RSC Advances

Supporting Information

Promotional effect of silver nanoparticles on performance of N-doped TiO_2 photoanode-based dye-sensitized solar cells

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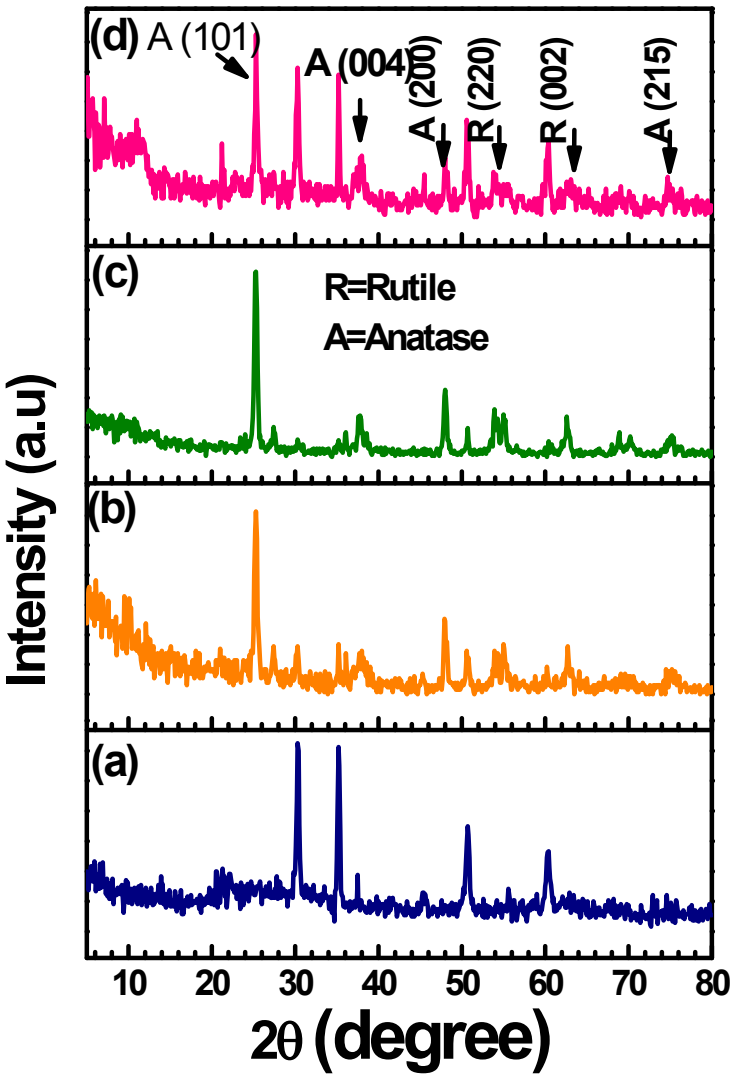

Fig. S1. X-ray diffraction patterns of (a) ITO, (b) TiO_2, (c) N-TiO_2, and (d) N-TiO_2-Ag.

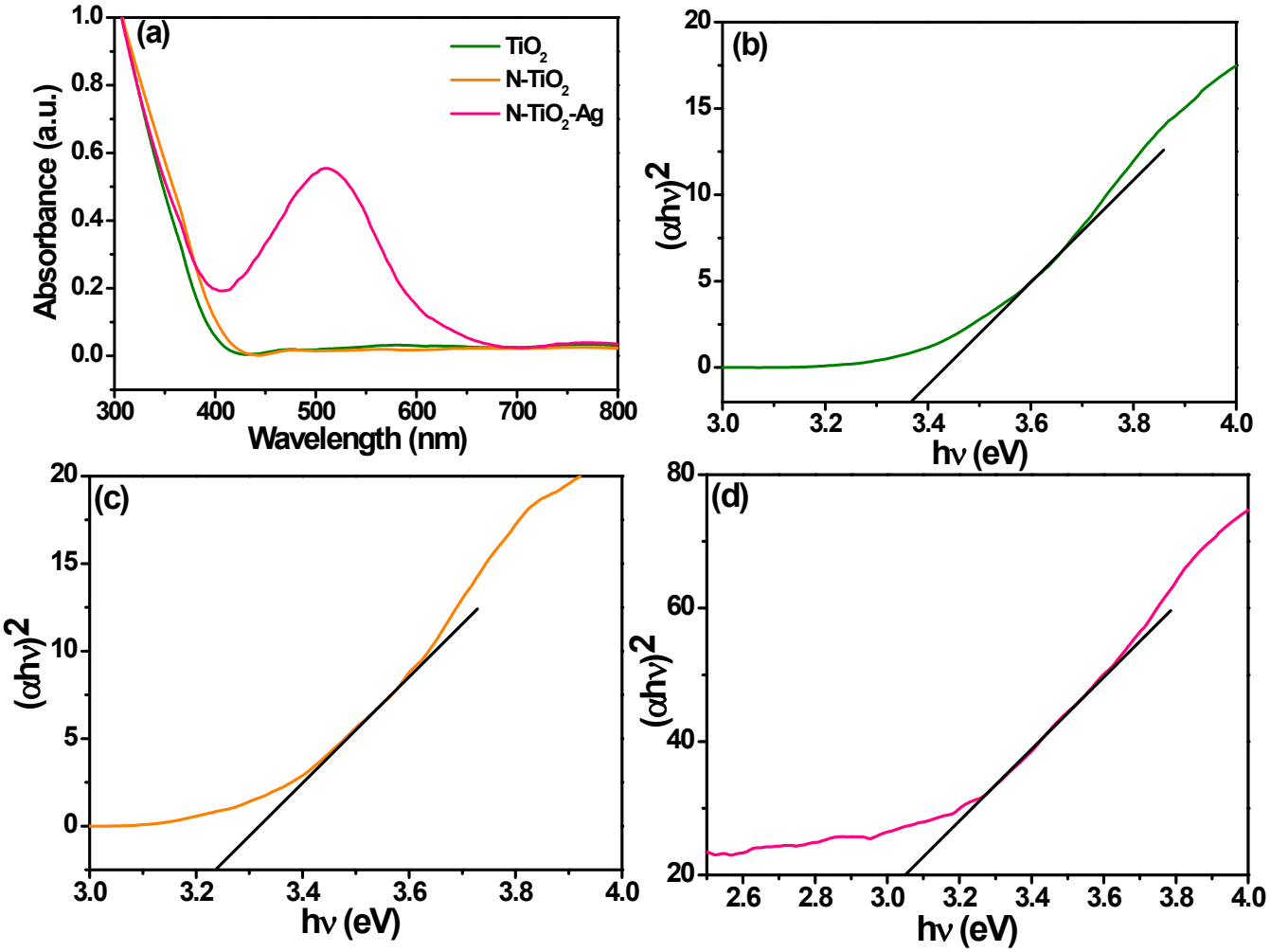

Fig. S2 (a) UV–visible absorption spectra of TiO_2, N-TiO_2, and N-TiO_2-Ag. Plots of $(\alpha h\nu)^2$ versus $h\nu$ obtained for **(b)** TiO_2, **(c)** N-TiO_2, and **(d)** N-TiO_2-Ag.

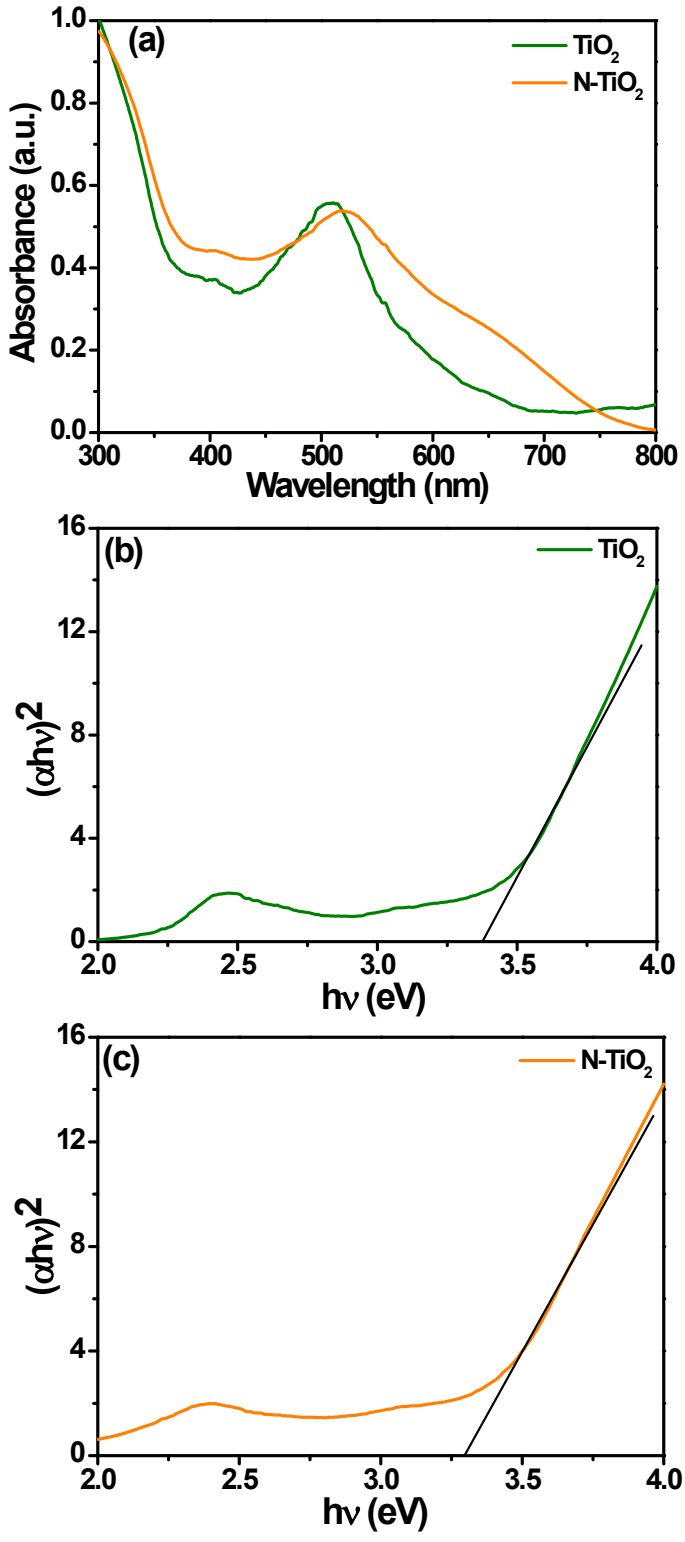

Fig. S3 (a) UV–visible absorption spectra of N719 dye adsorbed TiO_2 and N-TiO_2 photoanodes. Plots of $(\alpha h\nu)^2$ vs. hν obtained for the N719 dye adsorbed (b) TiO_2 and (c) N-TiO_2 photoanodes.

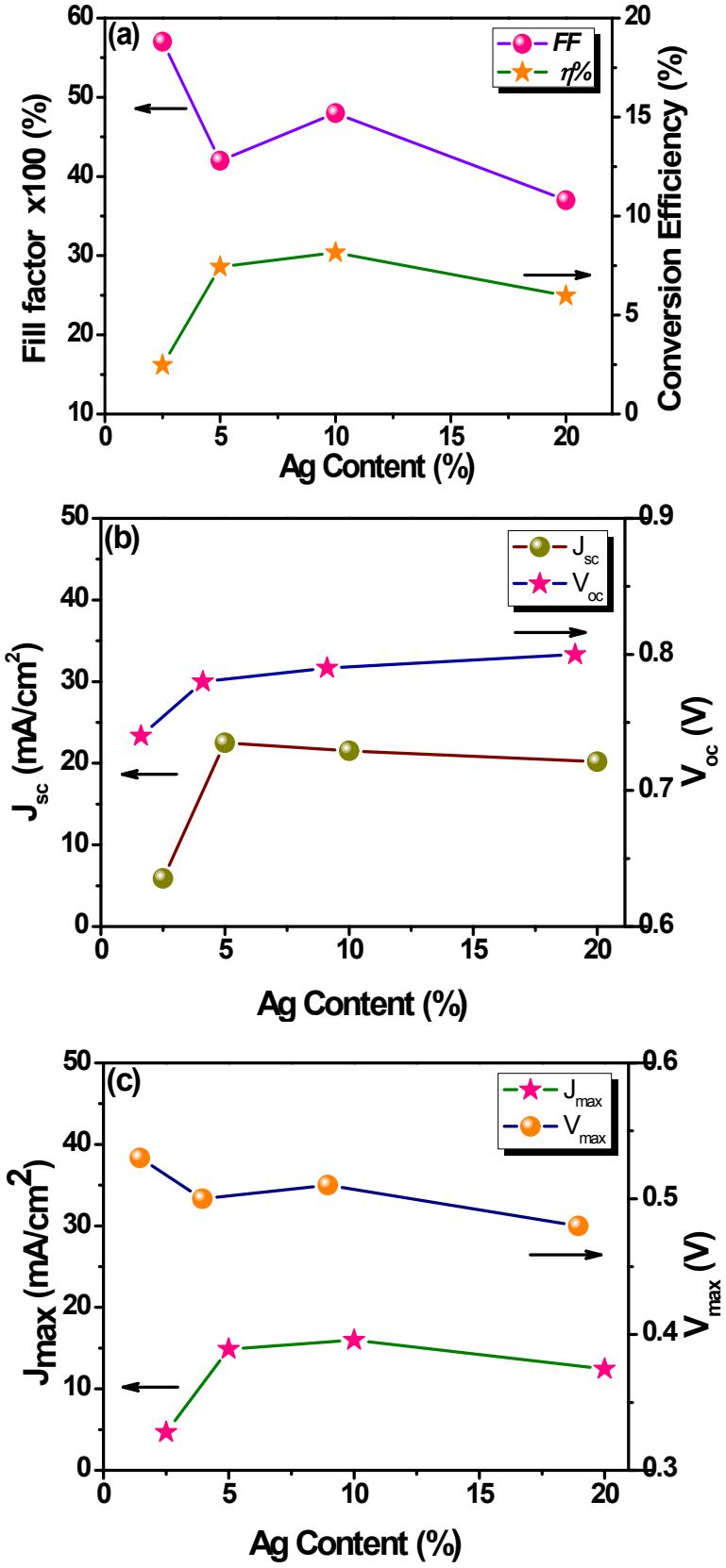

Fig. S4. Plots of **(a)** fill factor (FF) and power conversion efficiency (η), (**b**) short-circuit current density (J_{sc}) and open-circuit voltage (V_{oc}), and **(c)** maximum photocurrent density (J_{max}) and maximum photovoltage (V_{max}) obtained for N-TiO_2-Ag-based DSSC with different Ag contents.

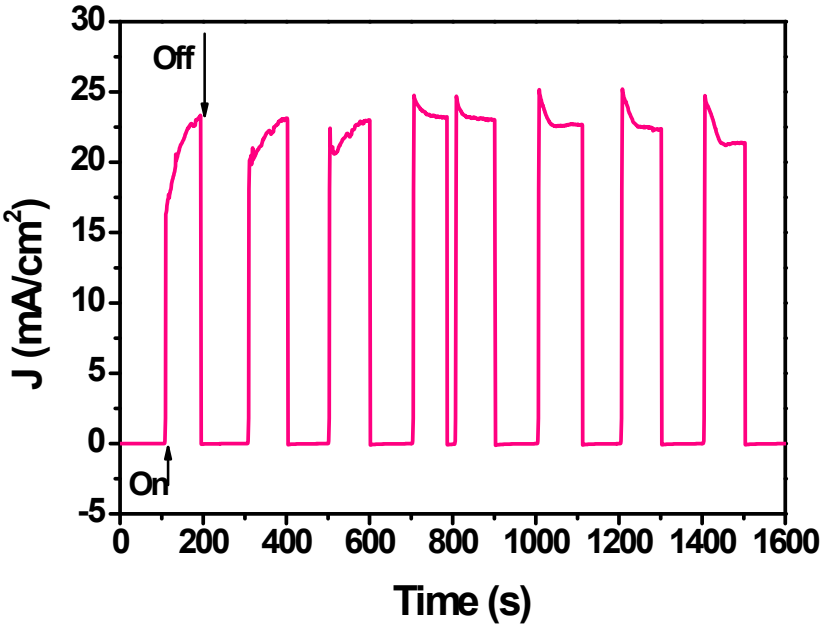

Fig. S5. Photocurrent density–time (J–T) profile obtained for the N-TiO_2-Ag (10 wt.% of Ag) plasmonic photoanode modified DSSC under illumination 'on-off' condition.

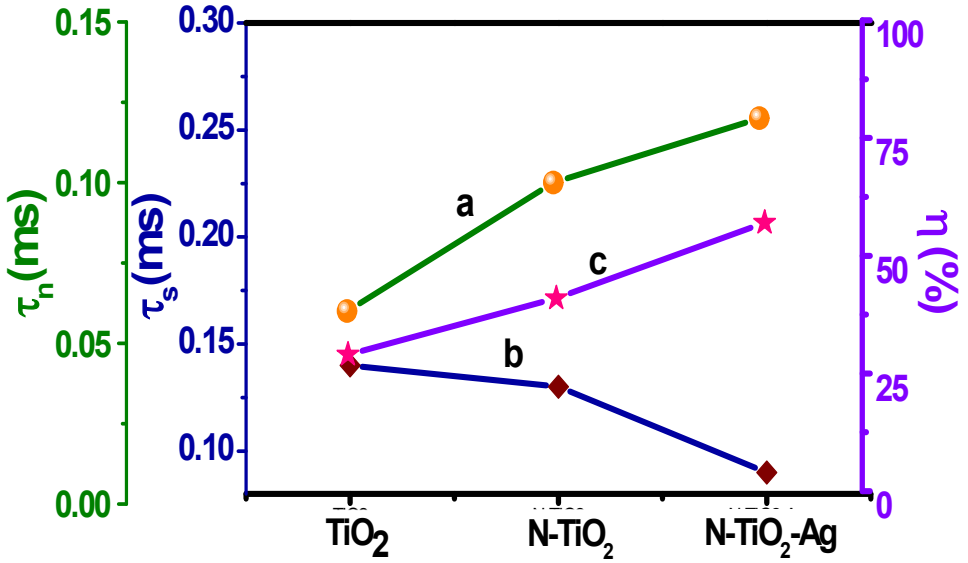

Fig. S6. (a) Electron lifetime (τ_n), (b) electron transport time (τ_s), and (c) charge collection efficiency (η_c) of TiO_2, N-TiO_2, and N-TiO_2-Ag photoanode-based DSSCs.