

SUPPORTING INFORMATION

Controllable design of natural gully-like $\text{TiO}_2\text{-ZrO}_2$ composite and its photocatalytic degradation and hydrogen production by water splitting

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SUMMARY

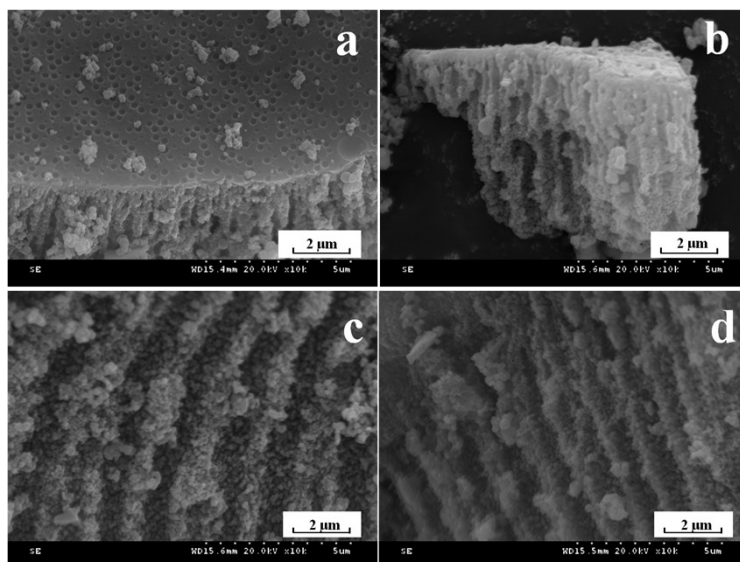


Figure S1 SEM images of TZ 1:4 before (a) and after hydrogen production (b), TZ 1:0.25 before (c) and after catalytic degradation of dyes (d)

In Figure S1 (a) and (b), the SEM images of the catalyst TZ 1: 4 before and after hydrogen evolution were analyzed. It can be seen from the figure that the morphology of the catalyst after the cycle has some damage, but the general gully morphology has

not changed. Figure S1 (c) and (d) are SEM images of TZ1: 0.25 before and after photocatalytic degradation. It can be seen that the majority of the catalyst after the cycle remains gully-like, but the depth of the gully is slightly reduced and the particles scattered on the surface are reduced.

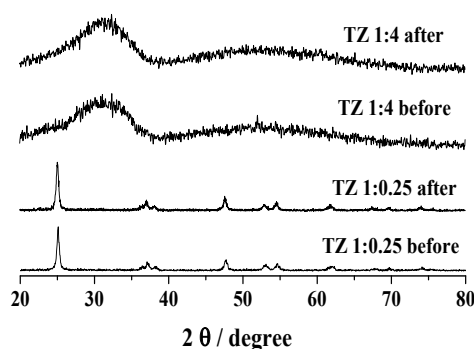


Figure S2 XRD images of TZ 1:4 before and after hydrogen production, TZ 1:0.25 before and after catalytic degradation of dyes.

Figure S2 shows the XRD images of the catalyst before and after degradation of dye and hydrogen production, as can be seen from the Figure S2, the TZ 1: 4 photocatalyst does not change much before and after the photocatalytic hydrogen production cycle, and the peak type is basically the same and the peak intensity does not change. Similarly, the XRD peak shape and peak intensity of TZ 1: 0.25 photocatalyst before and after photocatalytic degradation of dye are basically the same.