Supporting information

Facet-Dependent Photocatalytic Reduction of Nitroaromatics Using Tailored $SrTiO_3$ Crystals: Mechanism and Reactivity Enhancement

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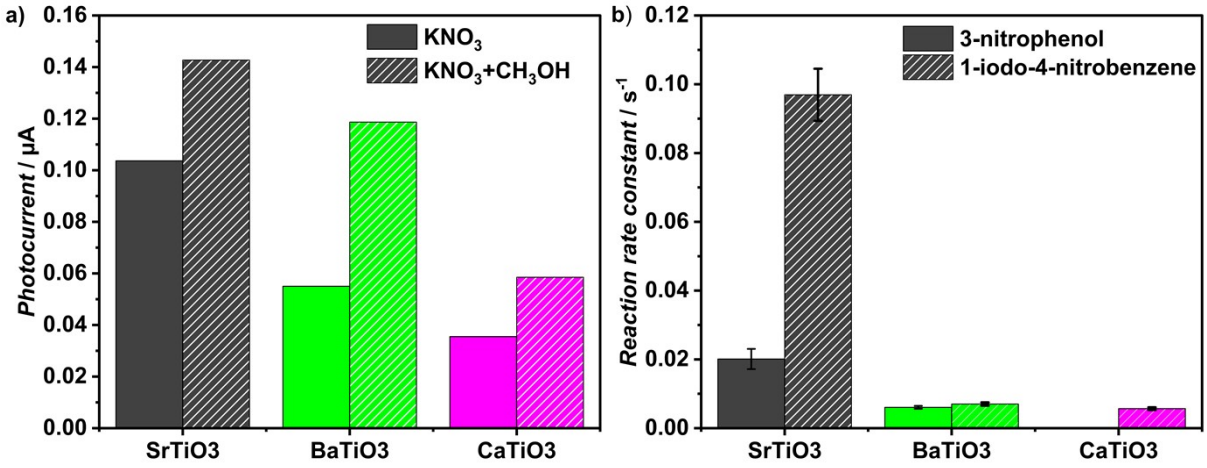

Fig. S1. The value of photocurrents (a) and reaction rate constant for 3-NP and INB reduction reaction in the presence of commercial titanates ($SrTiO_3$, $BaTiO_3$, $CaTiO_3$).

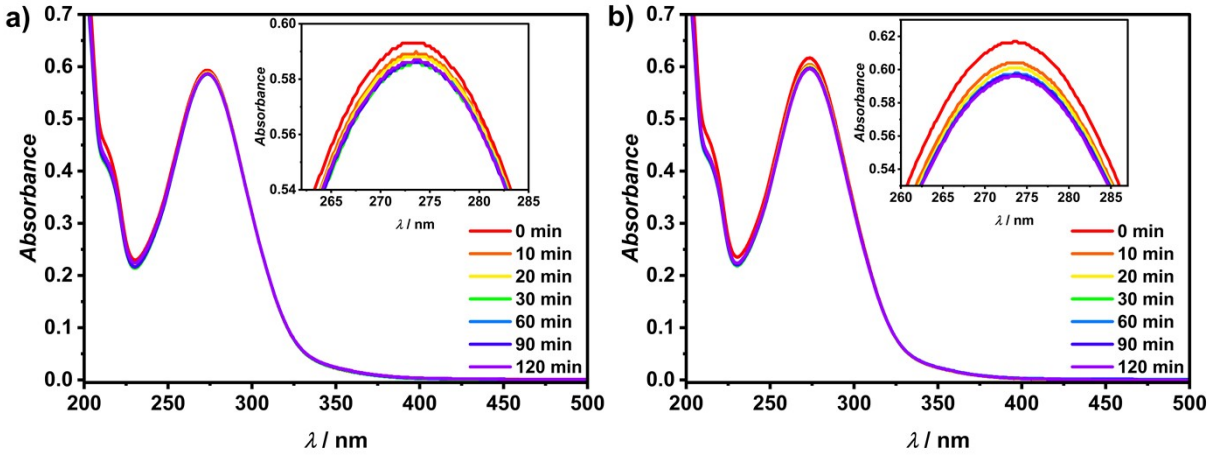

Fig. S2. UV-Vis spectra for the reduction reaction of PNBA in water in the presence of cubes (a) and rhombic dodecahedrons (b) $SrTiO_3$ crystals.

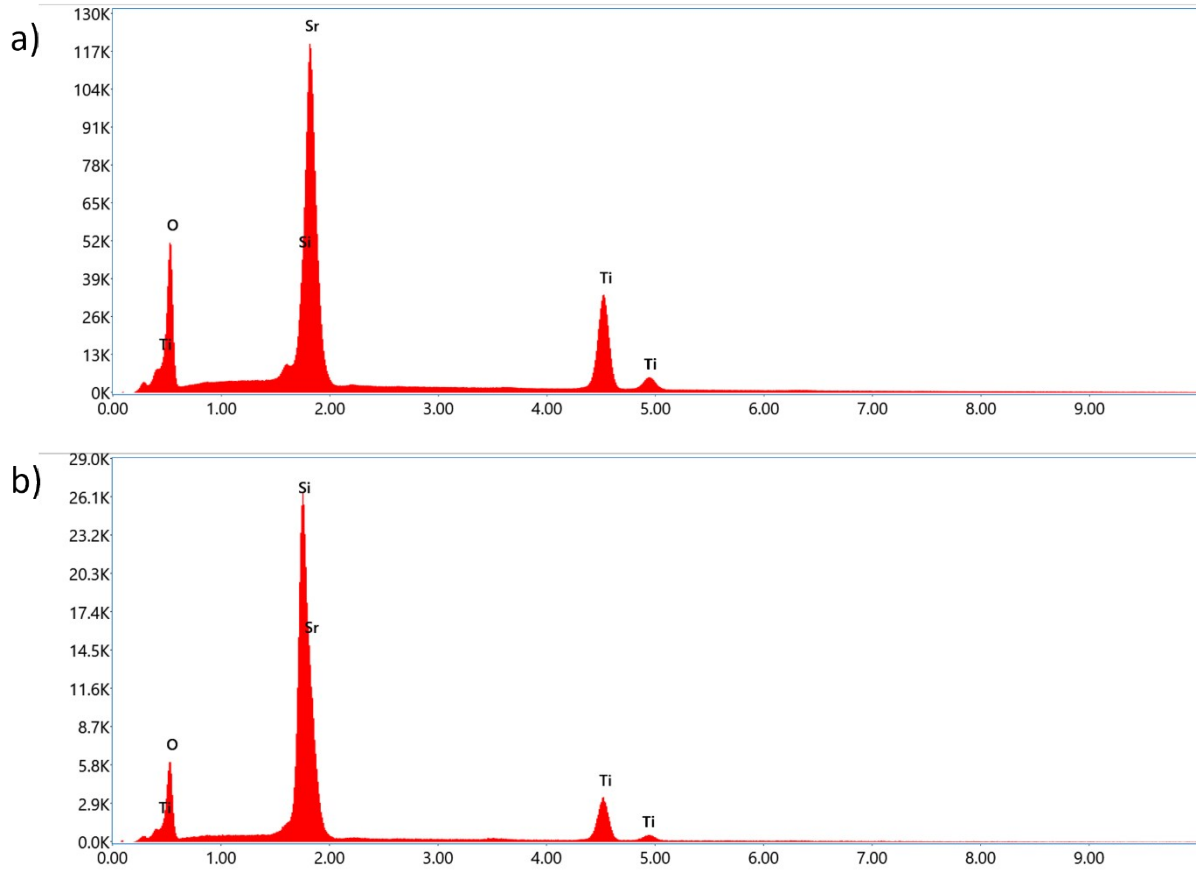

Fig. S3. EDS spectrum for cubes (a) and rhombic dodecahedrons (b) $SrTiO_3$ crystals.

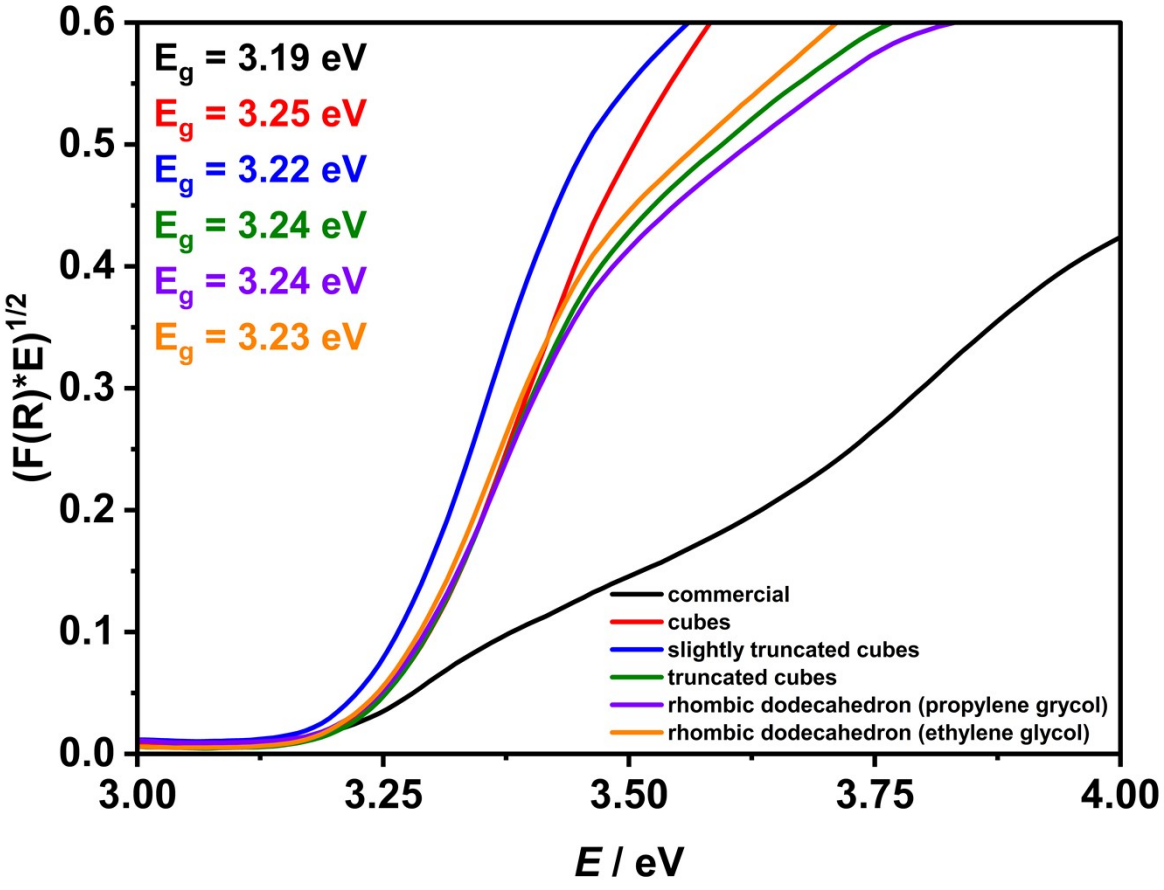

Fig. S4. Tauc plots and calculated band gap energies for tailored $SrTiO_3$ crystals.

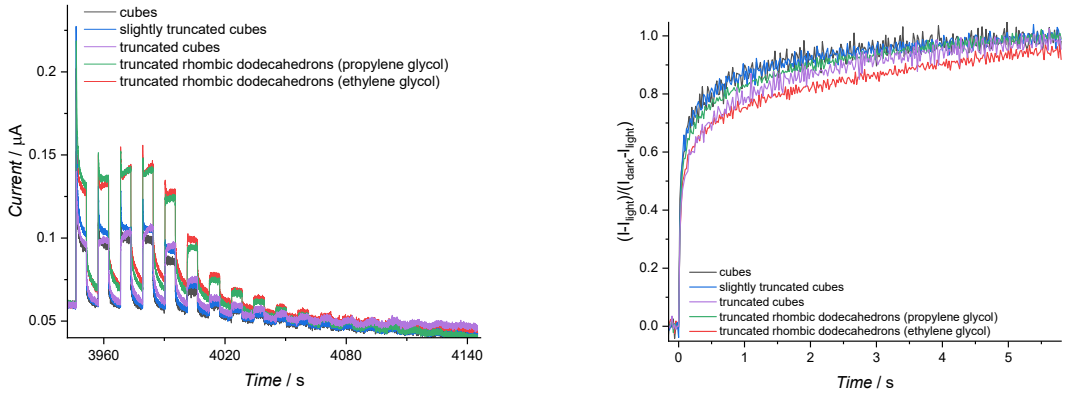

Fig. S5. Transient photocurrent for SrTiO3 materials collected at 1000 mV vs Ag/AgCl (left), and normalised photocurrent decay for SrTiO3 materials after irradiation with monochromatic light (340 nm), where I represents the current of the electrode after switching off the light. Ilight and Idark denote the steady-state current values upon illumination and in the dark, respectively.

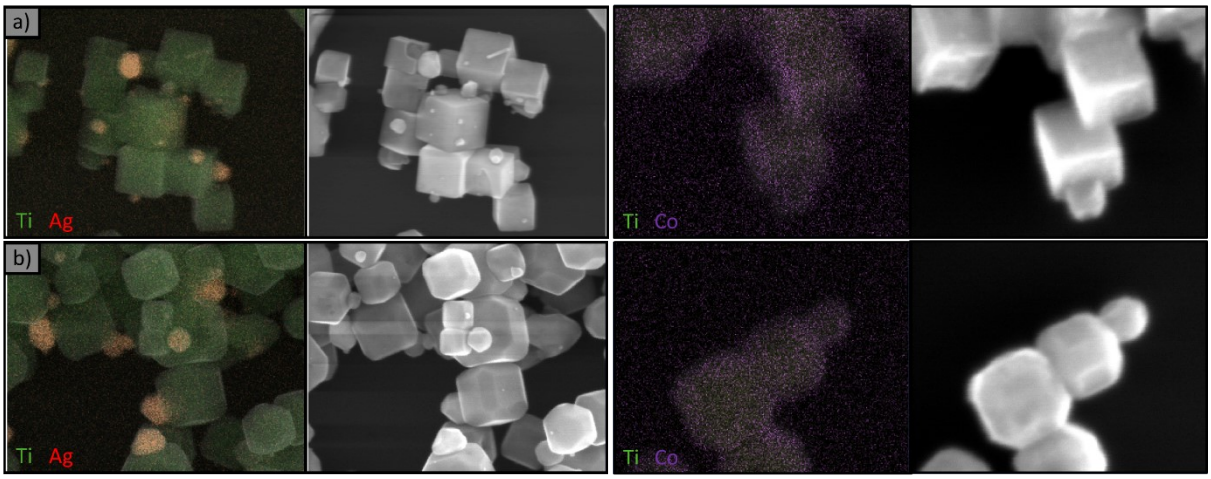

Fig. S6. EDS map of titanium (Ti), silver (Ag) and cobalt (Co) distribution after photo-deposition on cubes (a) and rhombic dodecahedrons (b).

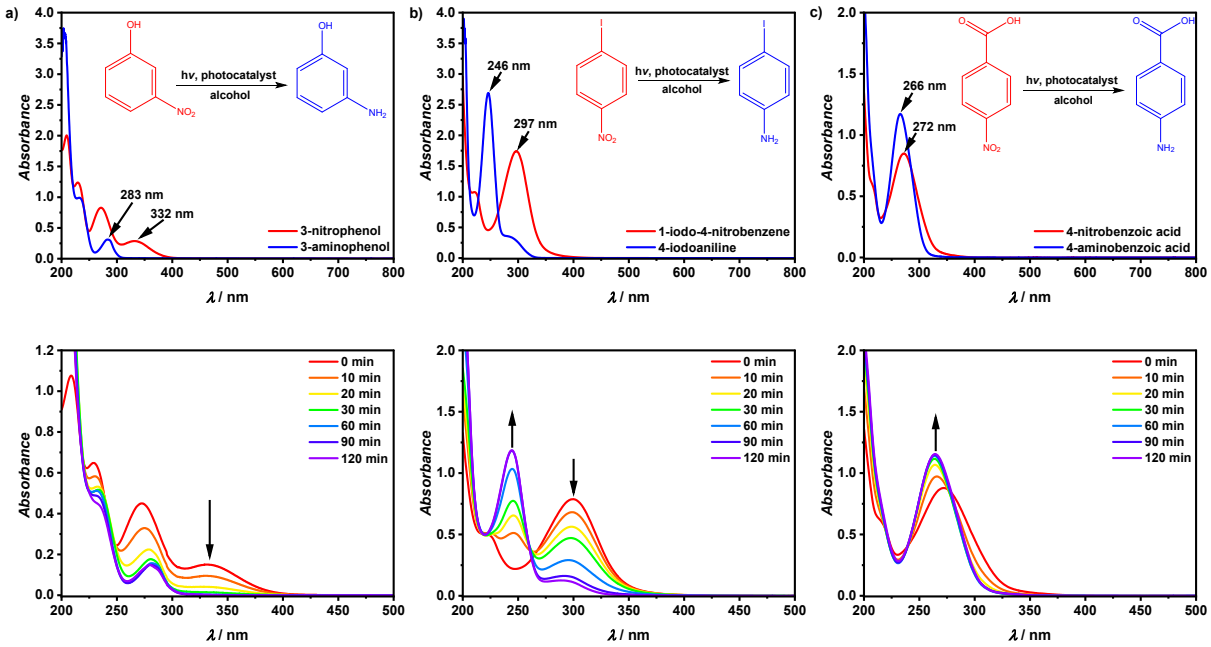

Fig. S7. Standard absorption spectra of substrates and products and evolution of absorption spectra of the tested solution upon irradiation with photocatalyst for 3-NP (a), INB (b) and PNBA (c) as a substrate.

Table S1. Comparison of reaction rate constant and conversion for 3NP, INB and PNBA reduction for tailored $SrTiO_3$ crystals.

	3NP		INB		PNBA	
	k / s^{-1}	X / %	k / s^{-1}	X / %	k / s^{-1}	X / %
commercial	0.015	18.0	0.040	33.3	0.695	85.5
cubes	0.040	9.9	0.022	15.2	0.231	71.3
slightly truncated cubes	0.003	6.7	0.017	9.4	0.281	74.0
truncated cubes	0.545	67.5	0.445	87.1	0.716	88.7
truncated rhombic dodecahedron (propylene glycol)	0.578	57.9	0.441	86.4	0.793	93.1
truncated rhombic dodecahedron (ethylene glycol)	0.344	62.1	0.151	71.0	0.534	96.3

k / s^{-1} – reaction rate constant; X / % - conversion (after 2h of the reaction).

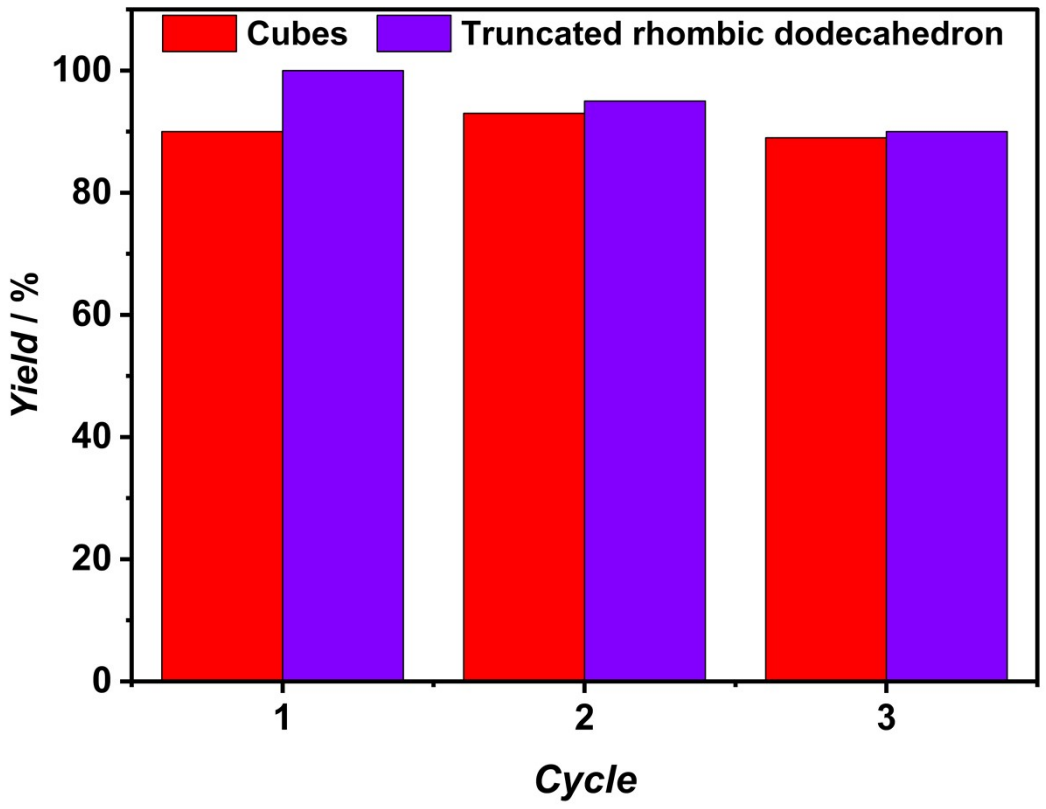

Fig. S8. Cycling tests of photocatalyst in the reduction of 1-iodo-4-nitrobenzene.