

Supplementary Information:

**Wet-chemistry fabrication of BaTiO₃@TiO_x for enhanced
tribocatalytic degradation of water pollutant**

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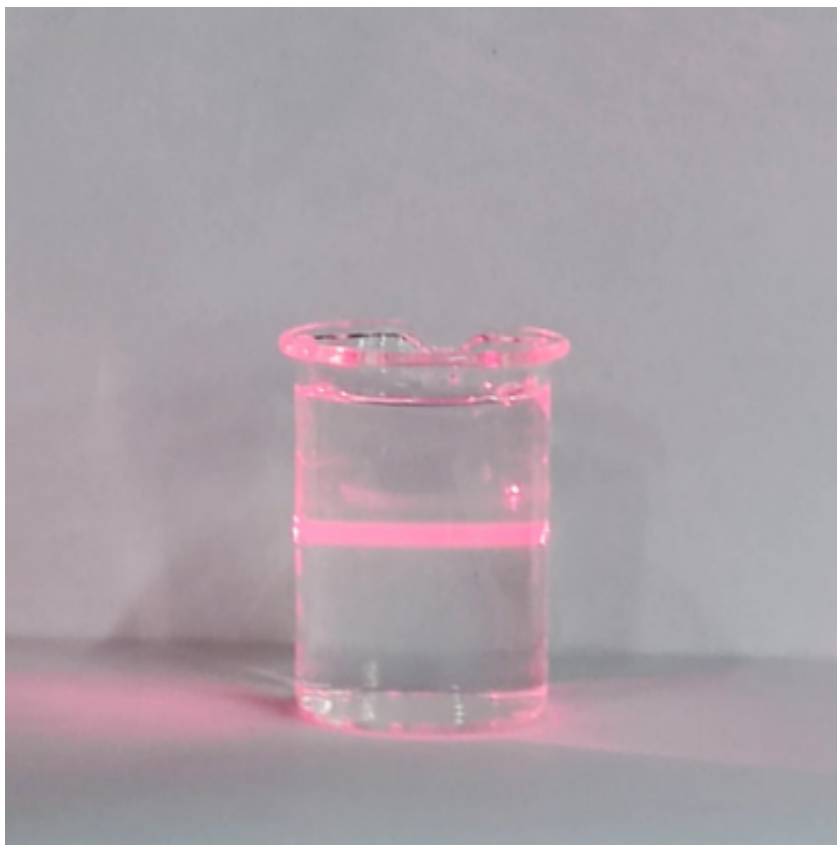


Figure S1 Photograph of the TiO_x colloid; the Tyndall effect (650 nm laser light scattering) confirms the formation of nanosized suspension.

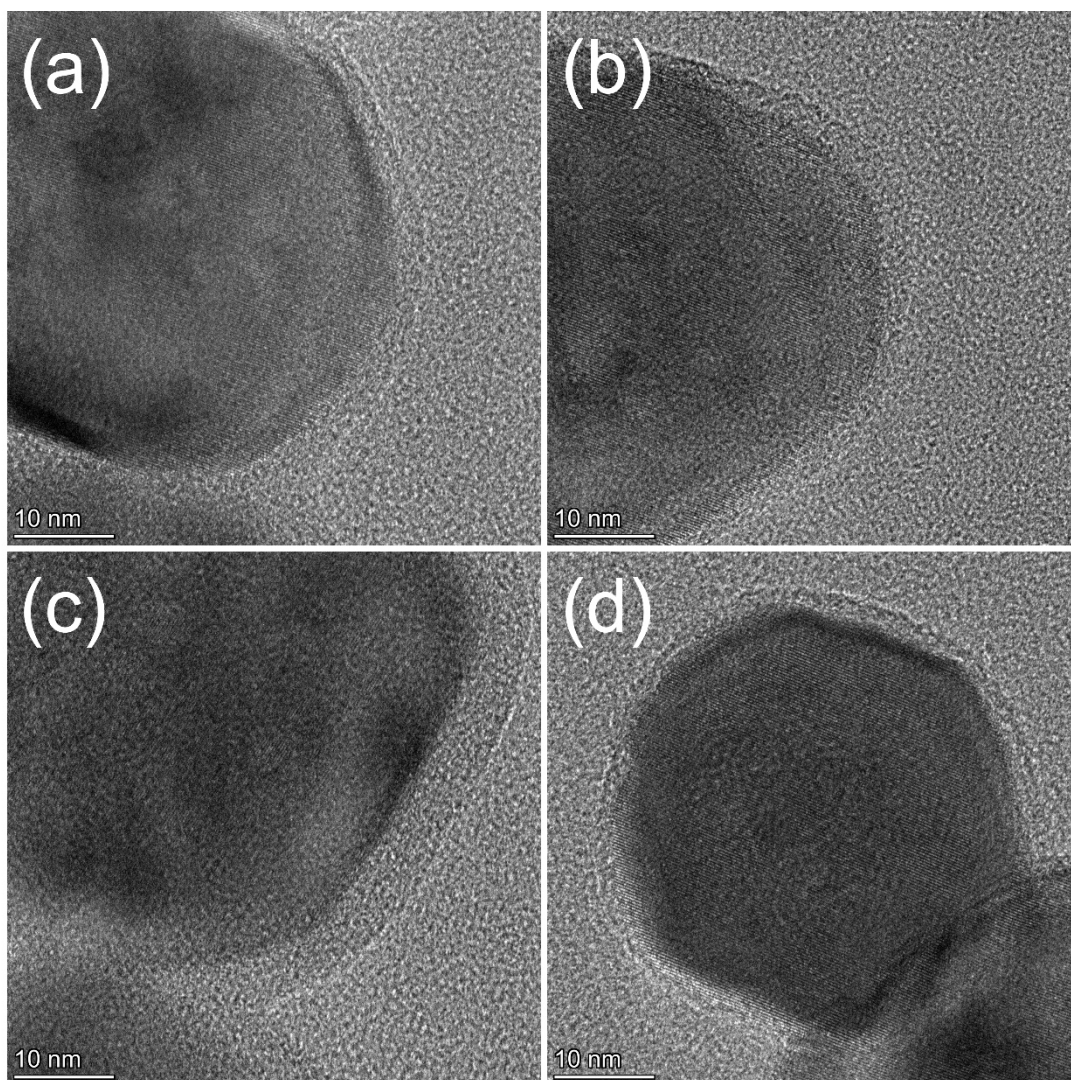


Figure S2 TEM images of BaTiO₃@TiO_x-1.

Note: TiO_x colloids were successfully deposited on the surface of BaTiO₃ and form a layer of several nanometers.

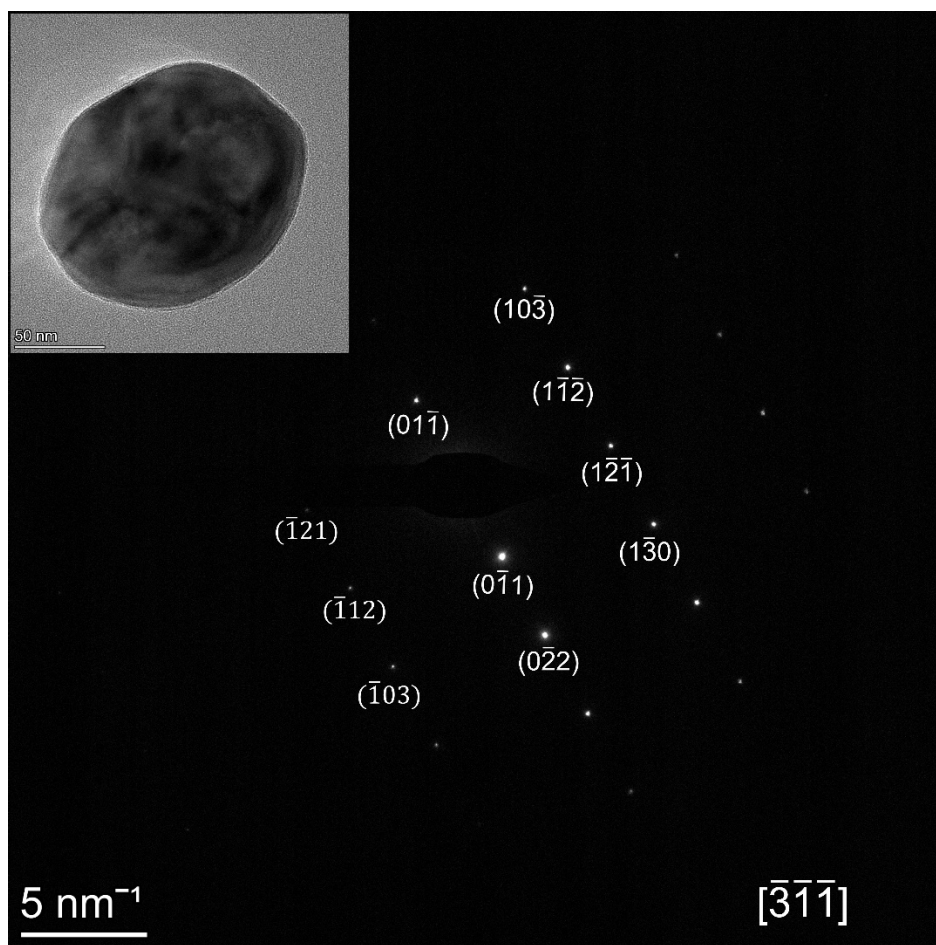


Figure S3 Selected area electron diffraction (SAED) pattern for BaTiO₃. Inset presents the corresponding BaTiO₃ nanoparticle.

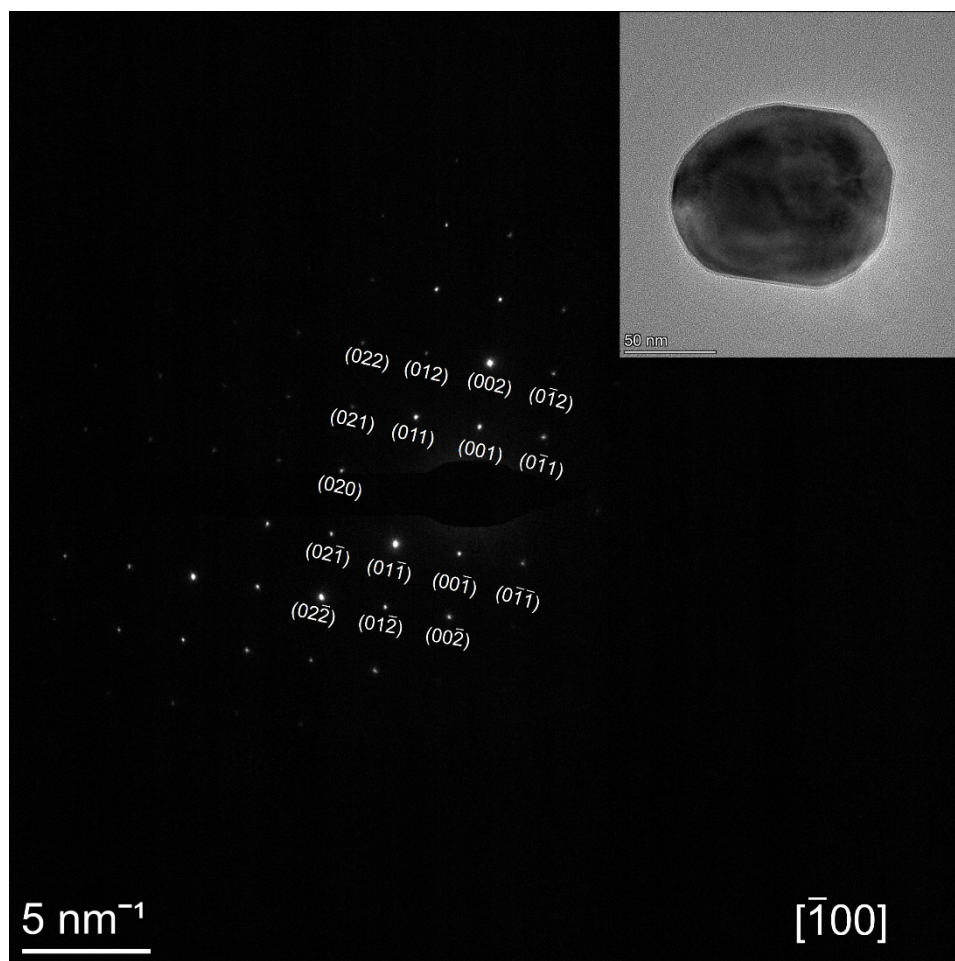
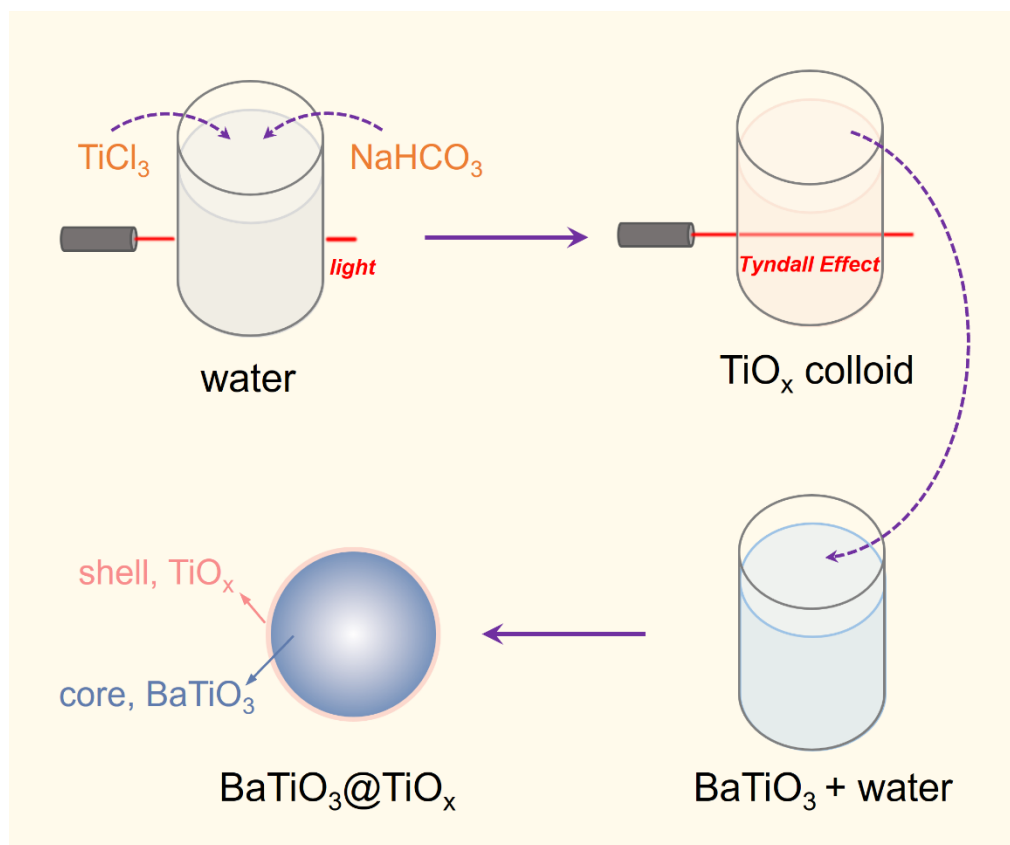


Figure S4 SAED pattern for $\text{BaTiO}_3@\text{TiO}_x\text{-1}$. Inset presents the corresponding $\text{BaTiO}_3@\text{TiO}_x\text{-1}$ nanoparticle.



Scheme S1 Schematic of the $\text{BaTiO}_3@\text{TiO}_x$ catalysts synthesis via wet chemistry method.

Table S1 Surface composition of BaTiO₃ and BaTiO₃@TiO_x-1 based on the XPS analysis.

Sample	Ba (Atomic %)	Ti (Atomic %)	O (Atomic %)
BaTiO ₃	14.62	15.82	45.12
BaTiO ₃ @TiO _x -1	14.35	16.73	45.90

Note: the summary of the atomic fraction was not equal to 100% because of the presence of carbon that was not shown in this Table.

Table S2 Comparison of the reaction rate of RhB over tribocatalysts with the reported literatures.

Catalyst	Reaction condition	Rate constant (h^{-1})	Ref.
poled BaTiO ₃ nanofibers	1000 r/min, RhB 5 mg/L, PTFE rod (size: $\varnothing$ 5 mm $\times$ 20 mm)	0.227	[1]
poled BaCu _{0.01} Ti _{0.99} O _{2.99} nanofibers		0.347	
Tetrahedron-like BTO	500 r/min, RhB 5 mg/L, PTFE rod (size: $\varnothing$ 70 mm $\times$ 90 mm)	0.150	[2]
Sheet-like BTO		0.370	
Flower-like BTO		0.440	
Dandelion-like BTO		0.540	
Ba(Zr _{0.05} Ti _{0.95})O ₃	1000 r/min, RhB 5 mg/L, PTFE rod (size: 20 mm)	0.4482	[3]
BaTiO ₃ (BTO)	RhB 5 mg/L, PTFE rod (size: $\varnothing$ 5 mm $\times$ 20 mm)	0.025	[4]
BaTiO ₃ -OV ₂ (BTO-OV ₂)		0.252	
Sr _{0.4} Ba _{0.6} Nb ₂ O ₆ -4La (SBN-4La)	600 r/min, PTFE rod (size: 300 mm)	0.170	[5]
CaTiO ₃	600 r/min, RhB 7.5 mg/L, PTFE rod	0.114	[6]
R-BaTiO ₃	500 r/min, RhB 10 mg/L, PTFE rod (size: 30 mm)	0.177	[7]
BaTiO ₃ @TiO _x -1	500 r/min, RhB 10 mg/L, PTFE rod (A type, size: 30 mm)	0.272	This work

References

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