

Supporting Information

The effect of fluorine doping on photocatalytic properties of hematite for water splitting

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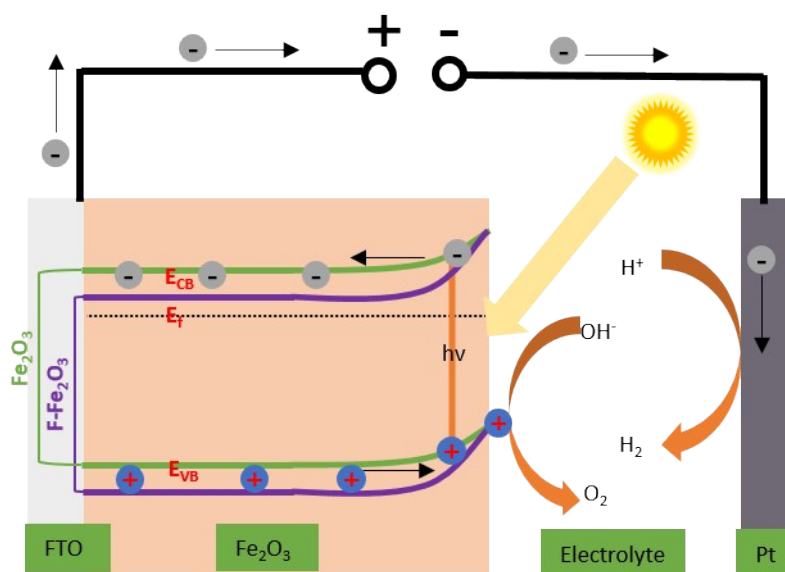


Figure S1. The schematic diagrams of the band structure and electron transfer process of the F-doped hematite during PEC water splitting.

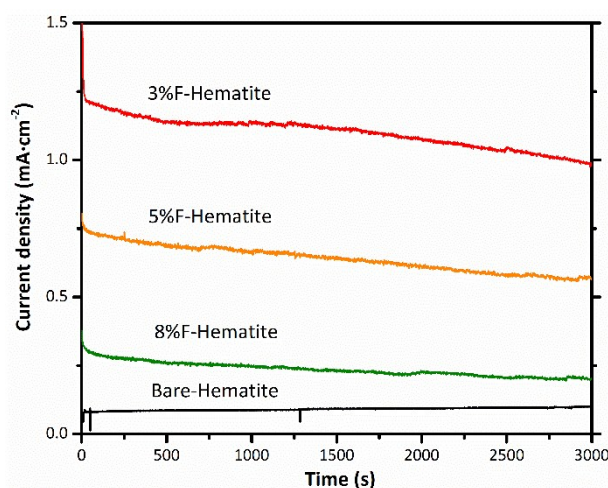


Figure S2. Chronoamperometry plots for F-doped hematite samples at 1.23 V vs. RHE under simulated solar illumination (AM 1.5 G, 100 mW·cm⁻²).

Table S1. Detailed parameters of XRD pattern for F doped hematite samples

Samples	(104)		(110)	
	2-Theta	d(Å)	2-Theta	d(Å)
Bare-hematite	33.18	2.70	35.70	2.52
3%F-hematite	33.12	2.70	35.62	2.52
5%F-hematite	33.13	2.70	35.65	2.52
8%F-hematite	33.12	2.70	35.64	2.52

Table S2. Comparison of various doped hematite samples in PEC system

Samples	Photocurrent density	Applied potential	Test Conditions	Ref.
S-Fe ₂ O ₃ nanorods	1.42 mA·cm ⁻²	1.23 V vs RHE	1 M NaOH, AM 1.5G, 100 mW·cm ⁻²	1
Grad-P: Fe ₂ O ₃ nanorods	1.48 mA·cm ⁻²	1.23 V vs. RHE	1 M KOH, AM 1.5G, 100 mW·cm ⁻²	2
P-Fe ₂ O ₃ nanowires	2.3 mA·cm ⁻²	1.23 V vs. RHE	1 M NaOH, AM 1.5G, 100 mW·cm ⁻²	3
Se- Fe ₂ O ₃ nanorods	1.44 mA·cm ⁻²	1.23 V vs. RHE	1 M NaOH, AM 1.5G, 100 mW·cm ⁻²	4
Ti-Fe ₂ O ₃ thin films	1.64 mA·cm ⁻²	1.23 V vs. RHE	1 M KOH, AM 1.5G, 100 mW·cm ⁻²	5
Cu-Fe ₂ O ₃ flower-like nanostructure	-5.34 mA·cm ⁻²	-0.6 V vs. RHE	0.1 M NaOH, AM 1.5G, 100 mW·cm ⁻²	6
F- Fe ₂ O ₃ films	1.24 mA·cm ⁻²	1.23 V vs. RHE	1 M NaOH, AM 1.5G, 100 mW·cm ⁻²	This work

Notes and references

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