Engineering Hydrogen Content in SiN_X Thin Films via Precursor Control for Improved Oxide TFTs Characteristics

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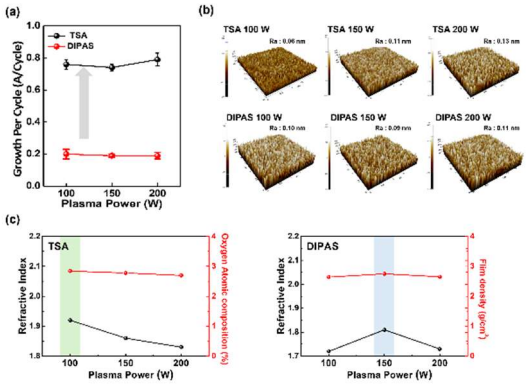

Figure 1. (a) GPC of TSA-SiN_X and DIPAS- SiN_X as a function of plasma power. (b) Schematic diagrams of TSA- SiN_X and DIPAS- SiN_X surfaces based on AFM measurements. (c) RI, oxygen content, and film density of TSA- SiN_X and DIPAS- SiN_X as a function of plasma power.

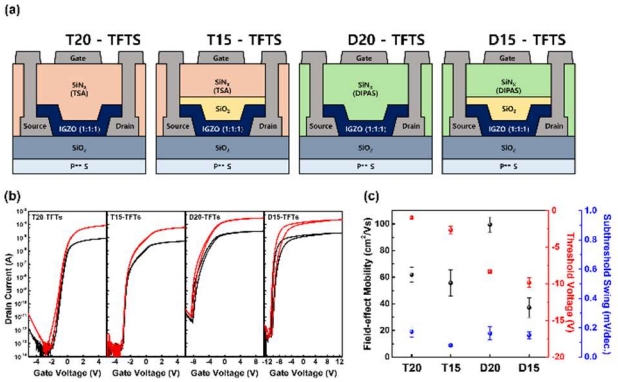

Figure 2. (a) Device schematics of TSA SiN_X 20 nm (T20), TSA SiN_X 15 nm/SiO_2 5 nm (T15), DIPAS SiN_X 20 nm (D20), and DIPAS SiN_X 15 nm/SiO_2 5 nm (D15). (b) Transfer curves of T20, T15, D20, and D15 TFTs. (c) Device characteristics of T20, T15, D20, and D15 TFTs.

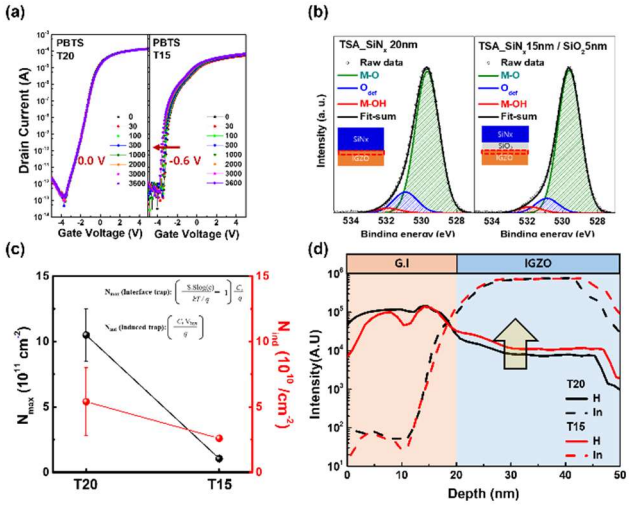

Figure 3. (a) PBTS results of T20 and T15 TFTs. (b) XPS results of T20 and T15 TFTs. (c) Quantitative trap density values derived from SS. (d) Hydrogen diffusion in T20 and T15 TFTs measured by SIMS.