

Supplemental data

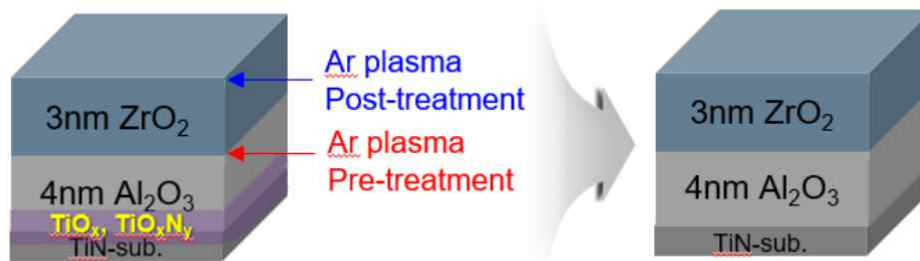


Figure 1. A low k interfacial layer (TiO_x, TiO_xN_y) between dielectric and bottom electrode is reduced by Ar plasma treatment.

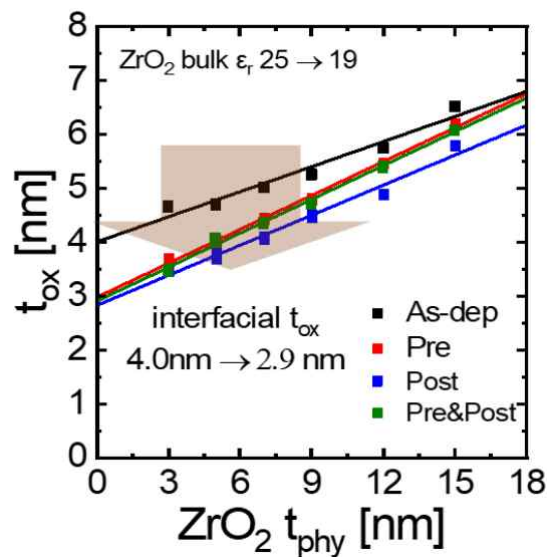


Figure 2. Precise control of interface properties by Ar plasma treatment successfully improved the capacitor properties. (lower t_{ox})