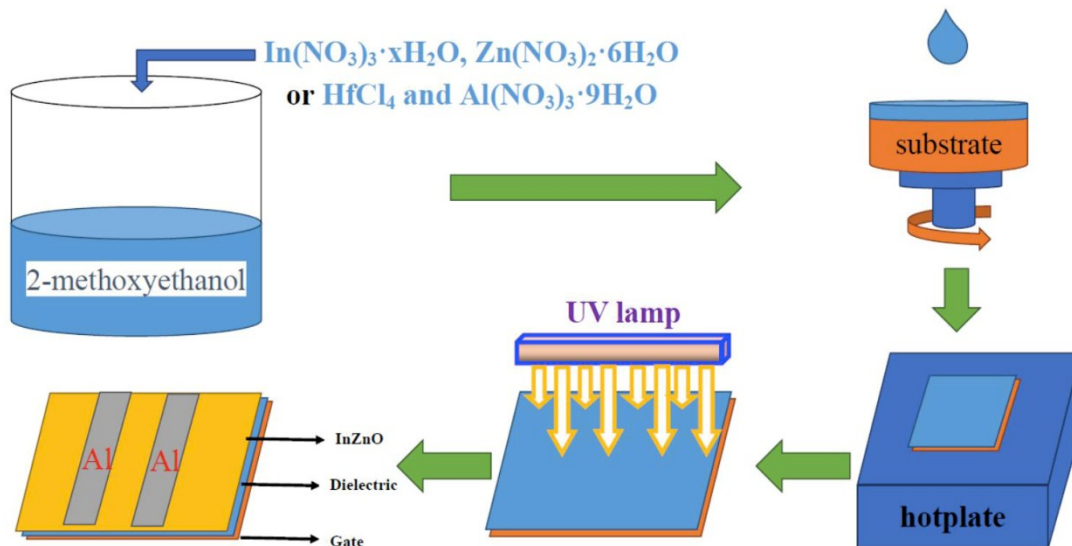


Fig. S1. Schematic diagram of solution-derived IZO and  $\text{HfAlO}_x$  thin films and IZO TFTs device fabrication.

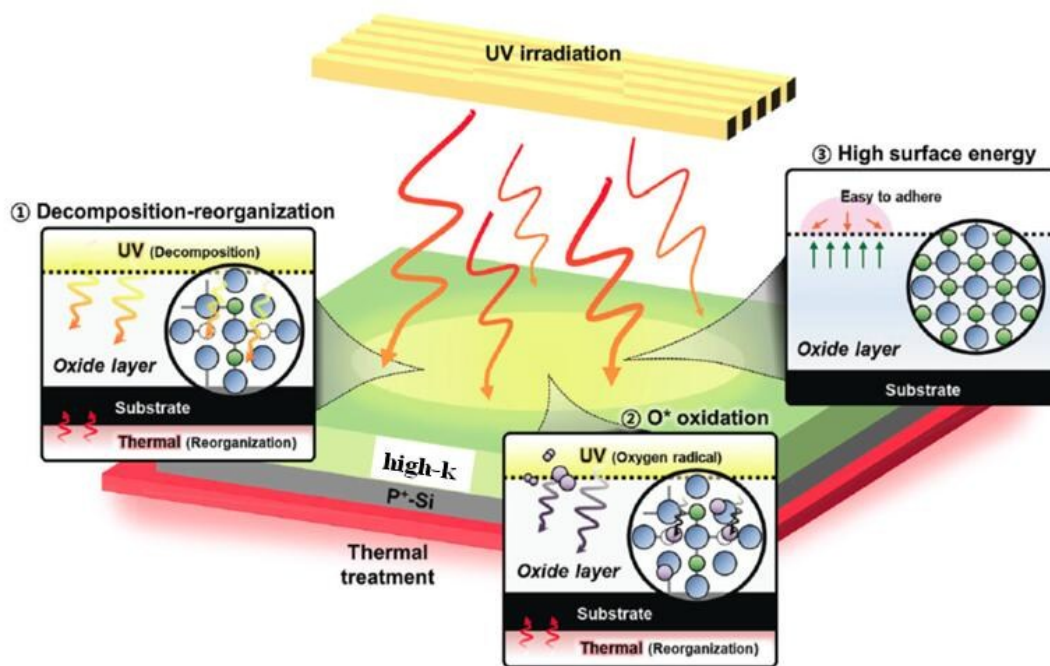


Fig. S2. Illustrated physical and chemical mechanisms of UV treatment.<sup>[1]</sup>

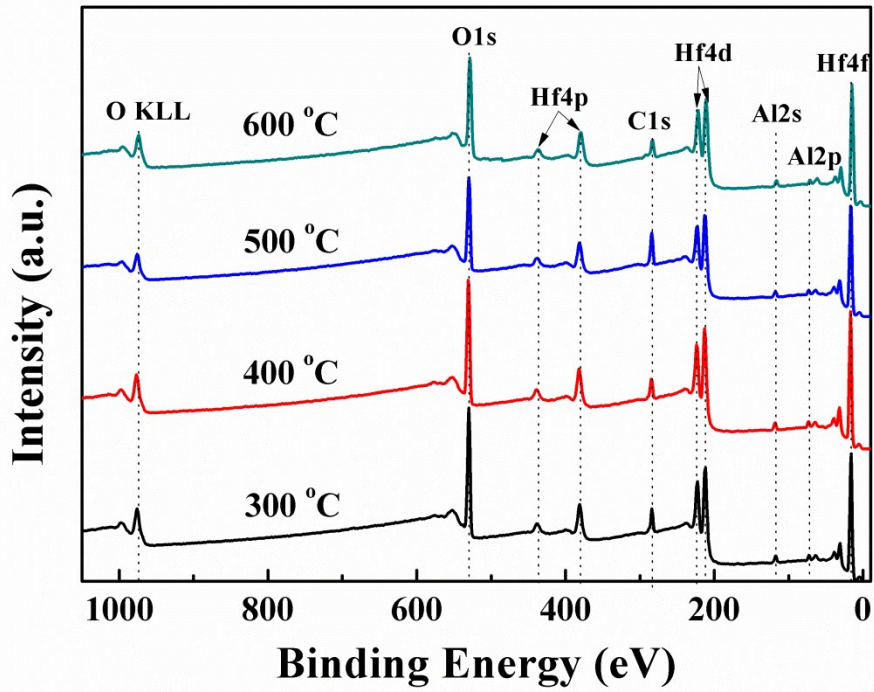


Fig. S3. XPS survey spectra of the HfAlO<sub>x</sub> films as a function of annealing temperature.

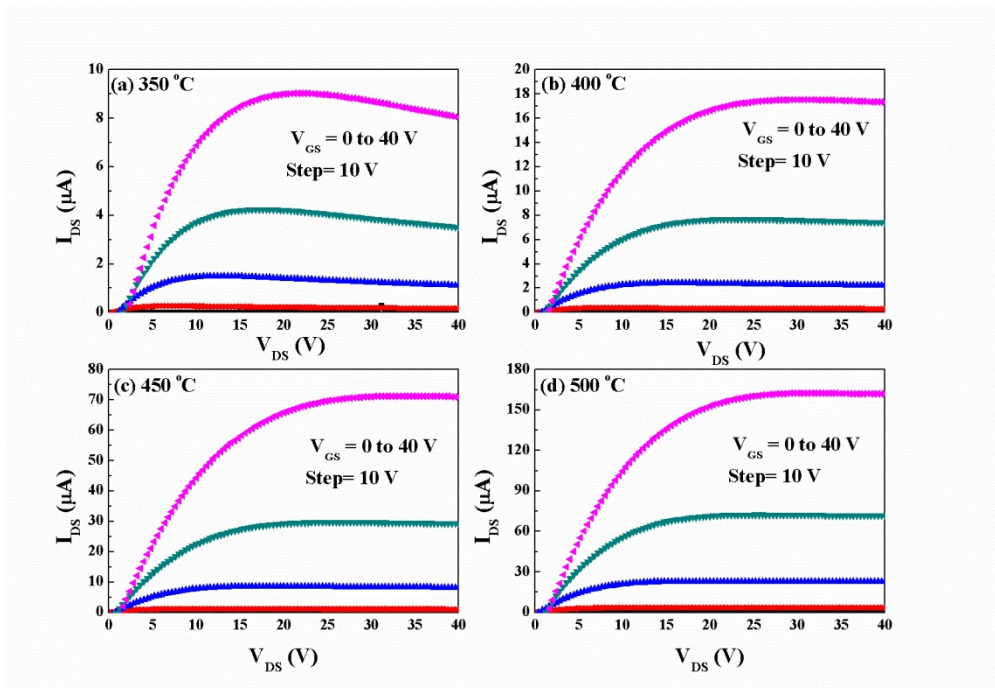


Fig. S4. The output characteristics of the IZO/SiO<sub>2</sub> TFTs as a function of annealing temperature.

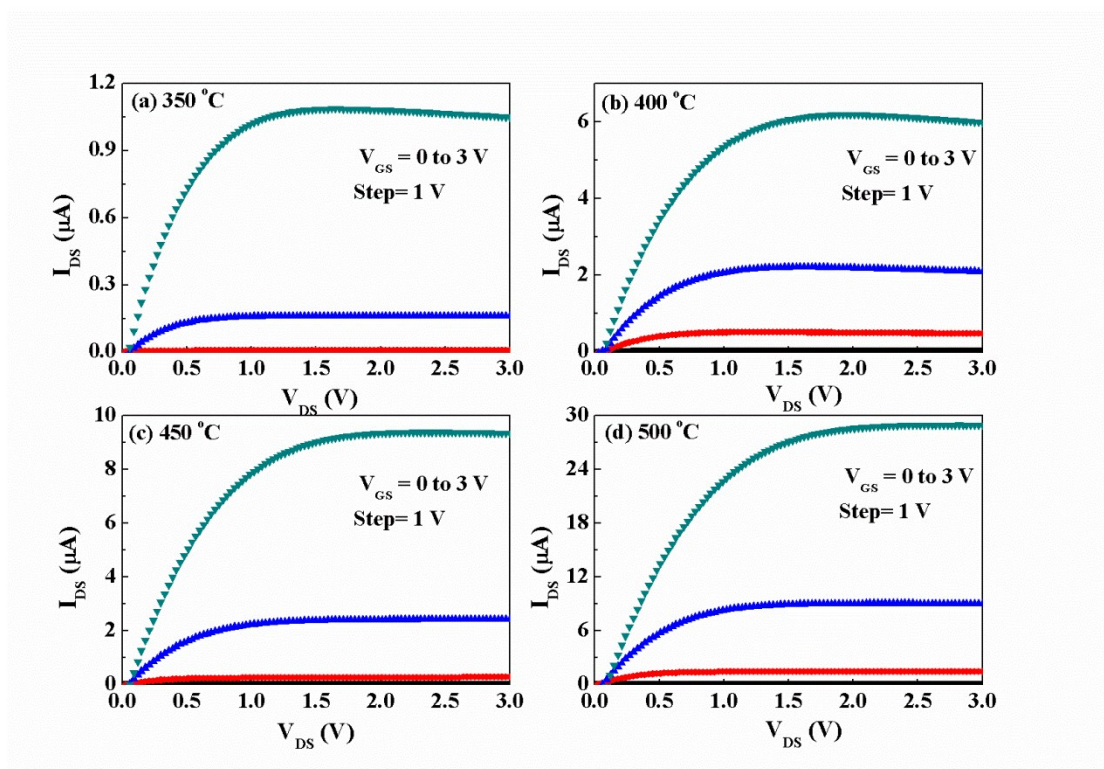


Fig. S5. The output characteristics of the IZO/HfAlO<sub>x</sub> TFTs as a function of annealing temperature.

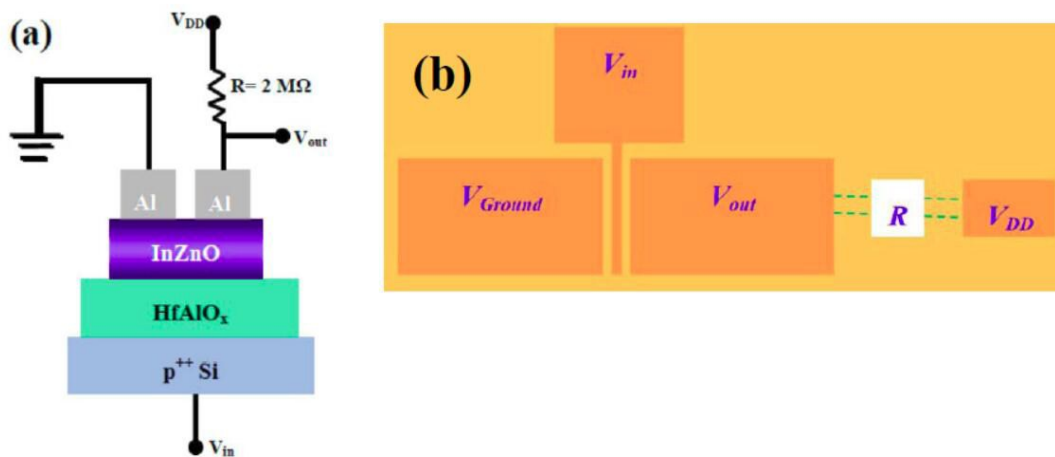


Fig. S6. The schematic diagrams (a) and top views (b) of the unipolar resistor-loaded inverter coupled with 450°C-annealed IZO/HfAlO<sub>x</sub> TFTs.

[1] Y. J. Tak, S. J. Kim, S. Kwon, H. J. Kim, K. B. Chung and H. J. Kim, *J. Mater.*

*Chem. C*, 2018, 6, 249.