Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting information

High-performance NiO/TiO_2 UV photodetector: Influence of NiO layers

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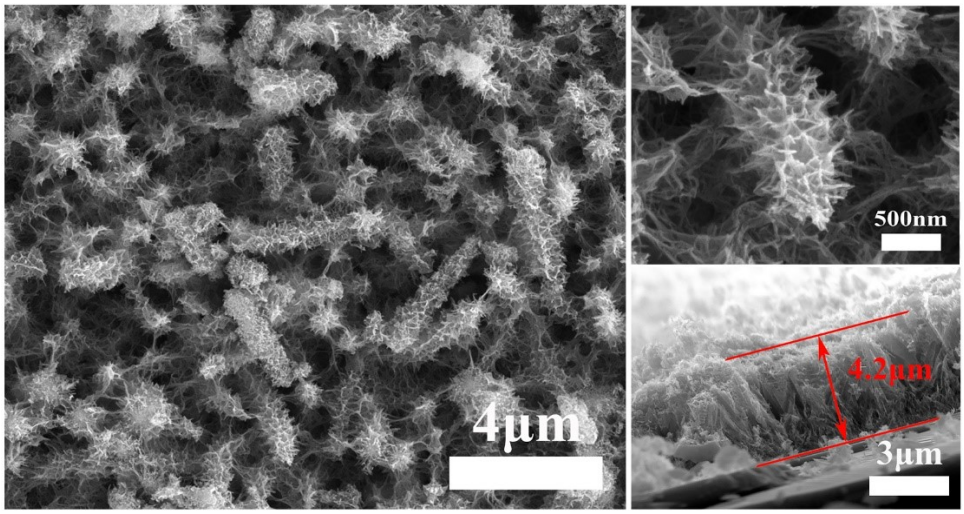

Fig. S1 Plane-view SEM images of TiO_2 NAs

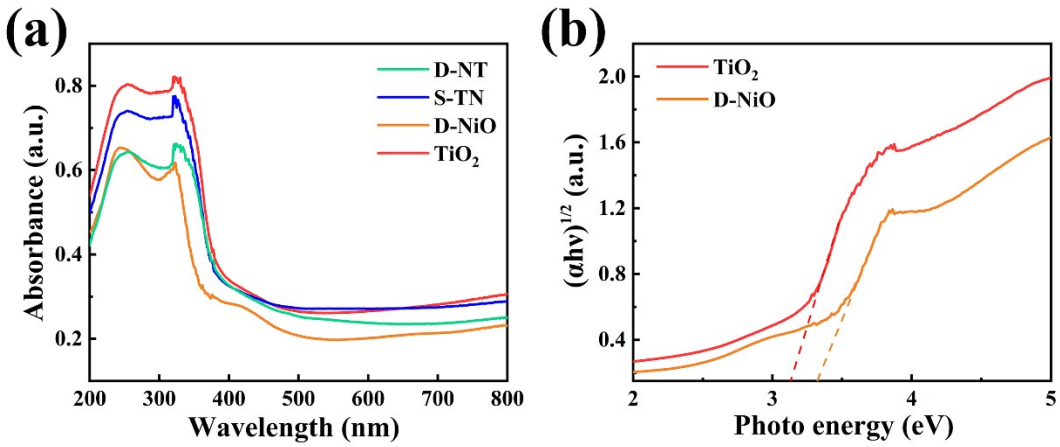

Fig. S2 (a) UV-vis diffuse reflectance spectra and (b) the corresponding plot analysis of optical band gap of TiO_2 NAs and TiO_2/NiO heterojunction.

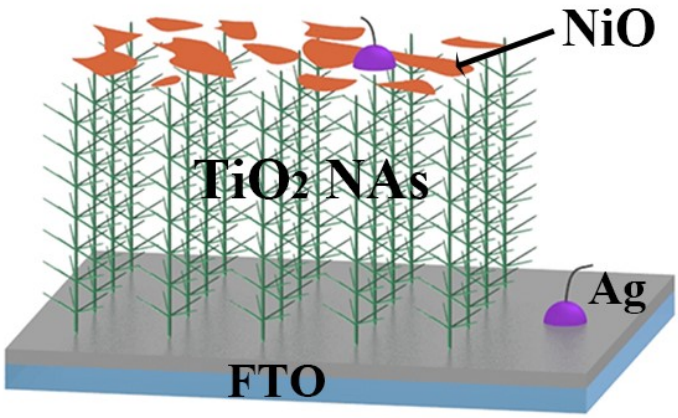

Fig. S3 Schematic illustration for S-TN device.

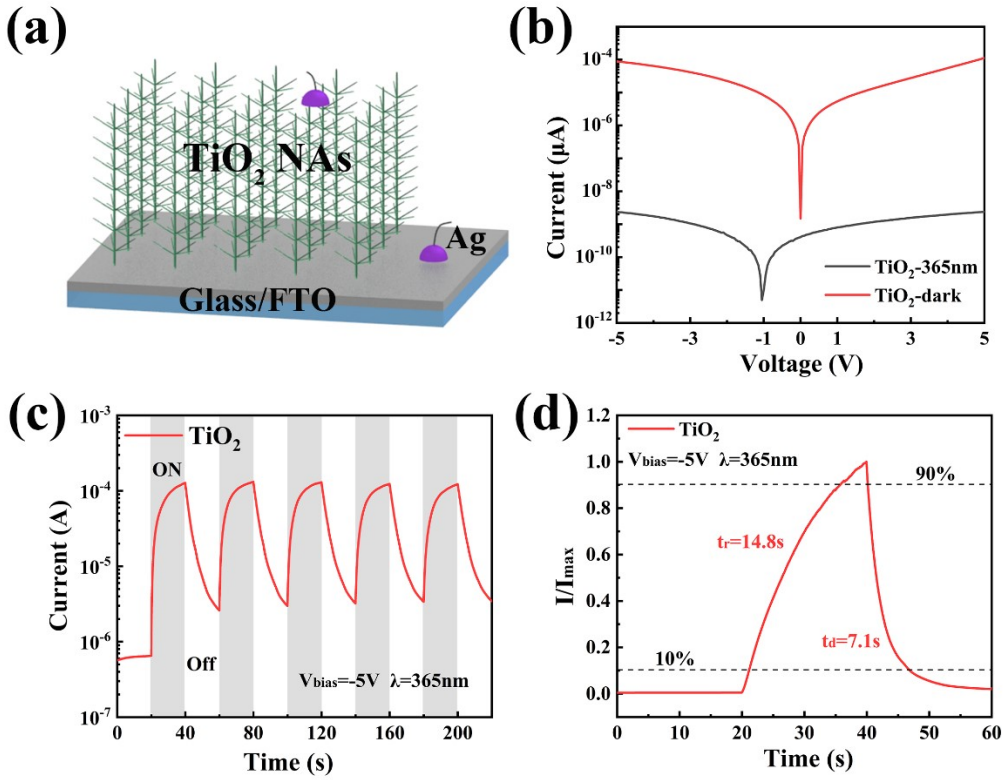

Fig. S4 (a) Schematic illustration (b) Typical I-V curves in the dark and under illumination with 365 nm light. (c) I-t curves during light on-off switching tests at -5 V bias with 365 nm illumination and (d) A sharp rise and decay in the enlarged portions of a 20-40 s range and a 40-60 s range corresponding to the on-state and off-state at a bias voltage of -5 V for TiO_2 NAs.

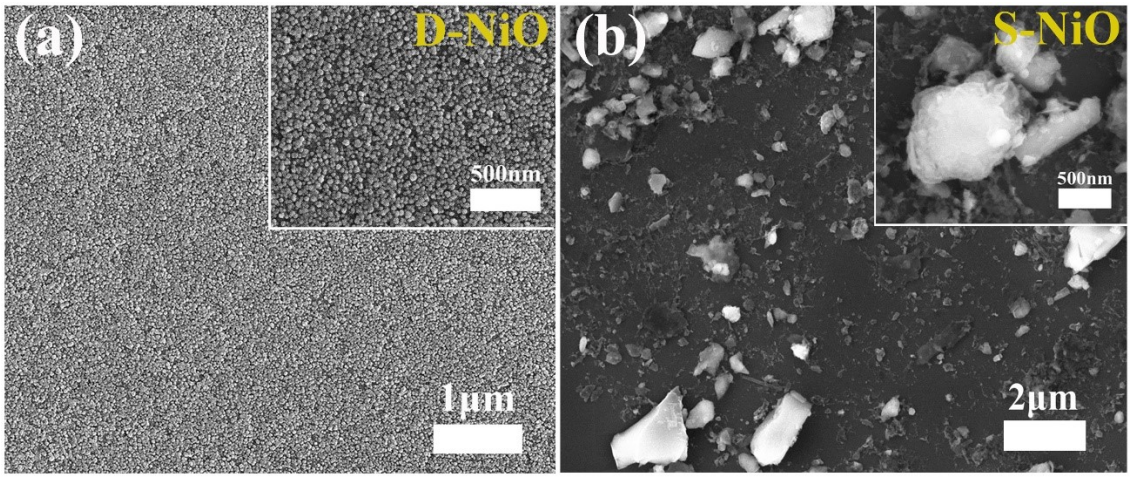

Fig. S5 Plane-view SEM images of NiO: (a) D-NiO, (b) S-NiO.

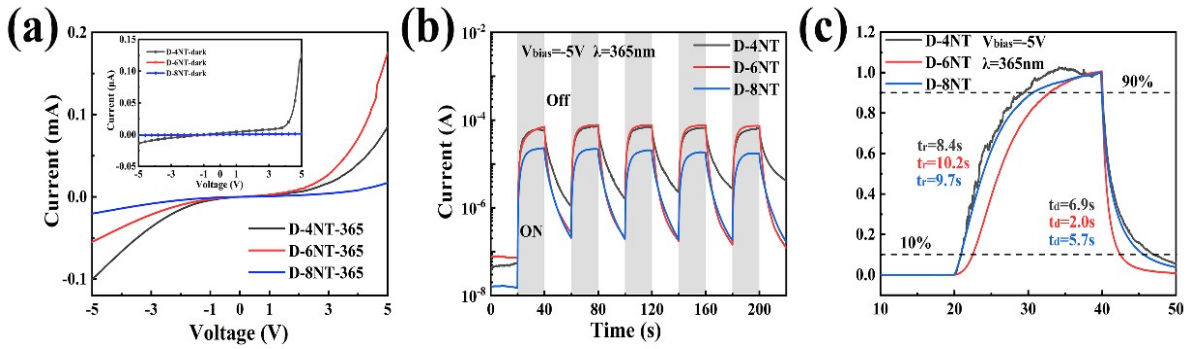

Fig. S6 (a) Typical I-V curves in the dark and under illumination with 365 nm light. (c) I-t curves during light on-off switching tests at -5 V bias with 365 nm illumination and (d) A sharp rise and decay in the enlarged portions of a 20-40 s range and a 40-60 s range corresponding to the on-state and off-state at a bias voltage of -5 V for D-4NT，D-6NT and D-8NT.

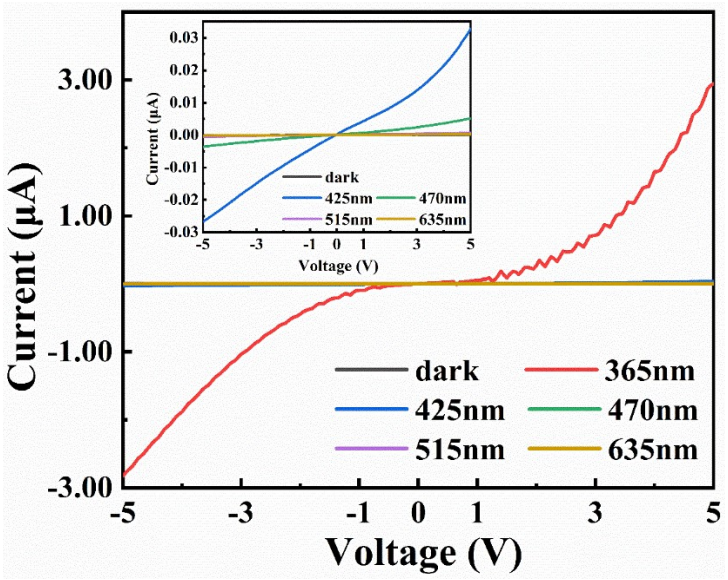

Fig. S7 Typical I-V curves for D-NT in the dark and under illumination with 365, 425, 470, 515 and 635 nm light.

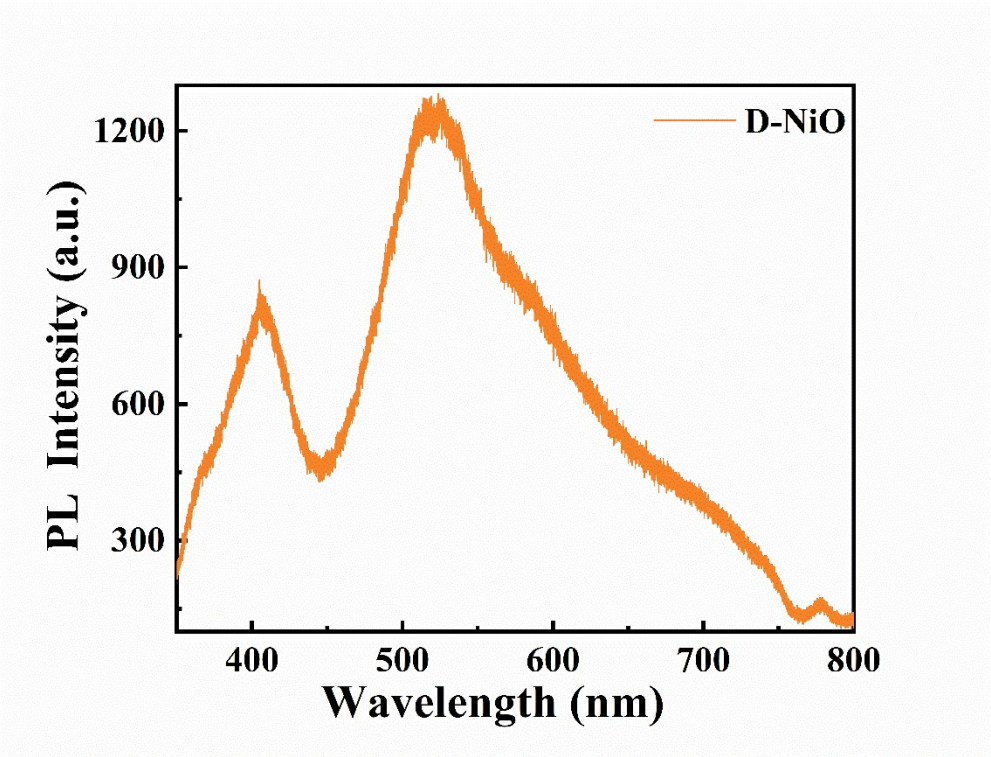

Fig. S8 PL spectra of D-NiO film.

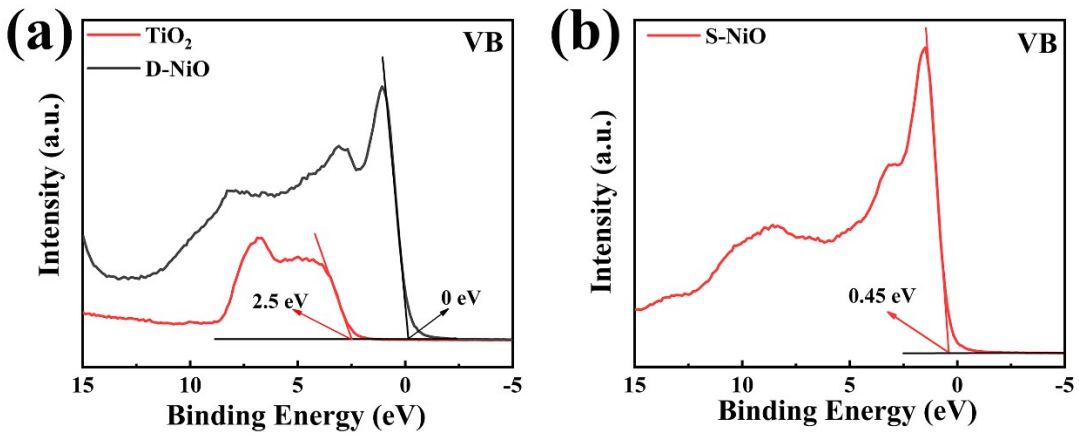

Fig. S9 The valence band spectra of TiO_2, D-NiO and S-NiO.

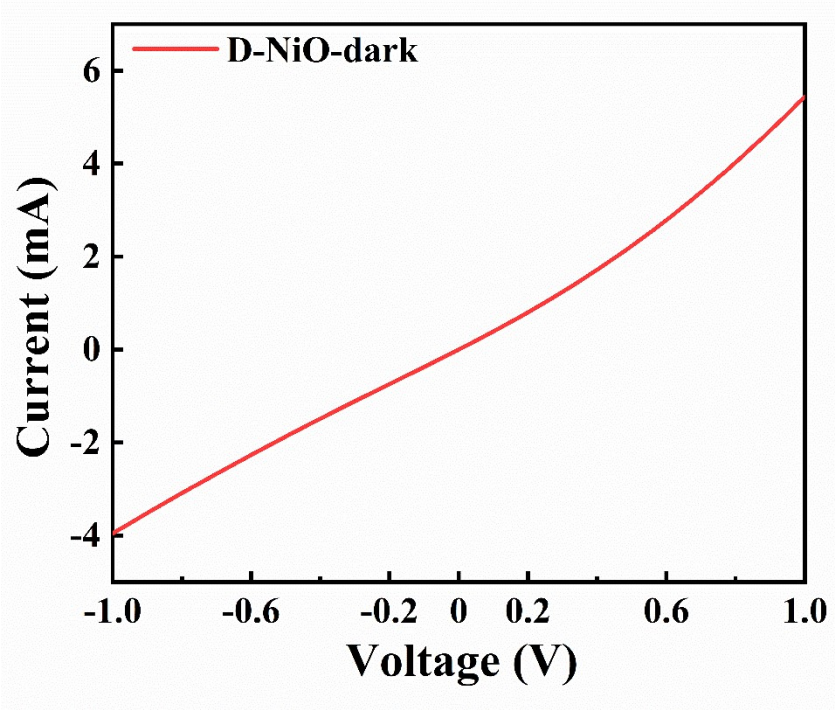

Fig. S10 Typical I-V curves of D-NiO film in the dark.