Supplementary Information

Self-assembled 3D hierarchical sheaf-like $Nb_3O_7(OH)$ nanostructures with enhanced photocatalytic activity

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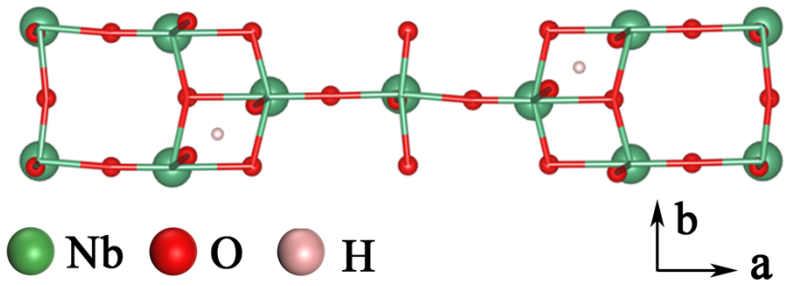

Fig. S1 Atomic structure model of $Nb_3O_7(OH)$. Atom colour code: green–Nb, red–O, pink–H.

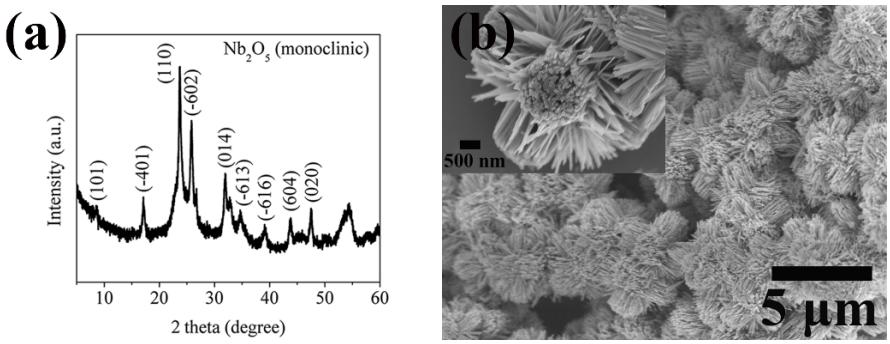

Fig. S2 (a) XRD pattern of Nb_2O_5 replica obtained by thermal treatment of 3D $Nb_3O_7(OH)$ six-direction sheaf-like nanostructures at 450 ºC for 2 h. (b) SEM image of the resulting Nb_2O_5 replica at a low magnification. Inset: high-magnification SEM image.

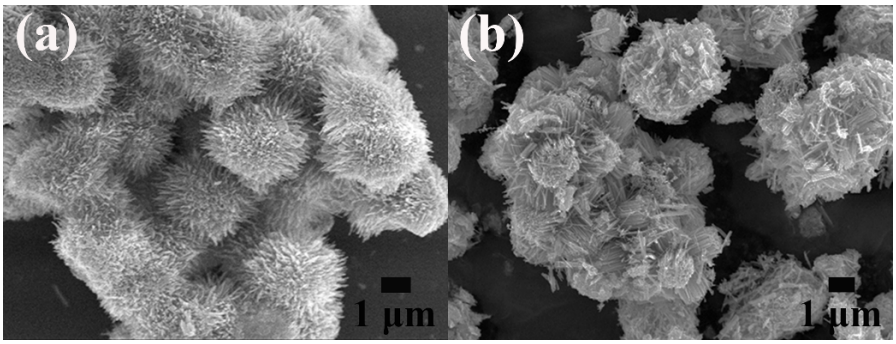

Fig. S3 Typical SEM images of the as-prepared $Nb_3O_7(OH)$ with different amounts of $NbCl_5$: (a) 0.21 g and (b) 0.43 g.

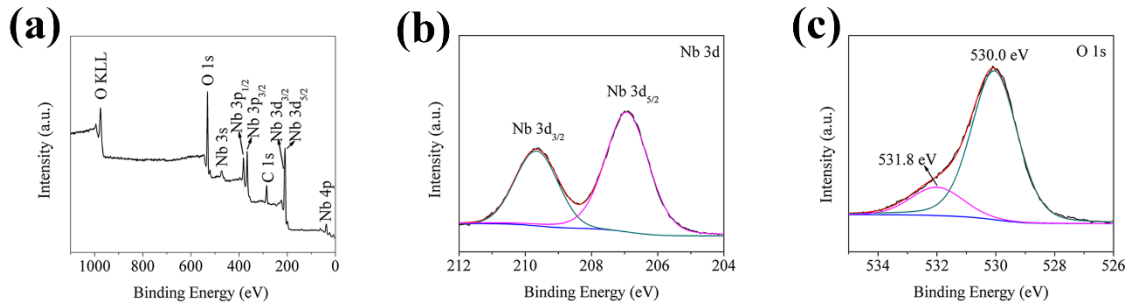

Fig. S4 XPS results of (a) survey spectrum, (b) Nb 3d (b), and (c) O 1s.

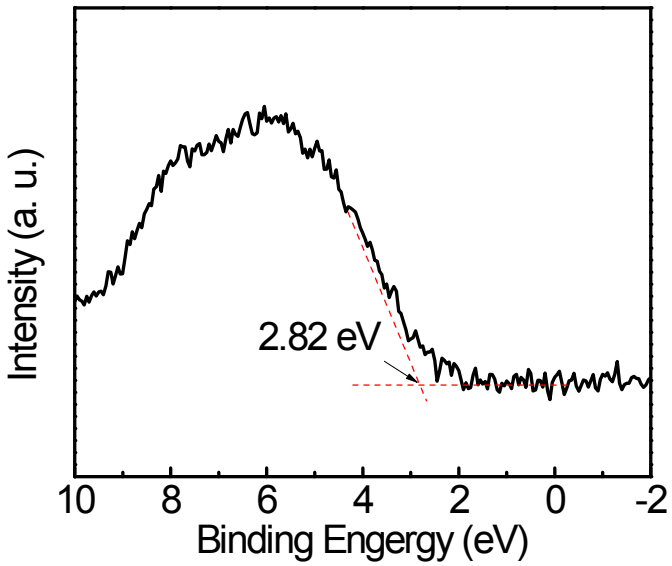

Fig. S5 XPS valence band spectrum of the $Nb_3O_7(OH)$.

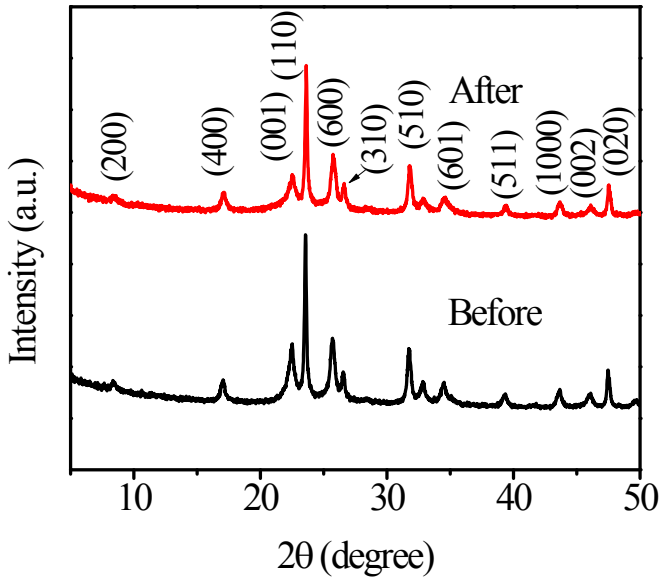

Fig. S6 XRD patterns of the 3D hierarchical $Nb_3O_7(OH)$ photocatalyst before and after photocatalytic degradation of RhB with five cycles.

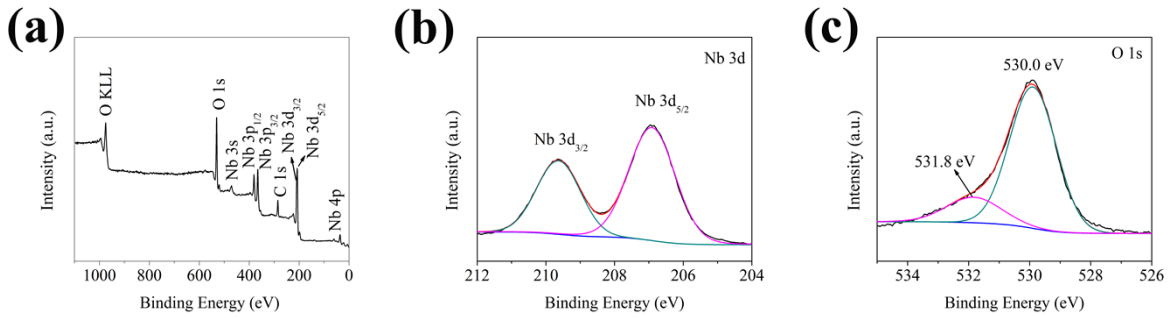

Fig. S7 XPS spectra of the $Nb_3O_7(OH)$ photocatalyst after photocatalytic degradation of RhB with five cycles.