

## Supporting information

### Facile synthesis of RuO<sub>x</sub>/SiC/C for photo-electrocatalysis

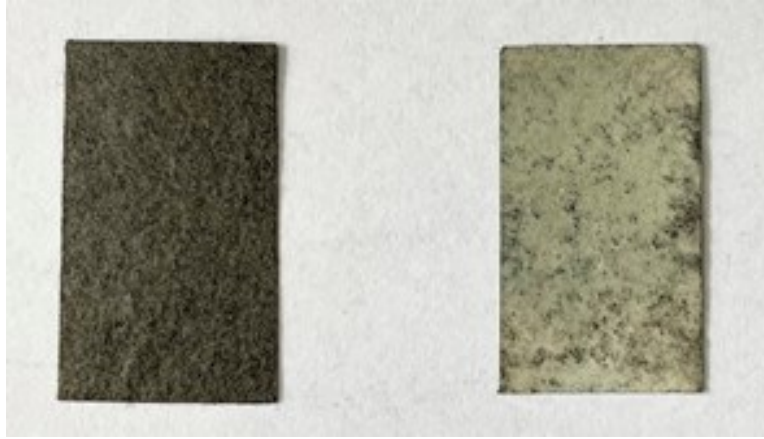
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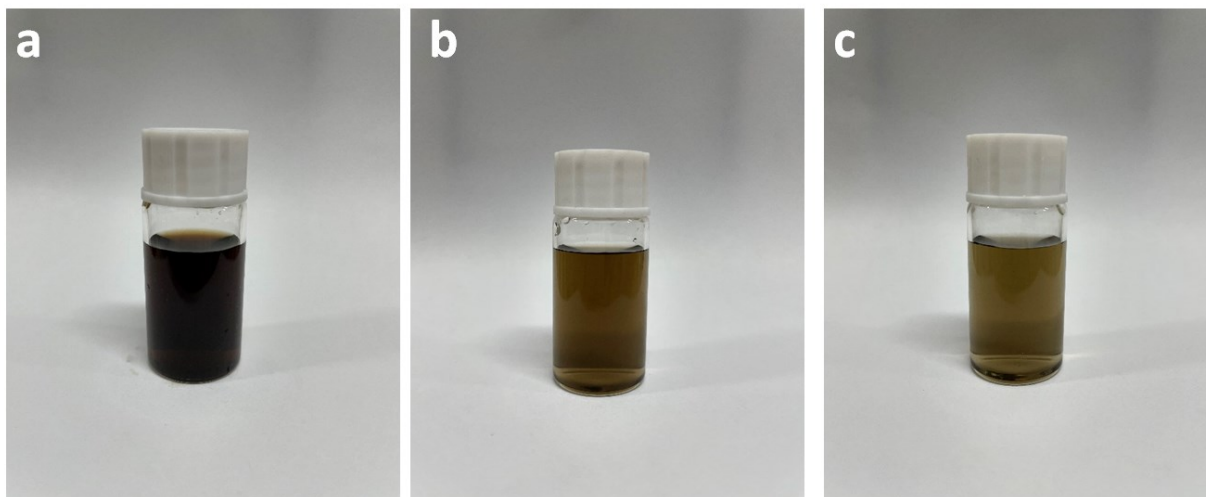
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**Fig. S1.** The color change of carbon paper before and after SiC growth.



**Fig. S2.** The color change of Ru solution before (a) and after 1h (b) and 2h (c) photo-deposition.

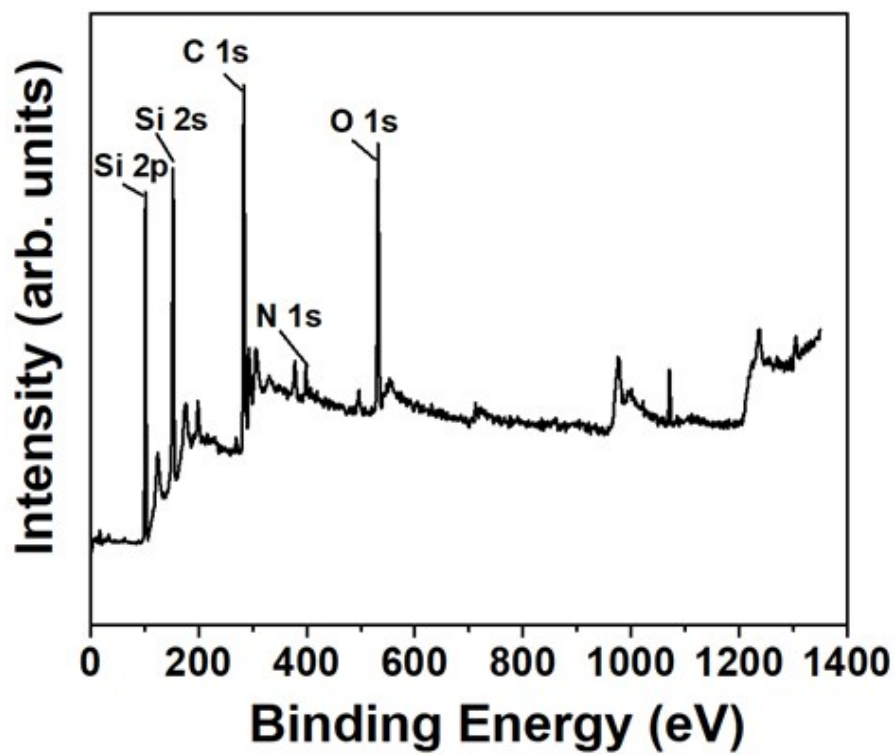
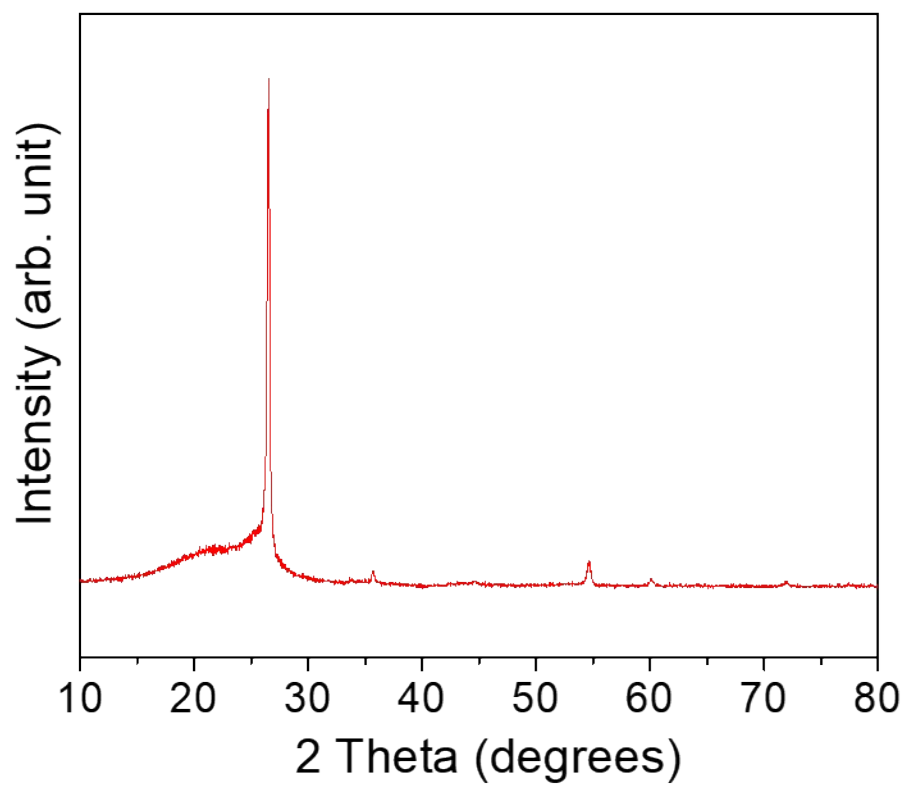
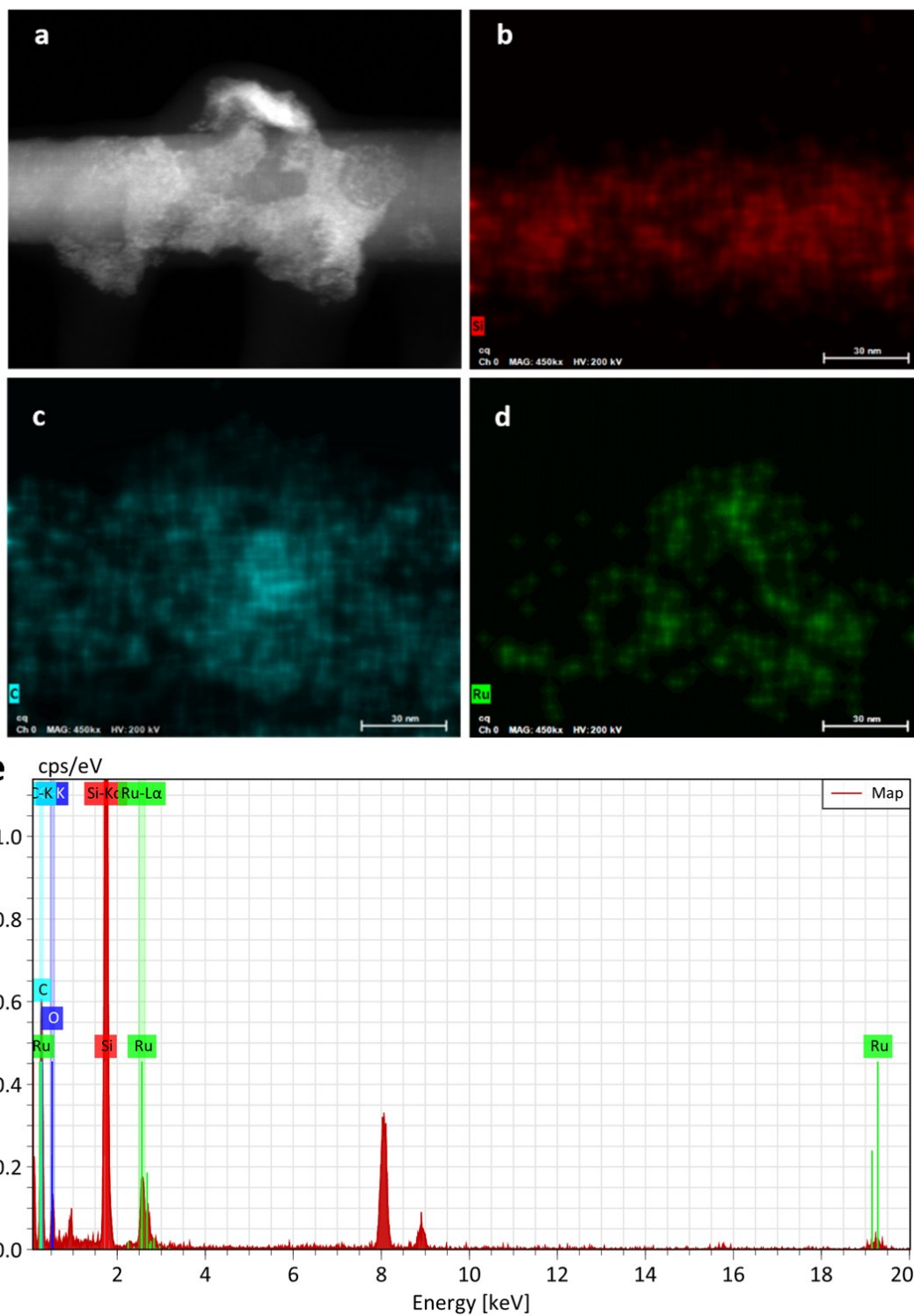


Fig. S3. XPS survey spectra of SiC/C sample.



**Fig. S4.** XRD of 2h RuO<sub>x</sub>/SiC/C sample.



**Fig. S5.** TEM image of 2h RuO<sub>x</sub>/SiC/C (a) and the corresponding mapping of silicon (b), carbon (c), ruthenium (d); in addition to EDX elemental mapping (e).

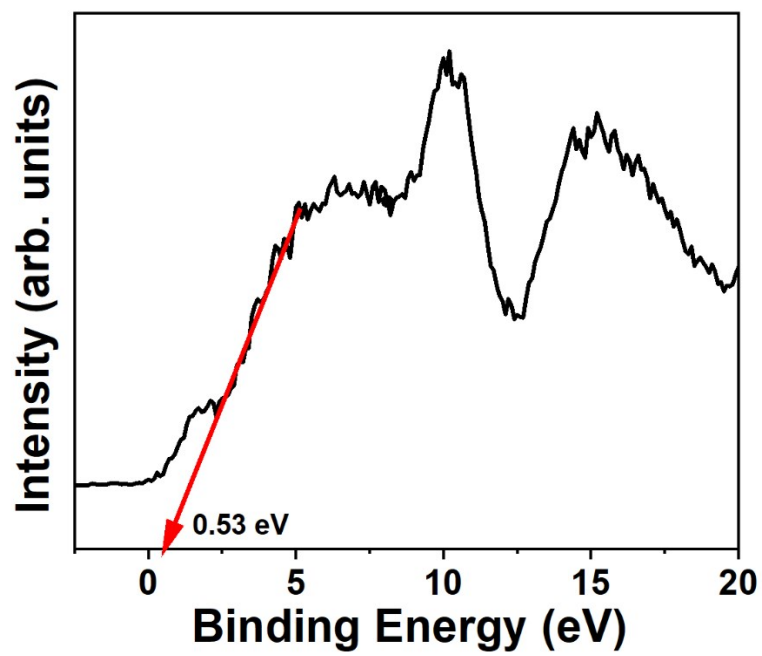


Fig. S6. XPS valence band spectra of 2h RuO<sub>x</sub>/SiC/C substrate.

Table S1: The atomic ratio of specific elements in SiC/C.

<b>Name</b>	<b>Peak BE</b>	<b>FWHM (eV)</b>	<b>Atomic (%)</b>
Si 2p	101.12	2.90	38.36
C 1s	283.38	3.27	47.33
O 1s	531.94	3.43	14.31