



**Figure.** (a) XRD patterns TiN films deposited at different temperatures; (b) High resolution XPS spectra of Ti 2p orbital in TiN films deposited at 350 °C. Binding energy was calibrated with C-C peaks; (c) UPS measurement of TiN films deposited at different temperatures with -5 bias voltage applied on the sample; (d) *n*-GaN/TiN(50nm)/Pt(50nm)/Au(100nm) sample annealed at 700 °C in N<sub>2</sub> for 1 min ToF-SIMS depth profile.