

Supporting Information

Fig. S1 AFM topographic images in tapping mode operation of TiO₂ films on silicon substrates a) before treatment, b) after post-deposition cw-UV treatment and c) after UV-treatment on colloidal solution. Scan size 5 $\mu\text{m} \times 5 \mu\text{m}$.

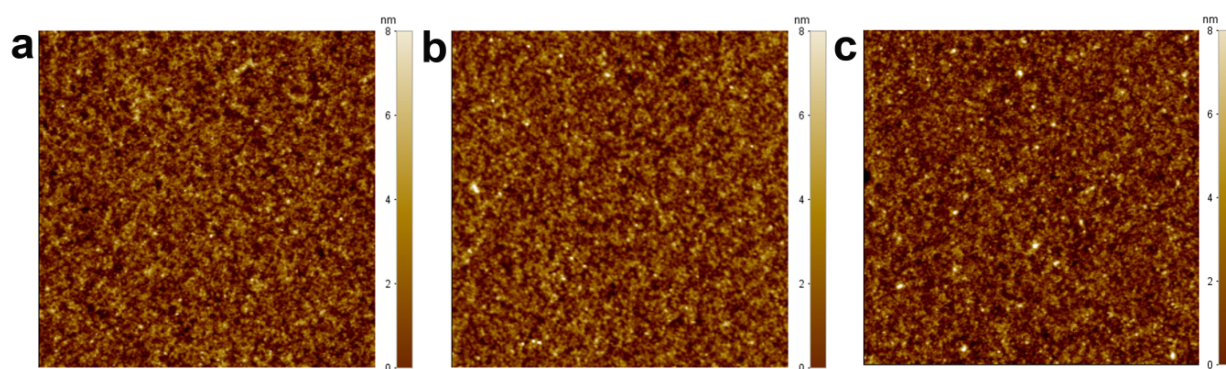
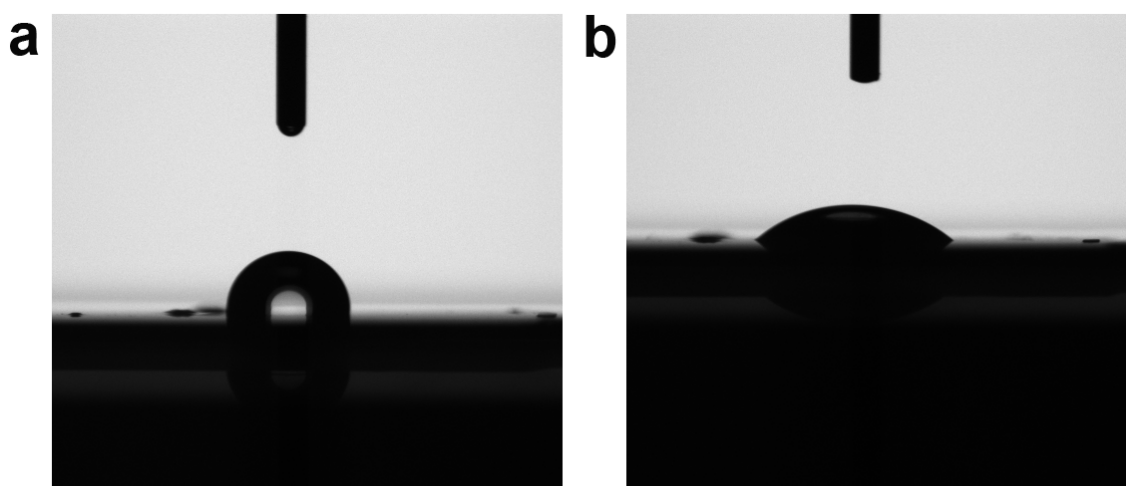


Fig. S2 Contact angle measurement of TiO₂ NRs a) before and b) after UV irradiation.



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Fig. S3 AFM topographic image of TiO_2 film deposited on silicon substrate after sintering treatment at 430°C for 1h in a muffle furnace. Scan size $5\text{ }\mu\text{m} \times 5\text{ }\mu\text{m}$.

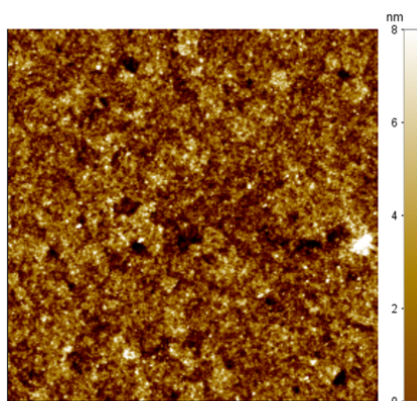
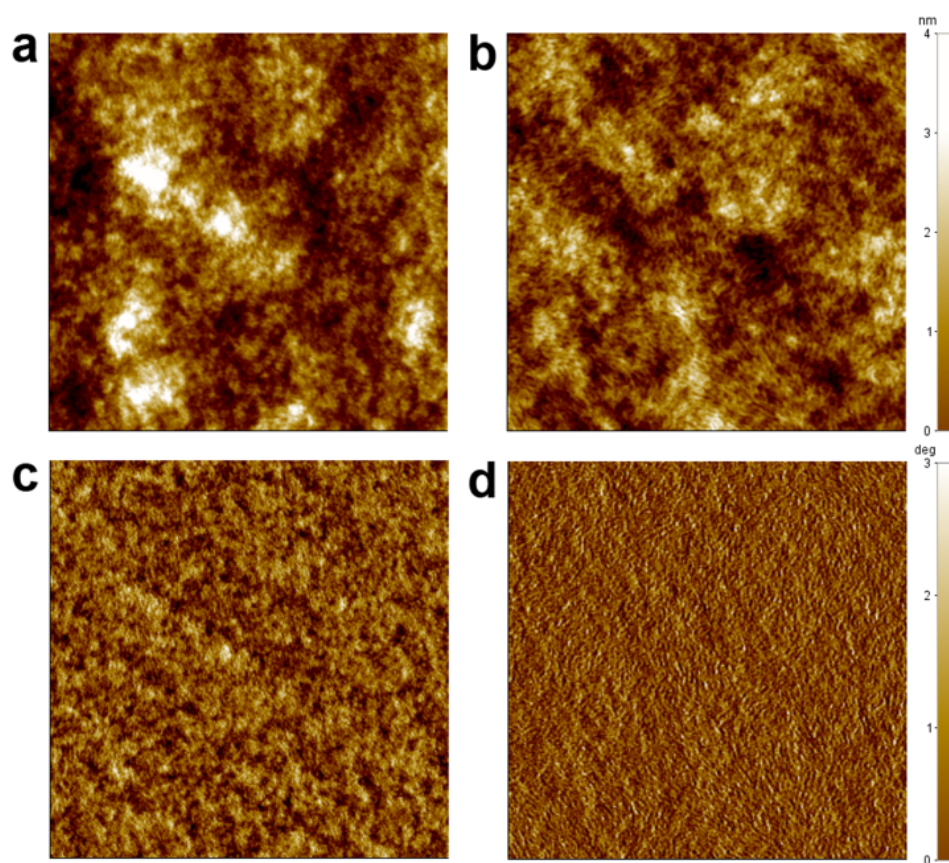


Fig. S4 AFM topography of the active layer without (a) and with (b) the TiO_2 coating, respectively; (c) and (d) show the respective phase images. Scan size = $2\text{ }\mu\text{m} \times 2\text{ }\mu\text{m}$.



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Fig. S5 Normalized Absorption of TiO₂ NRs in solution.

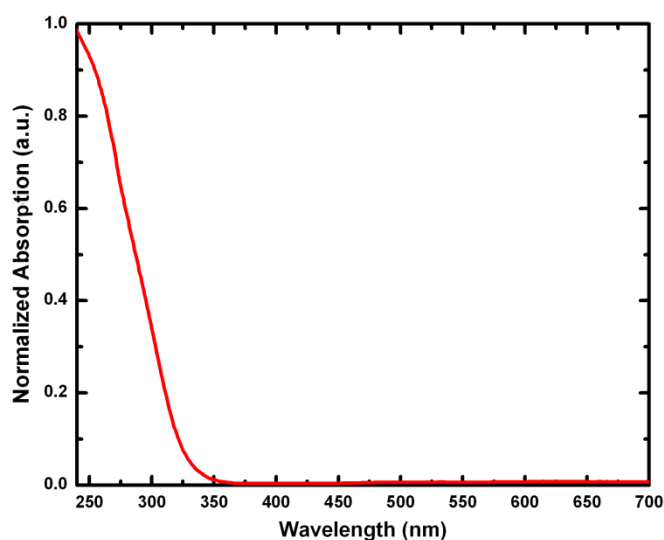


Fig. S6 (a) The change in the absorption spectrum ($\Delta\alpha$) resulting from the addition of the optical spacer as given by equation (1).

$$\Delta\alpha \approx -\frac{1}{2}d \times \ln \left[\frac{I'_{out}(x)}{I_{out}(x)} \right] \quad (1)$$

where $I'_{out}(x)$ is the intensity of the reflected light from the device with the optical spacer, $I_{out}(x)$ is the intensity of the reflected light from an identical device without the optical spacer, and d is the thickness of the active layer (*ca.* 60 nm); (b) Scheme of the optic beam path in the samples.

