

Supporting Information

Facile preparation of hydrophilic In₂O₃ nanospheres and rods with improved performances for photocatalytic degradation of PFOA

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Table S1. The target compounds of PFOA and its degradation products, and their MS/MS parameters.

Acronym	Name	Formula	MS/MS mass transition	Cone voltage (V)	Collision energy (eV)
PFOA	Perfluorooctanoic acid	C ₇ F ₁₅ COOH	412.90 → 369.00	20	10
PFHpA	Perfluoroheptanoic acid	C ₆ F ₁₃ COOH	363.00 → 319.00	2.6	22
PFHxA	Perfluorohexanoic acid	C ₅ F ₁₁ COOH	313.00 → 269.00	2.6	8.4
PFPeA	Perfluoropentanoic acid	C ₄ F ₉ COOH	262.55 → 219.10	2.6	8.4
PFBA	Perfluorobutyric acid	C ₃ F ₇ COOH	212.20 → 169.10	2.6	10.0
PFPrA	Pentafluoropropionic acid	C ₂ F ₅ COOH	162.9 → 118.8	12.0	7.0
TFA	Trifluoroacetic acid	CF ₃ COOH	112.9 → 68.9	12.0	7.0

Table S2 Atomic ratio (%) of elements (In, O and C), based on XPS survey-scan spectra.

Name	In-BDC NS	In-BDC rod	In ₂ O ₃ NS	In ₂ O ₃ rod	Commercial In ₂ O ₃
C1s (%)	52.73	51.81	12.99	10.42	16.17
In3d (%)	6.98	7.18	32.56	33.97	31.44
O1s (%)	40.29	41.01	54.45	55.61	52.39

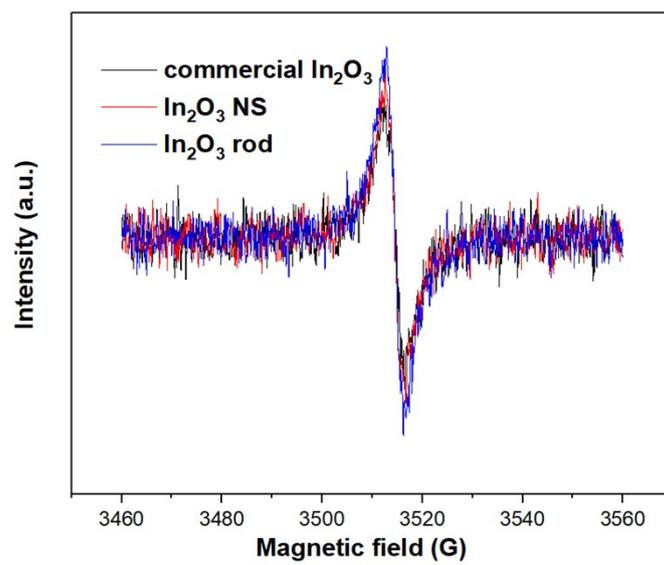


Figure S1. ESR spectra of In_2O_3 samples.

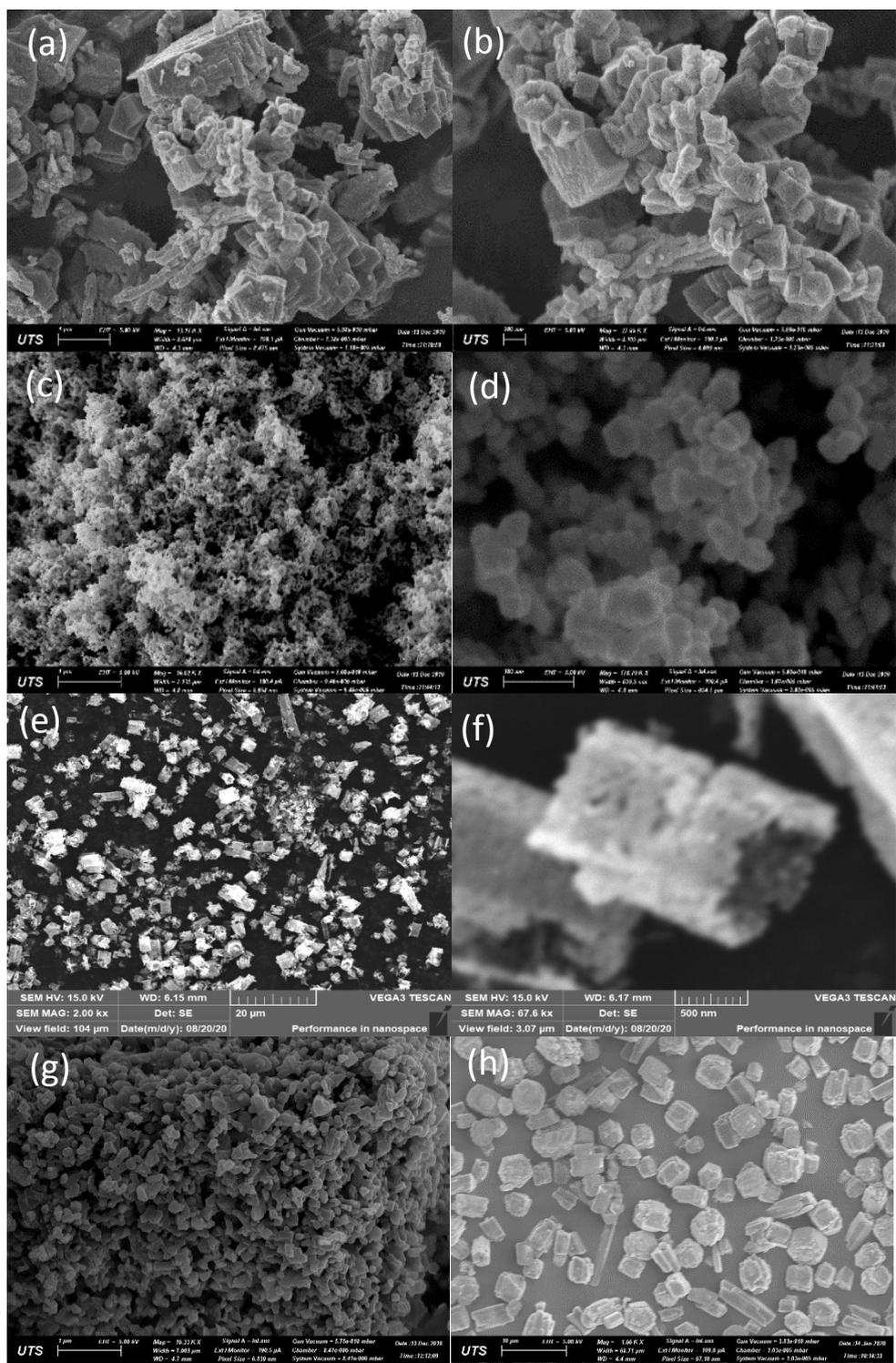


Figure S2. SEM images of commercial In₂O₃ (a, b), In₂O₃ NS (c, d), In₂O₃ rod (e, f), In-BDC NS (g), and In-BDC rod (h).

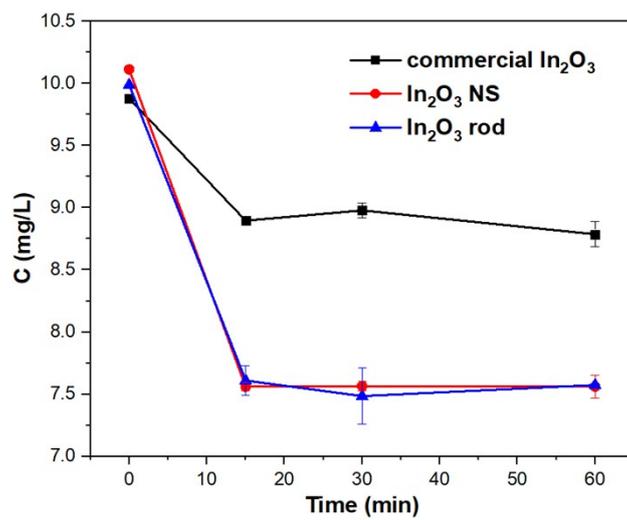


Figure S3. Adsorption of PFOA onto In_2O_3 samples.

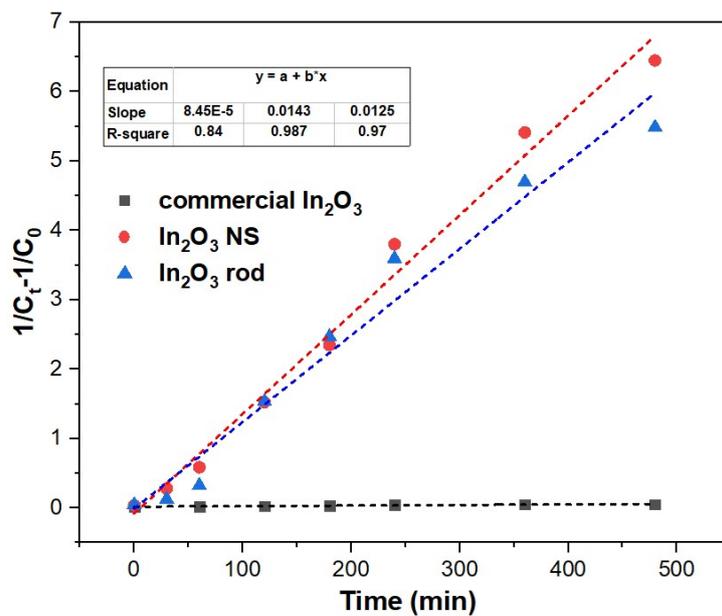


Figure S4. Second-order kinetics simulation of PFOA degradation: $\frac{1}{C_t} - \frac{1}{C_0} = kt$, where, C_t (mg L⁻¹) is the concentration at t min, C_0 (mg L⁻¹) is the original concentration, k (L mg⁻¹ min⁻¹) is the reaction constant, t (min) is the reaction time.

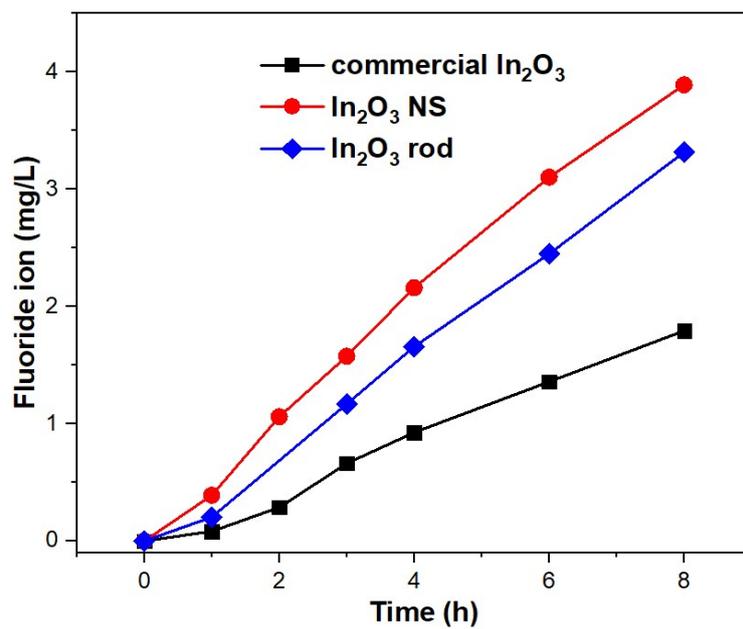


Figure S5. Fluoride ion detected during the photodegradation of PFOA.

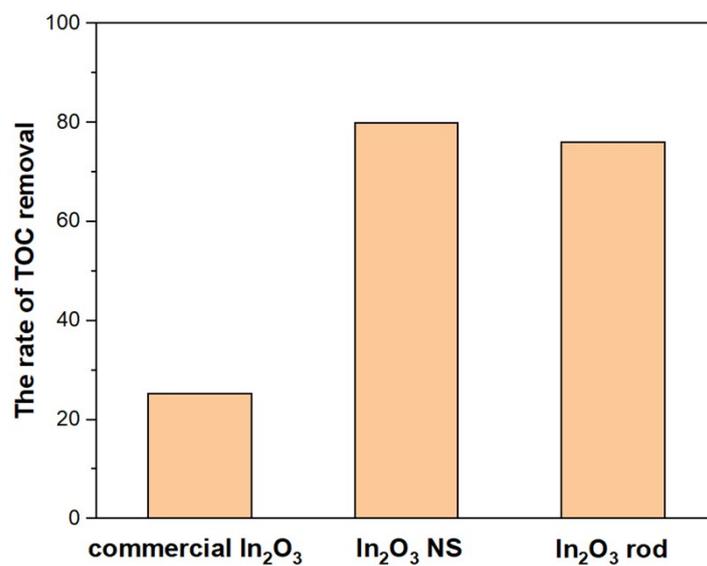


Figure S6. The TOC removal rate under UV light irradiation in the presence of commercial In₂O₃, In₂O₃ NS and rod.

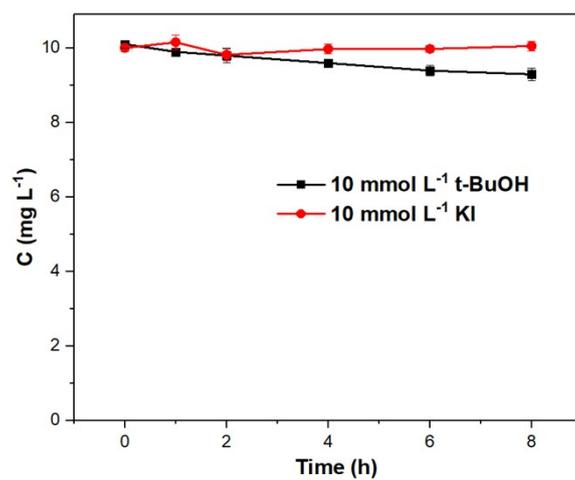


Figure S7. Effects of different scavengers on the PFOA photodegradation in the UV/In₂O₃ NS System.

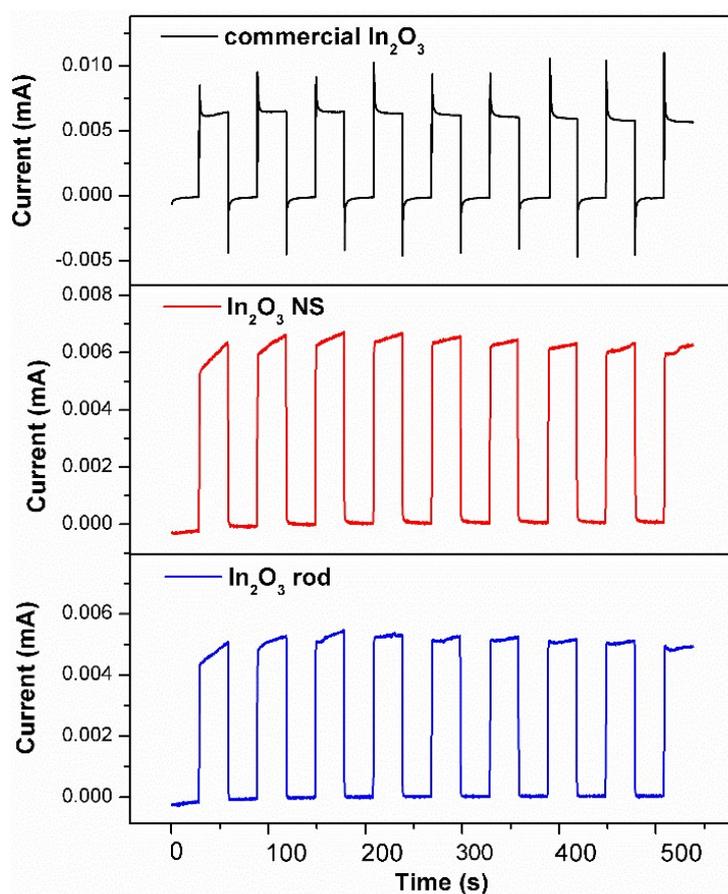


Figure S8. The transient photocurrent density responses of prepared-sample electrodes with light on/off cycles under UV 254 nm light irradiation.