Supporting Information

Solution-mediated Nanometric Growth of α-Fe_2O_3 with Electrocatalytic Activity for Water Oxidation

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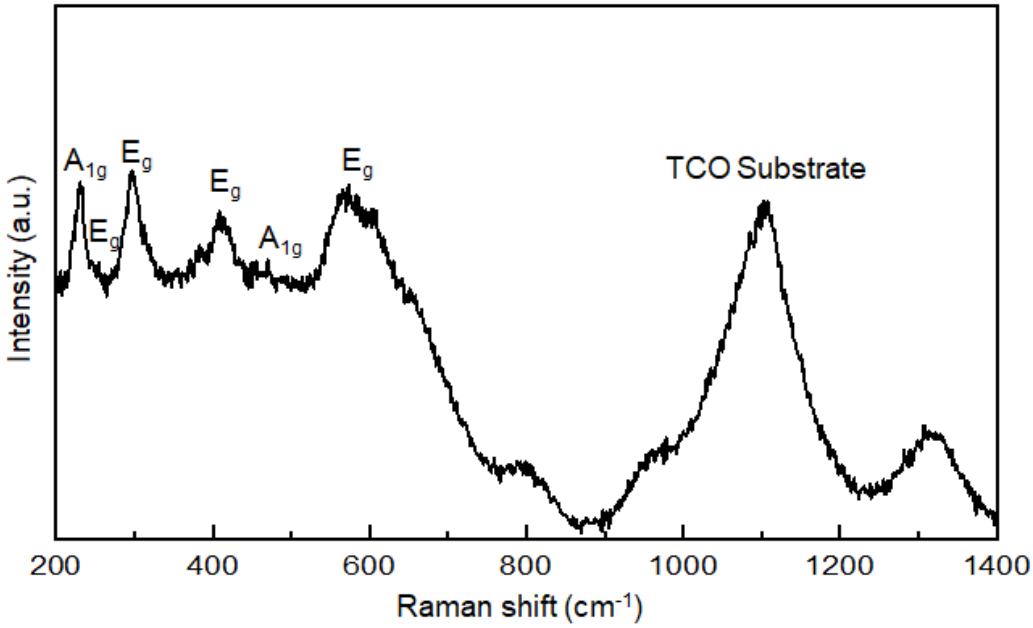


Figure S1. Wide-range Raman spectrum of SMART-derived α-Fe_2O_3 on a glass substrate deposited after 90 cycles.

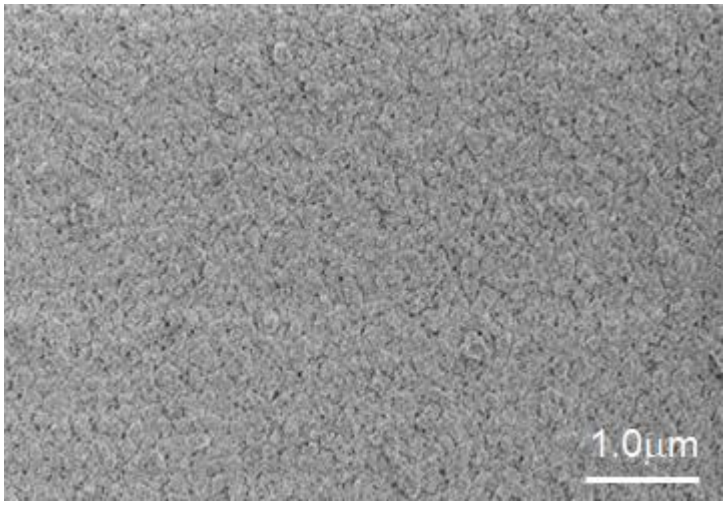


Figure S2. Low magnification SEM image of SMART-derived α-Fe_2O_3 layer on a glass substrate after 90 deposition cycles.

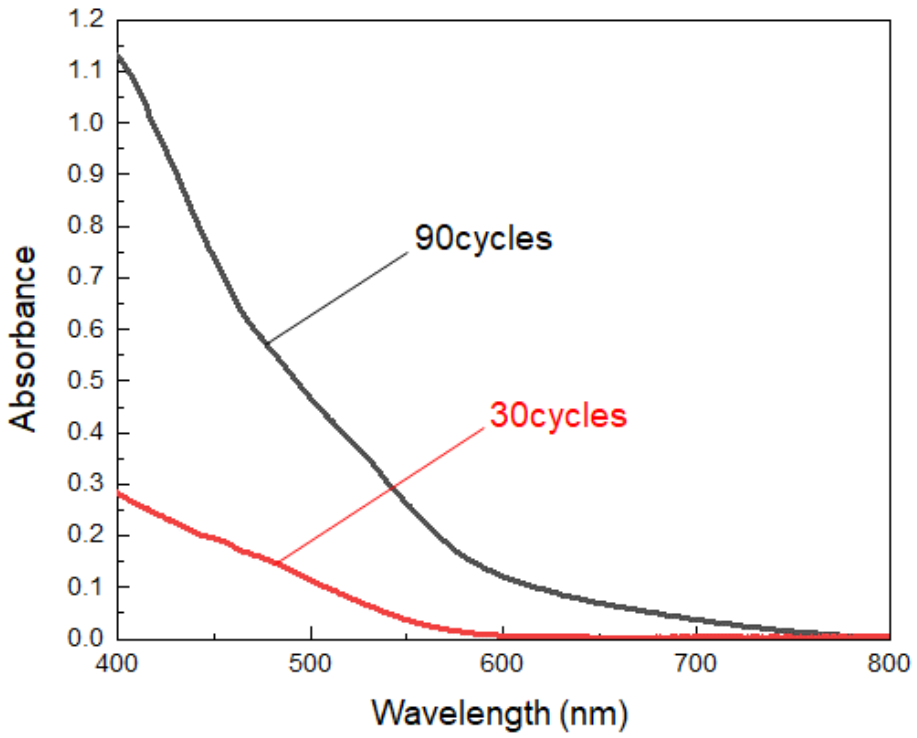


Figure S3. UV-vis spectra of SMART-derived α-Fe_2O_3 layer on a glass substrate after 30 and 90 deposition cycles.

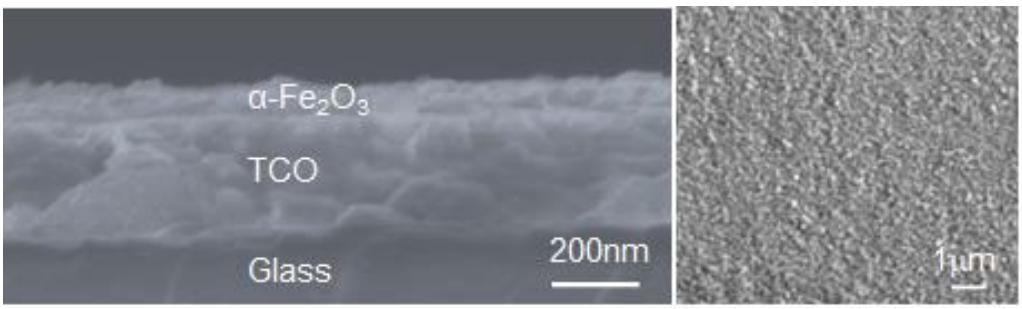


Figure S4. SEM images of SMART-derived α-Fe_2O_3 on an TCO substrate deposited after 30 cycles.

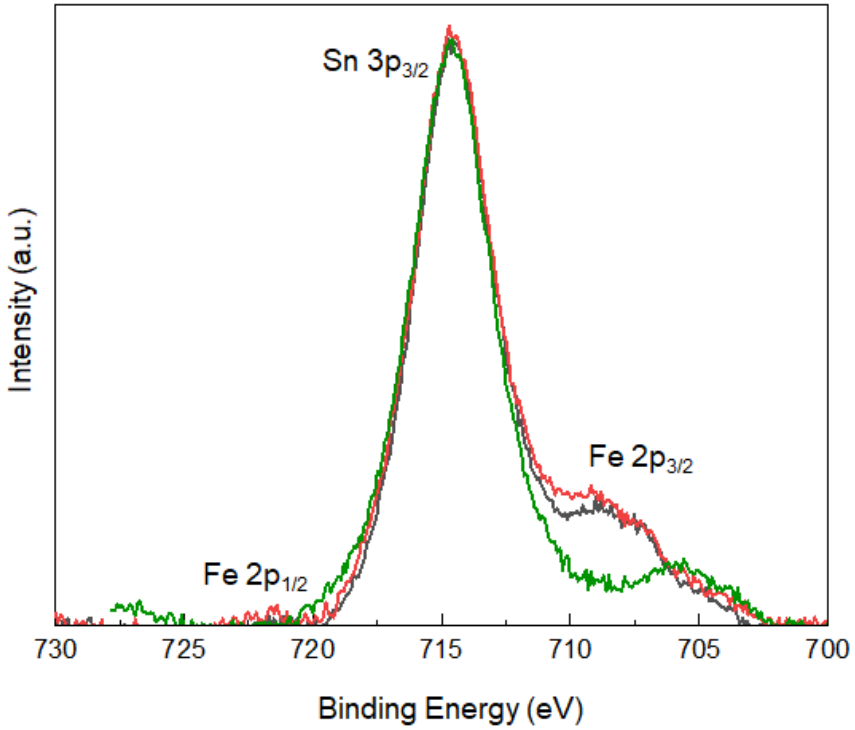


Figure S5. As-measured Fe 2p XPS spectra after the first step (black) and second step (red) in the first deposition cycle, and Sn 3p spectra of a bare TCO substrate (green).

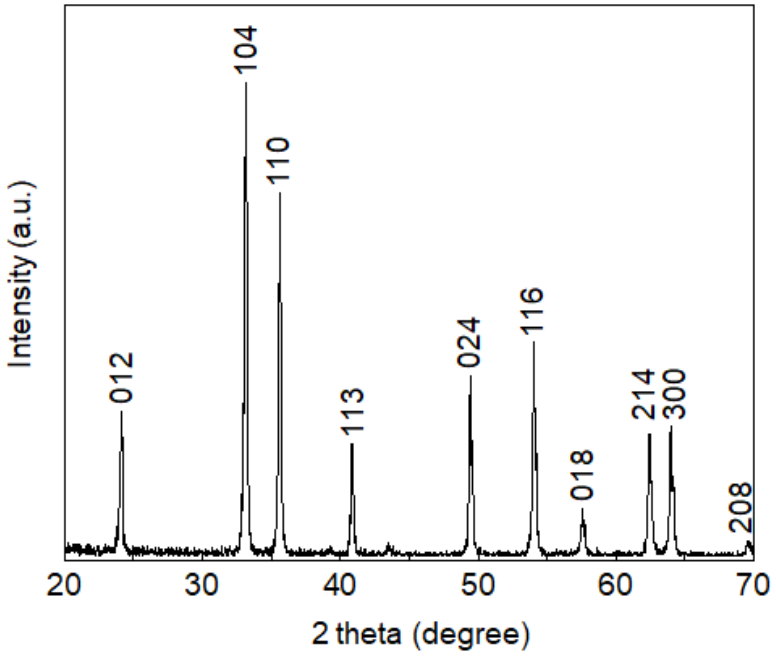


Figure S6. XRD pattern of reference α-Fe_2O_3 powder.

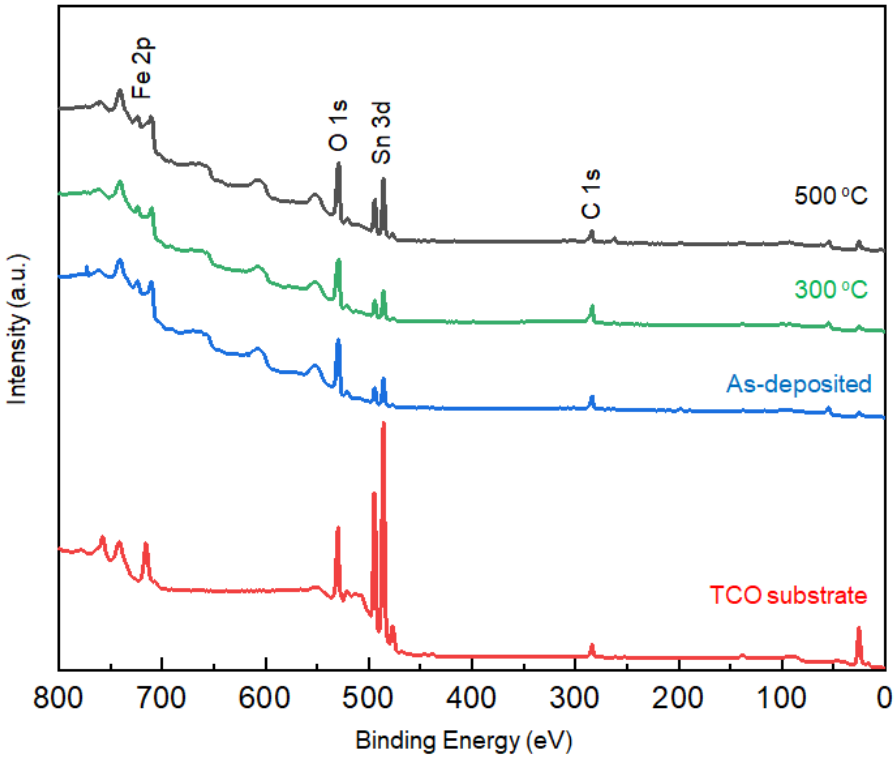


Figure S7. Wide-scan XPS spectrum of the SMART-derived α-Fe_2O_3 deposited on an TCO substrate, as-deposited, and subsequently annealed at 300 °C and 500 °C. Wide-scan XPS spectrum of TCO substrate is shown as a reference.

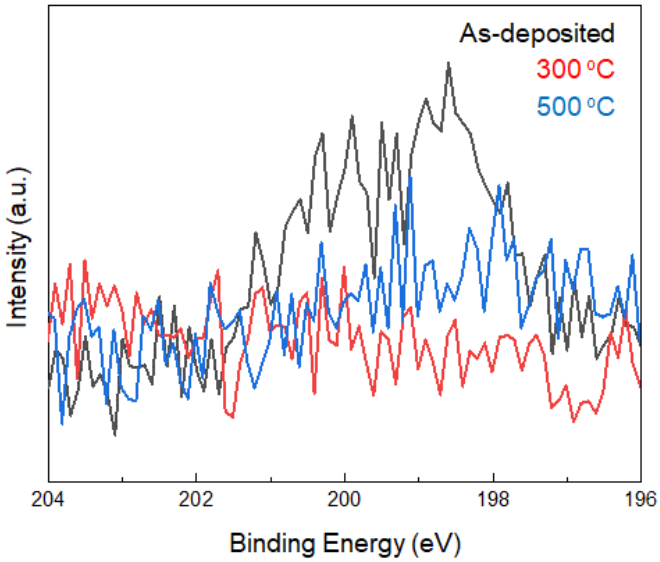
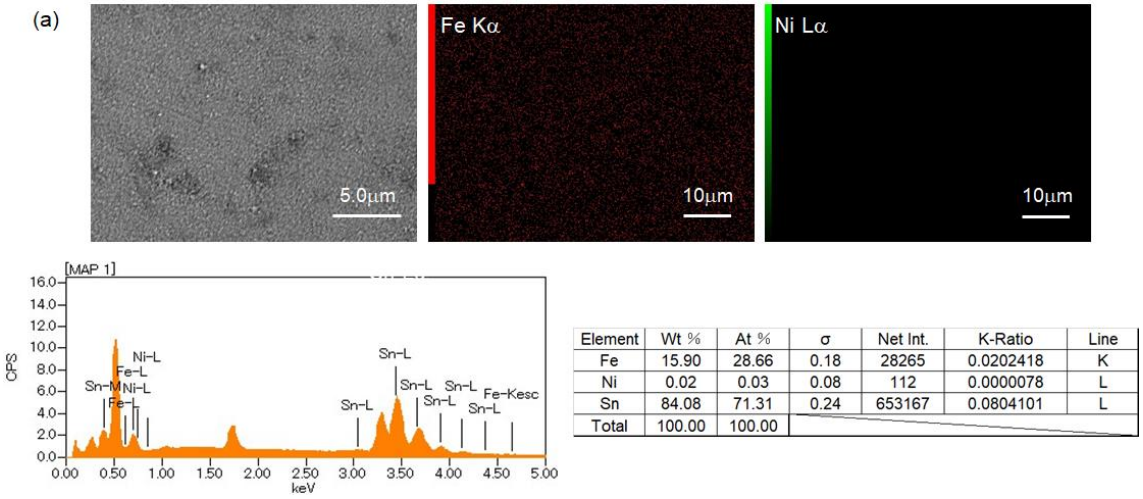
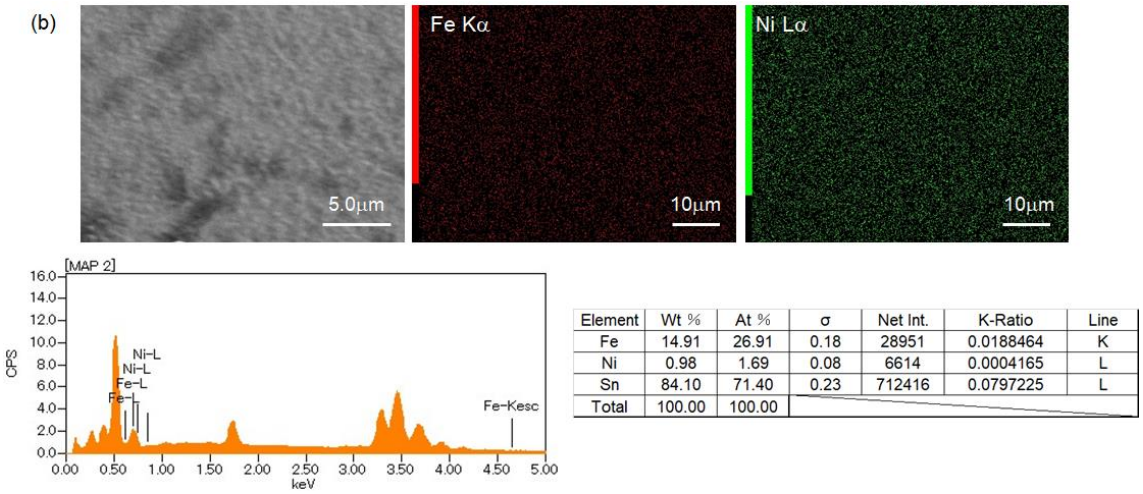


Figure S8. Cl 2p spectra of the SMART-derived α-Fe_2O_3 deposited on an TCO substrate, as-deposited, and after annealing at 300 °C and 500 °C.



Element	Wt %	At %	σ	Net Int.	K-Ratio	Line
Fe	15.90	28.66	0.18	28265	0.0202418	K
Ni	0.02	0.03	0.08	112	0.0000078	L
Sn	84.08	71.31	0.24	653167	0.0804101	L
Total	100.00	100.00				



Element	Wt %	At %	σ	Net Int.	K-Ratio	Line
Fe	14.91	26.91	0.18	28951	0.0188464	K
Ni	0.98	1.69	0.08	6614	0.0004165	L
Sn	84.10	71.40	0.23	712416	0.0797225	L
Total	100.00	100.00				

Figure S9. SEM images and Fe/Ni distributions obtained by EDS elemental mapping of SMART-derived α-Fe_2O_3 (a) before and (b) after $Ni(OH)_2$ surface-modification.

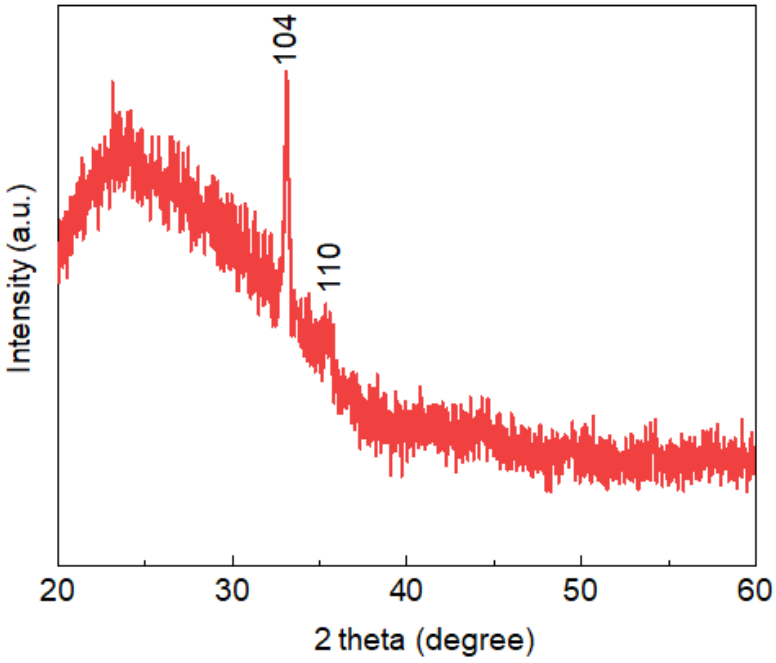


Figure S10. XRD pattern of the SMART-derived α-Fe_2O_3 (annealed at 500 °C) after $Ni(OH)_2$ surface-modification. Note that α-Fe_2O_3 layer was deposited after 90 cycles.

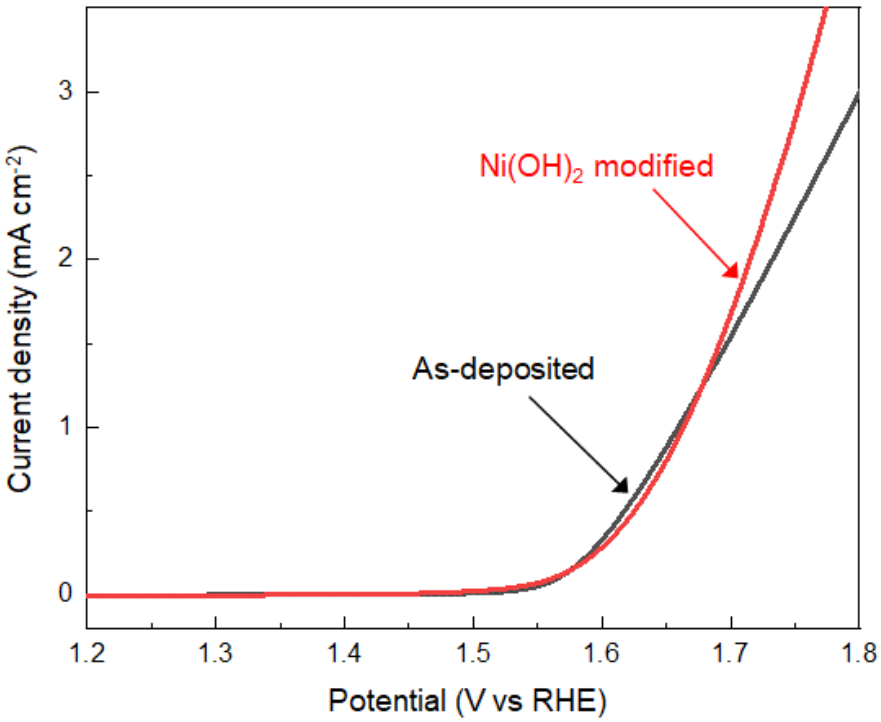


Figure S11. LSV-curves of the SMART-derived α-Fe_2O_3 before/after $Ni(OH)_2$ surface-modification.