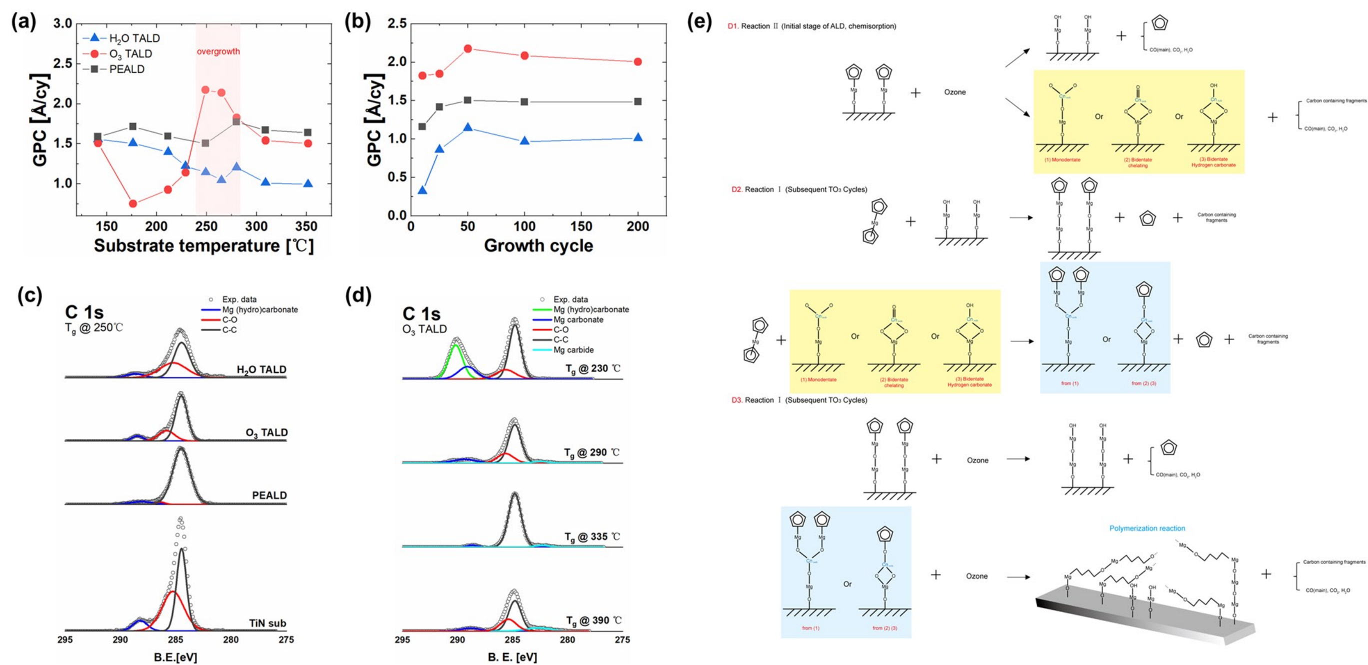

Fig 1. Growth per cycle comparison for 3 reactants involved ALD with the dependence of (a) substrate temperature (b) growth cycle number. XPS C1s of MgO deposited by ALD process (c) varied by reactant type on $TiN/Ti/SiO_2/Si$ substrate under 250 °C growth temperature (d) varied by growth temperature on Si substrate with O_3 as reactant (d) Growth mechanism schematic of O_3 ALD process

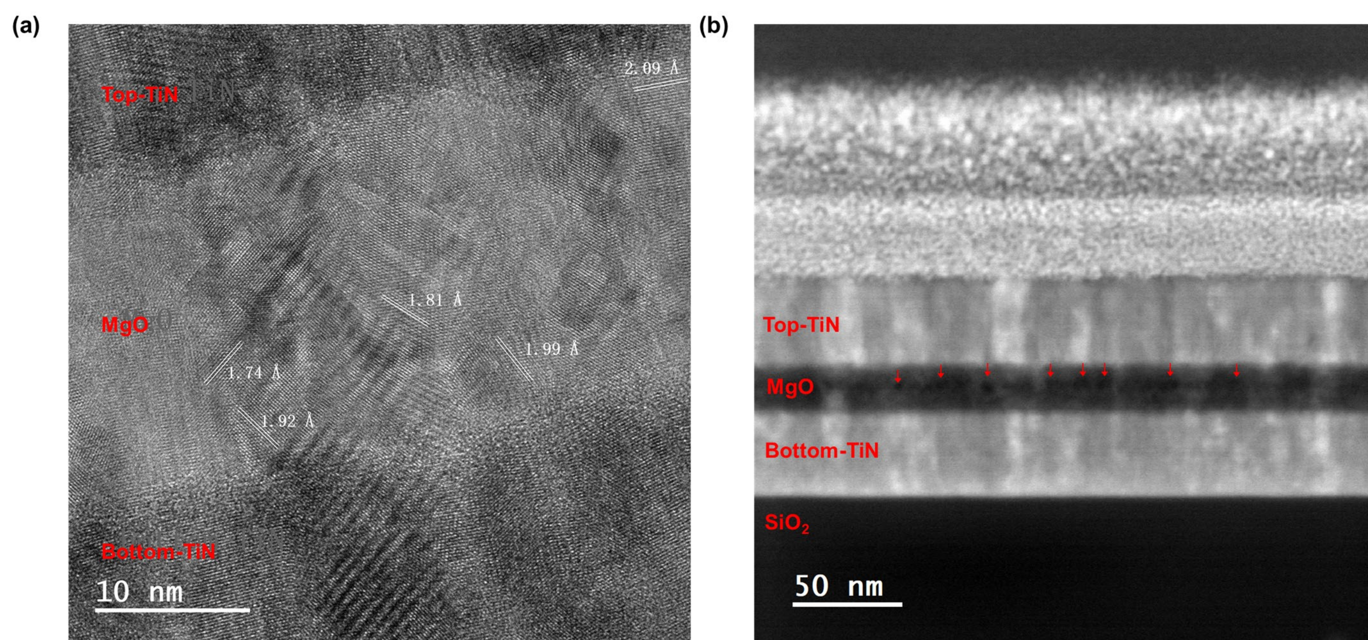

Figure 2. Cross-sectional view of TiN/MgO/TiN where the MgO was deposited by O_3 ALD process under 290°C. (a) HRTEM (b) STEM-HAADF.