Electronic Supplementary Material (ESI) for Dalton Transactions.

Supplementary data

Structure-evolved $YbBiO_3$ perovskite for highly formate-selective CO_2 electroreduction

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Content

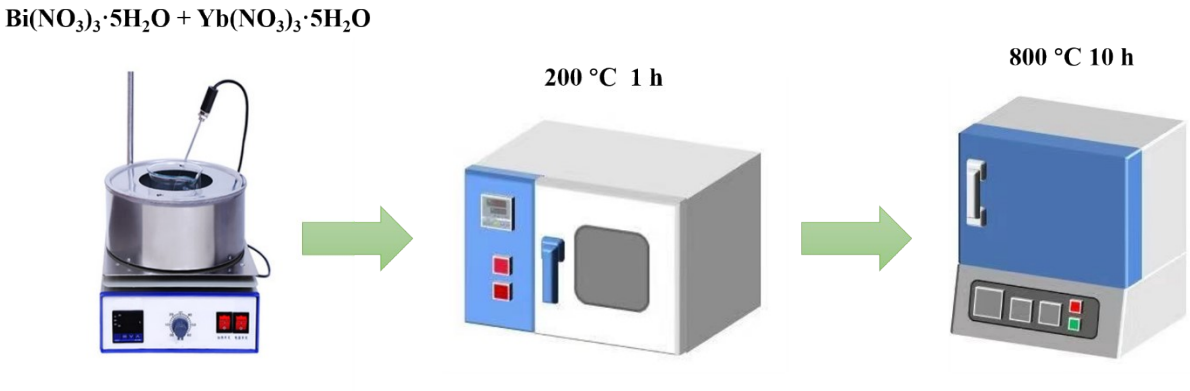

Fig. S1. Schematic illustration of the material synthesis process.

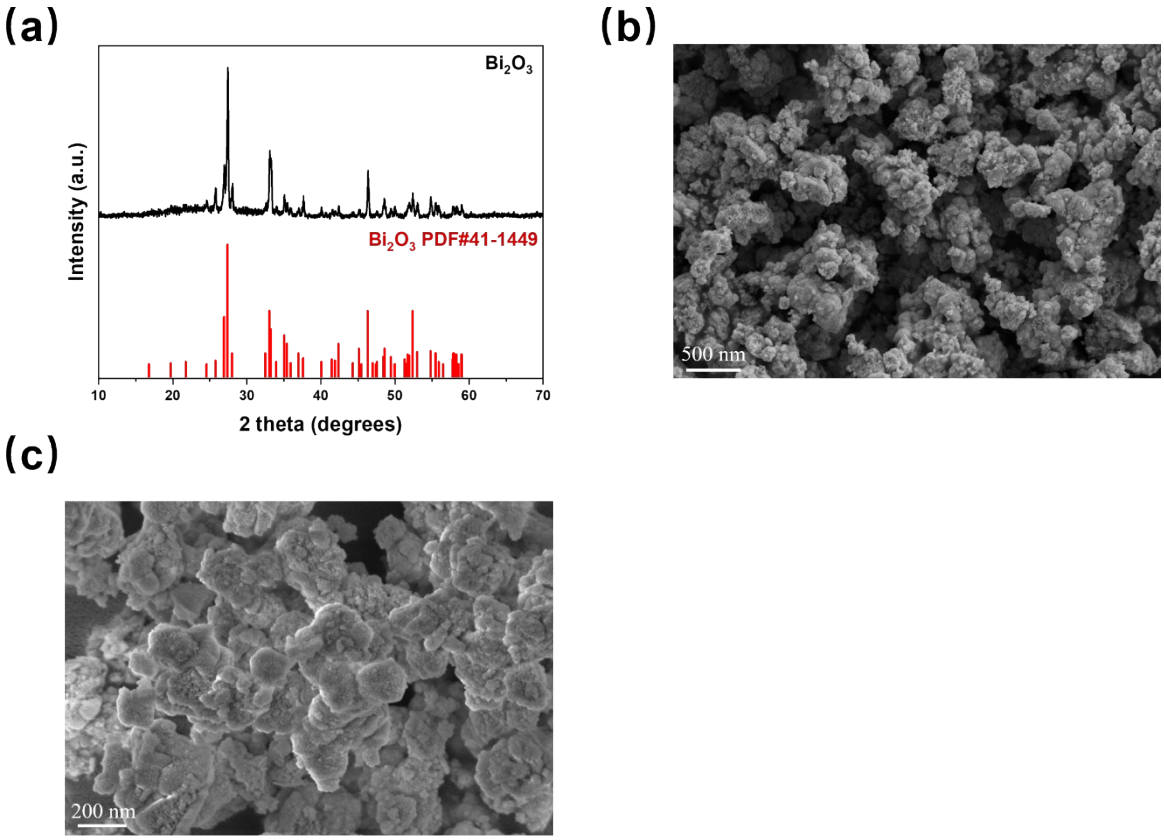

Fig. S2. (a) XRD pattern of Bi_2O_3 NPs, SEM images of (b) Bi_2O_3 NPs, (c) Bi_2O_3 NPs after electroreduction.

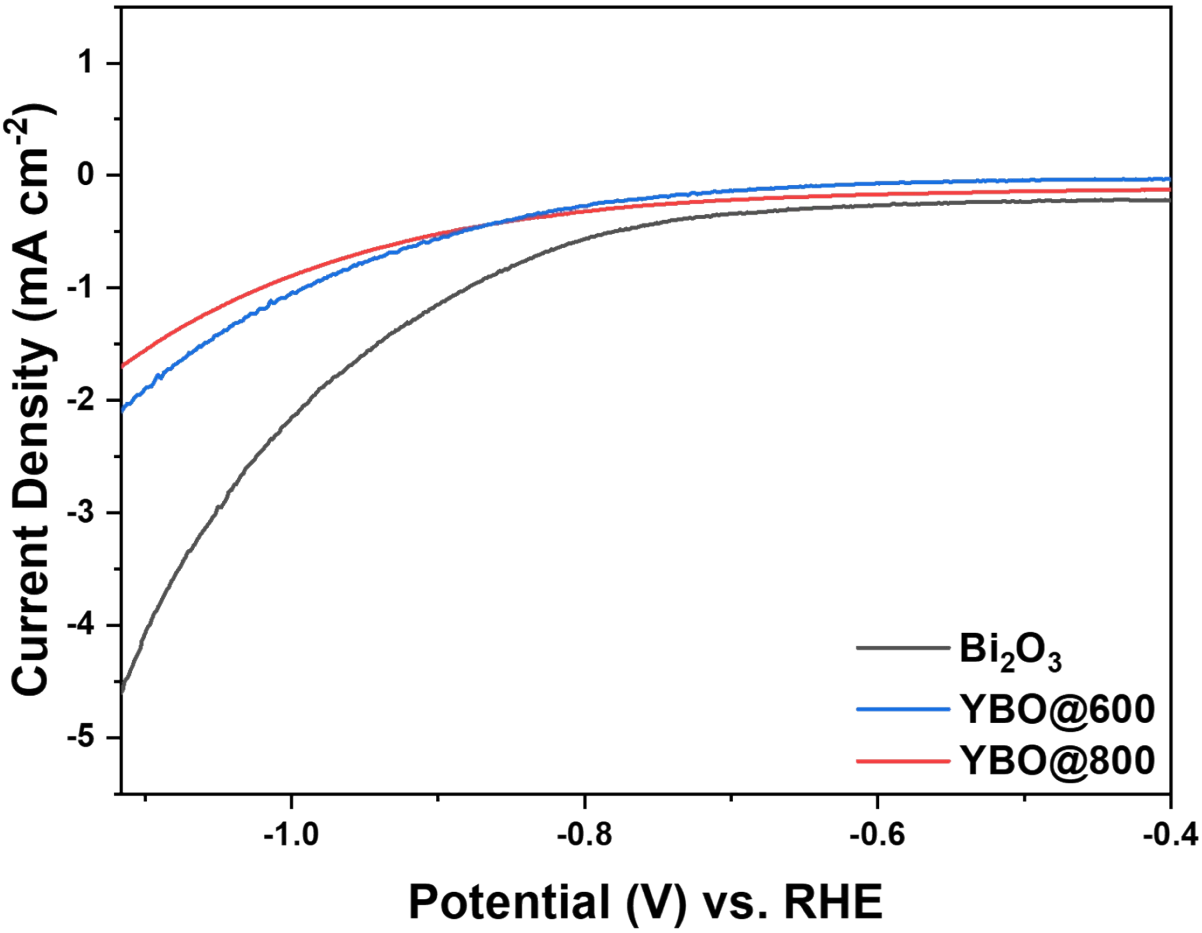

Fig. S3. LSV curves of Bi_2O_3 NPs, YBO@600 and YBO@800 in 0.1M $KHCO_3$ saturated with Ar.

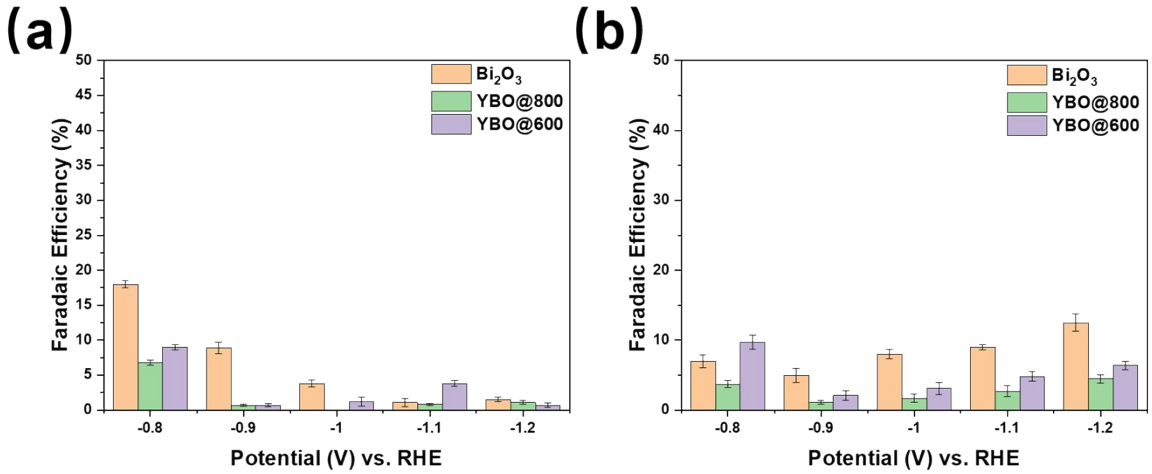

Fig. S4. (a) FE_{CO} diagram of Bi_2O_3 NPs, YBO@600 and YBO@800 at varied applied potentials. (b) $FE_{H_2}of$ Bi_2O_3 NPs, YBO@600 and YBO@800 at varied applied potentials.

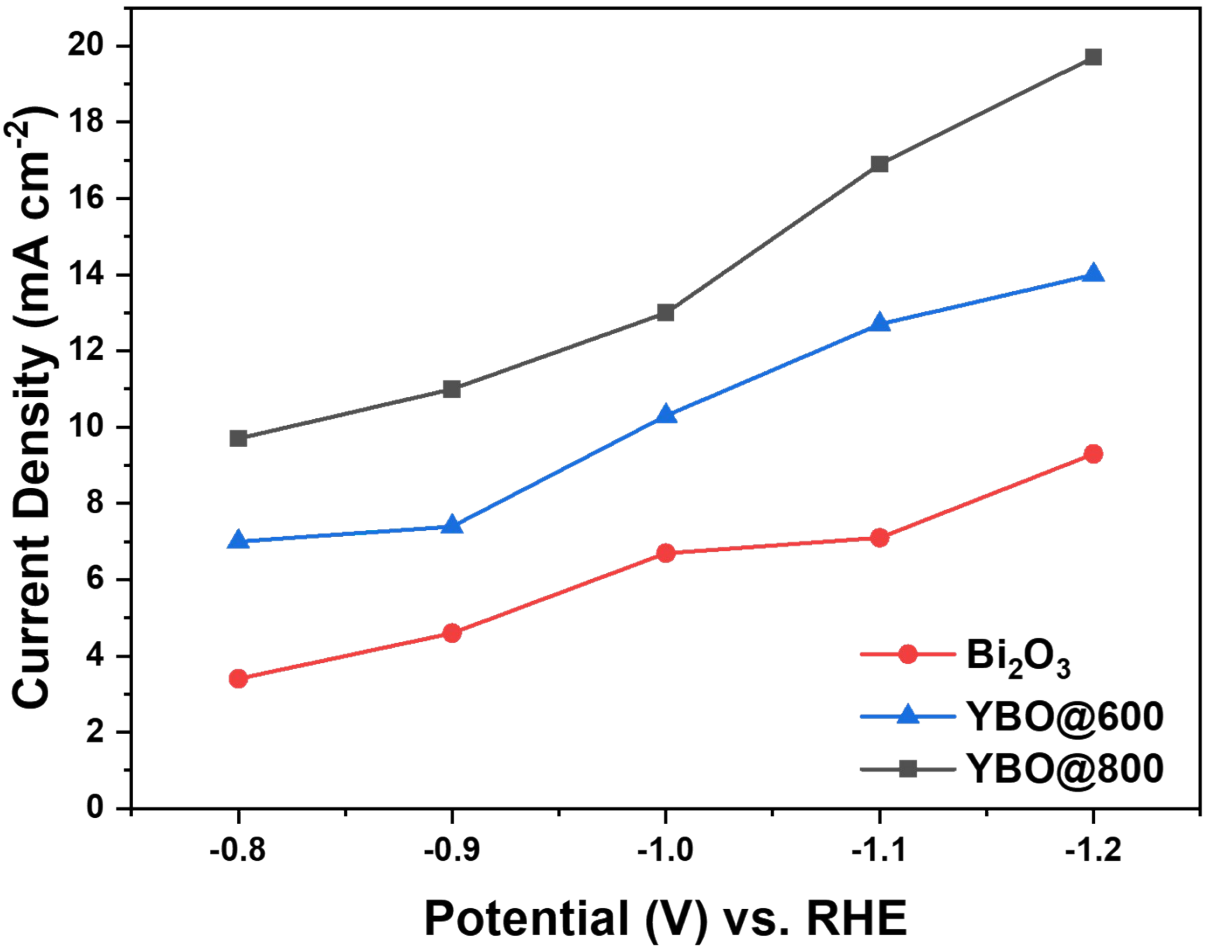

Fig. S5. Current density of Bi_2O_3 NPs, YBO@600 and YBO@800 at varied applied potentials.

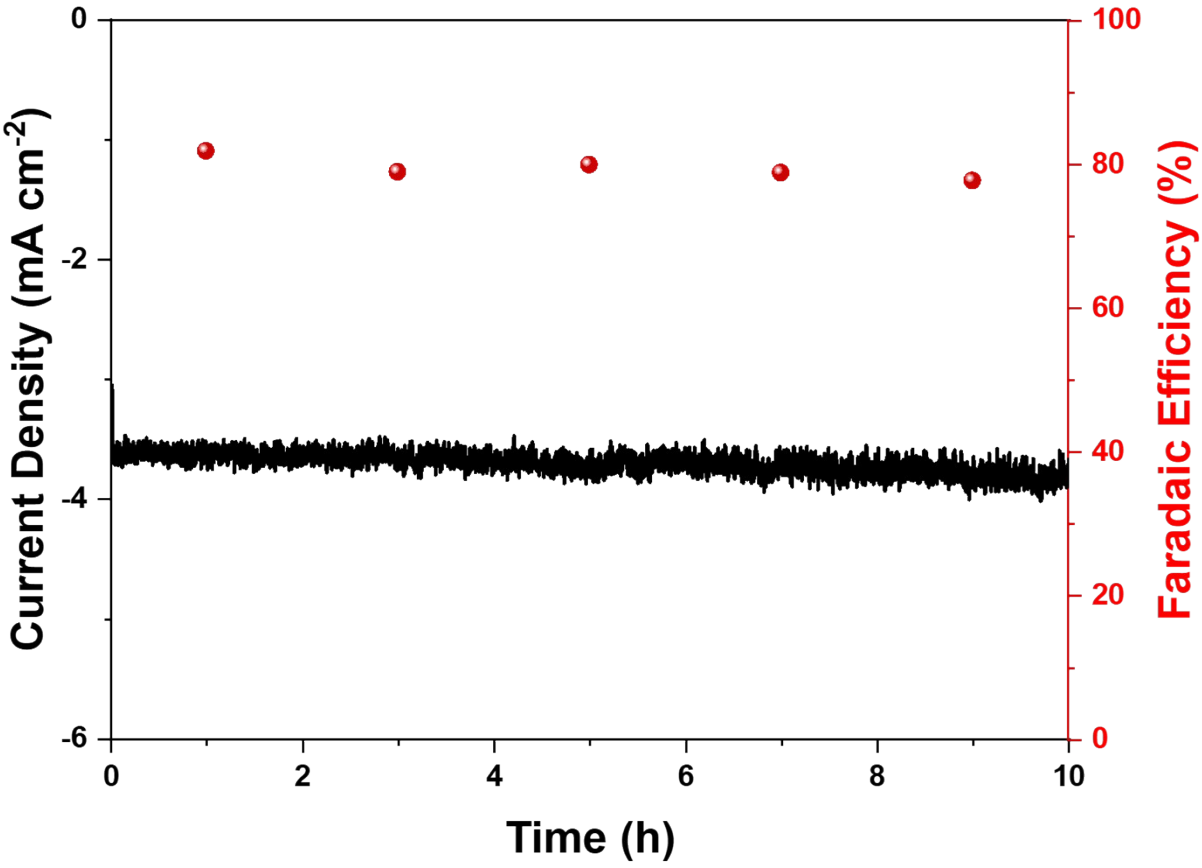

Fig. S6. The $FE_{formate}$ and current density during the stability test of Bi_2O_3 NPs in H-type cell at -0.9 V_{RHE}.

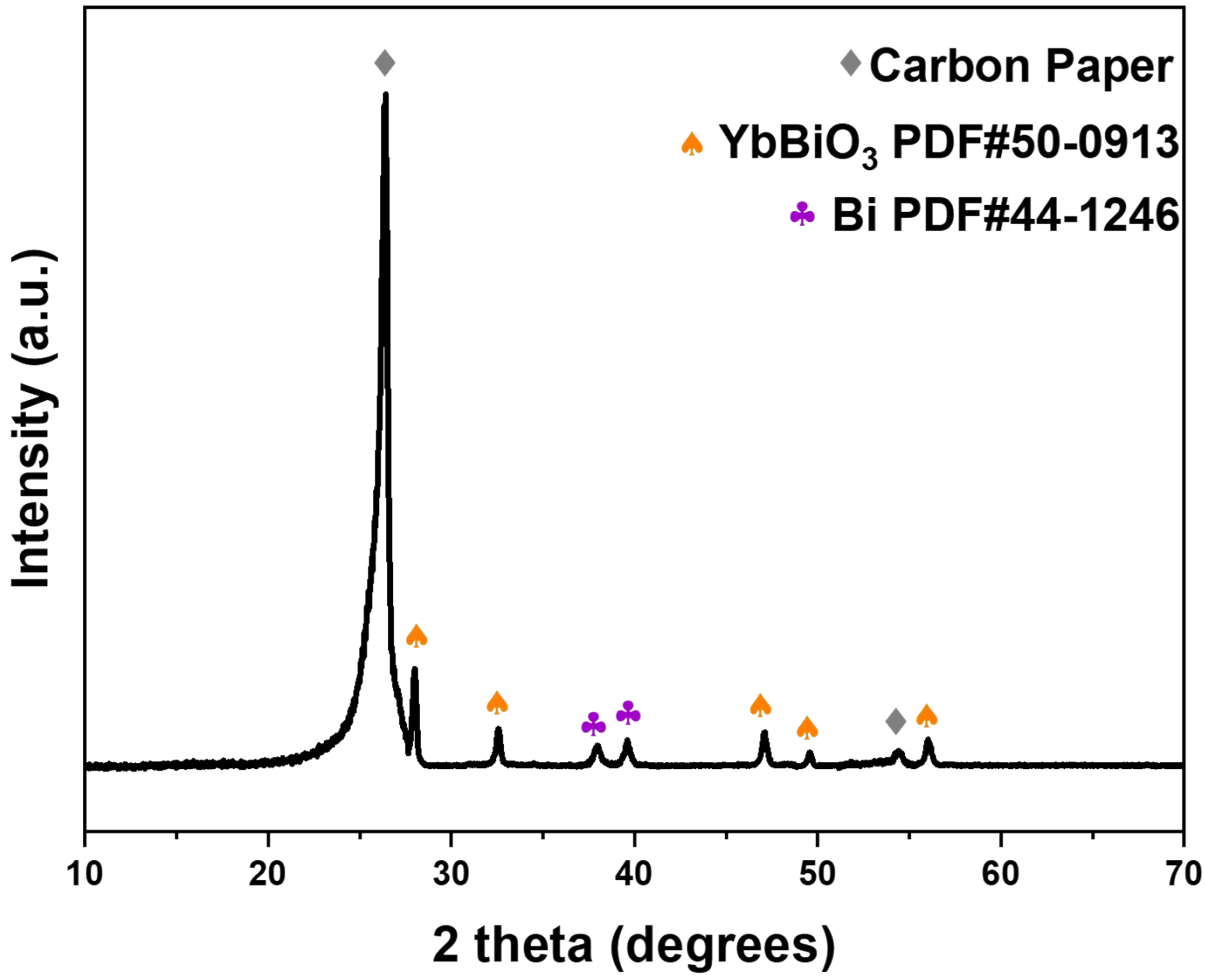

Fig. S7. XRD pattern of YBO@800 catalyst after 80h stability test.

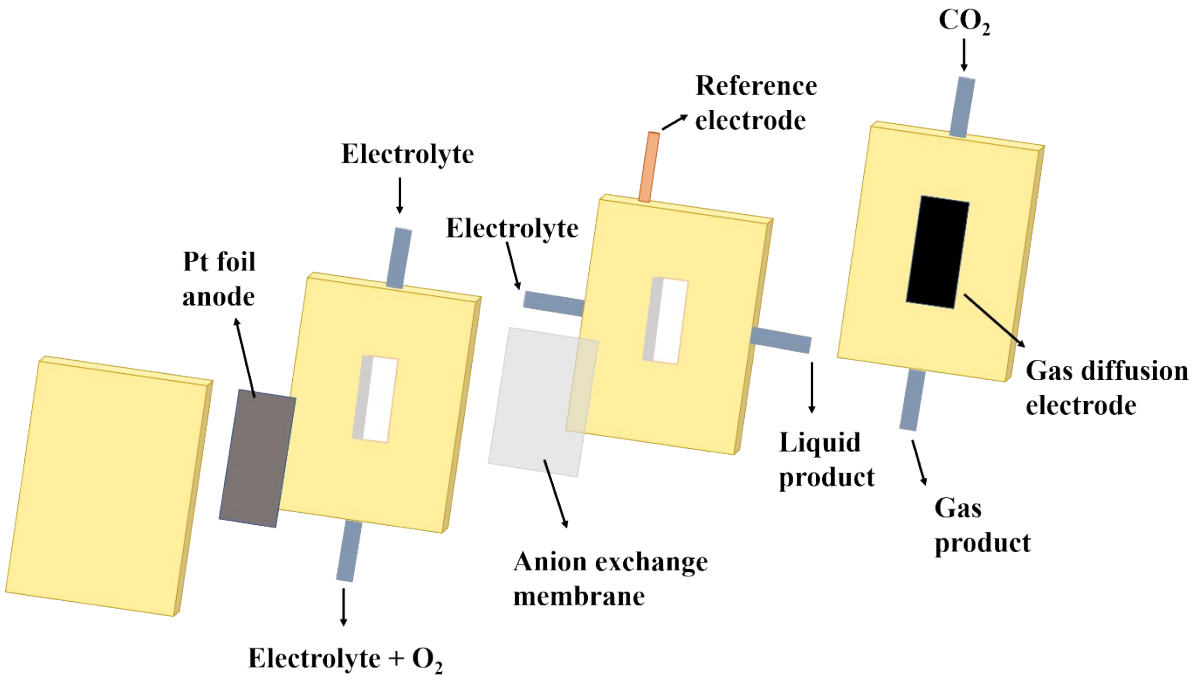

Fig. S8. Installation diagram of flow-cell.

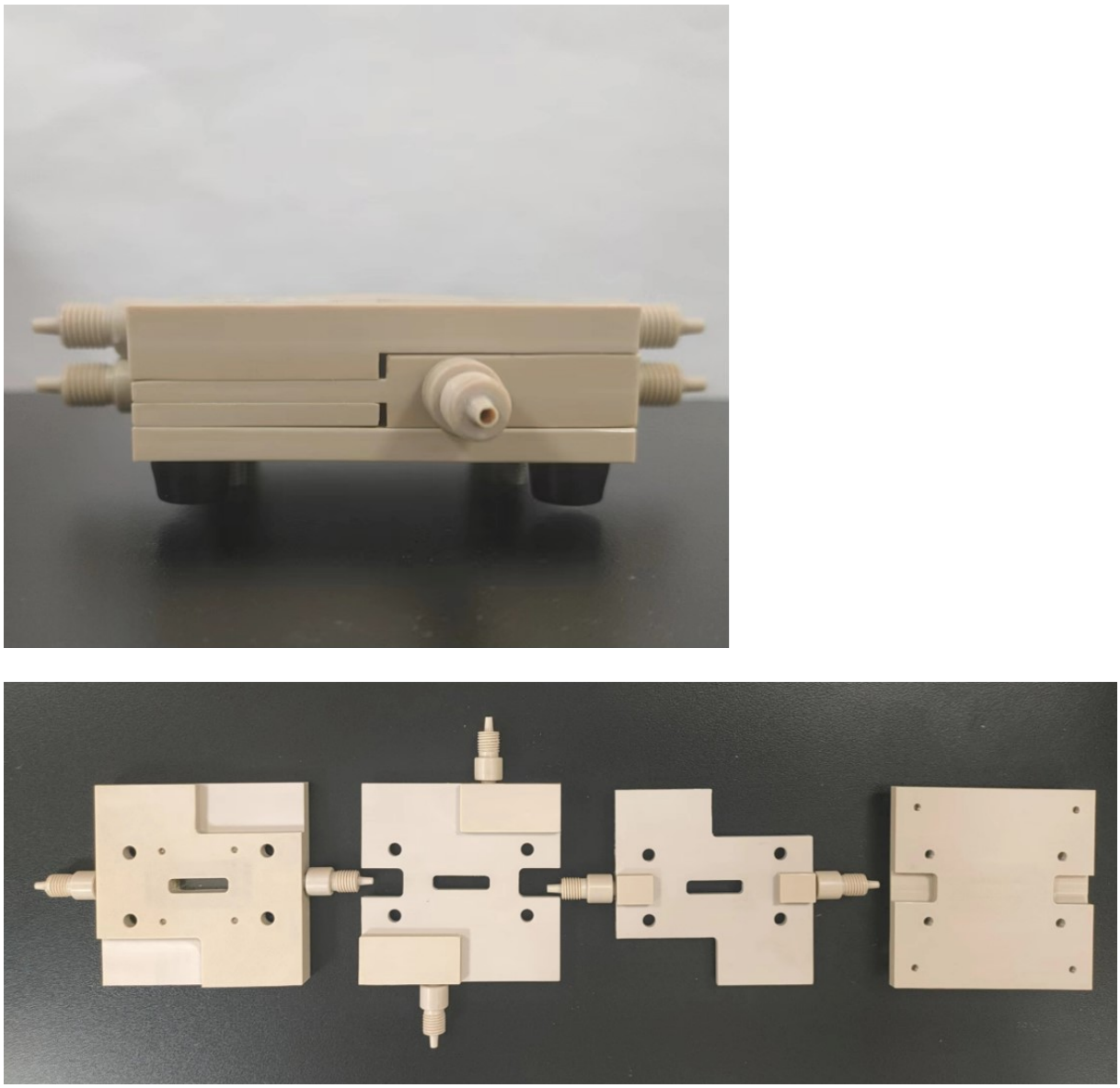

Fig. S9. Pictures of flow-cell system.

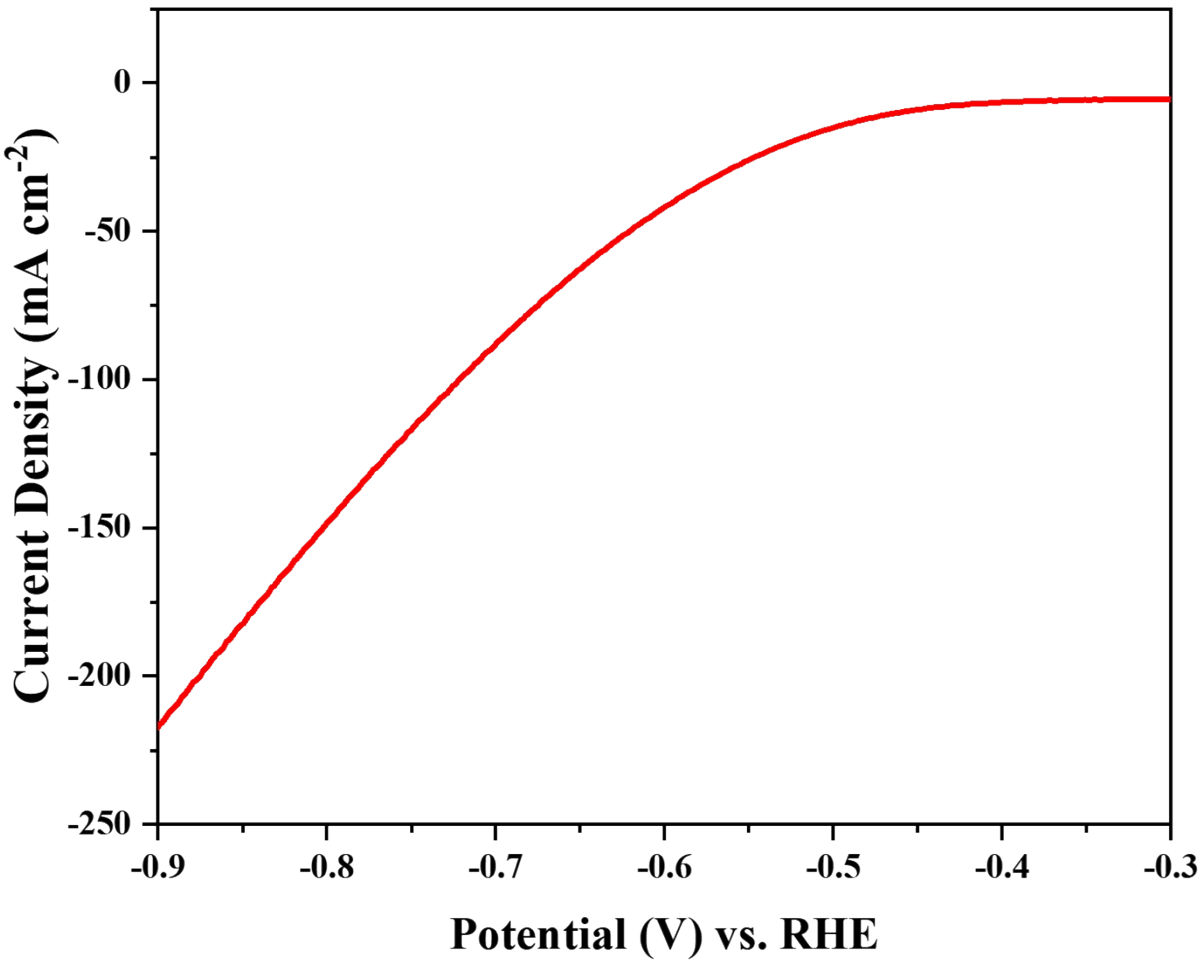

Fig. S10. LSV curve of the YBO@800 catalyst in the flow-cell with CO_2 injection.

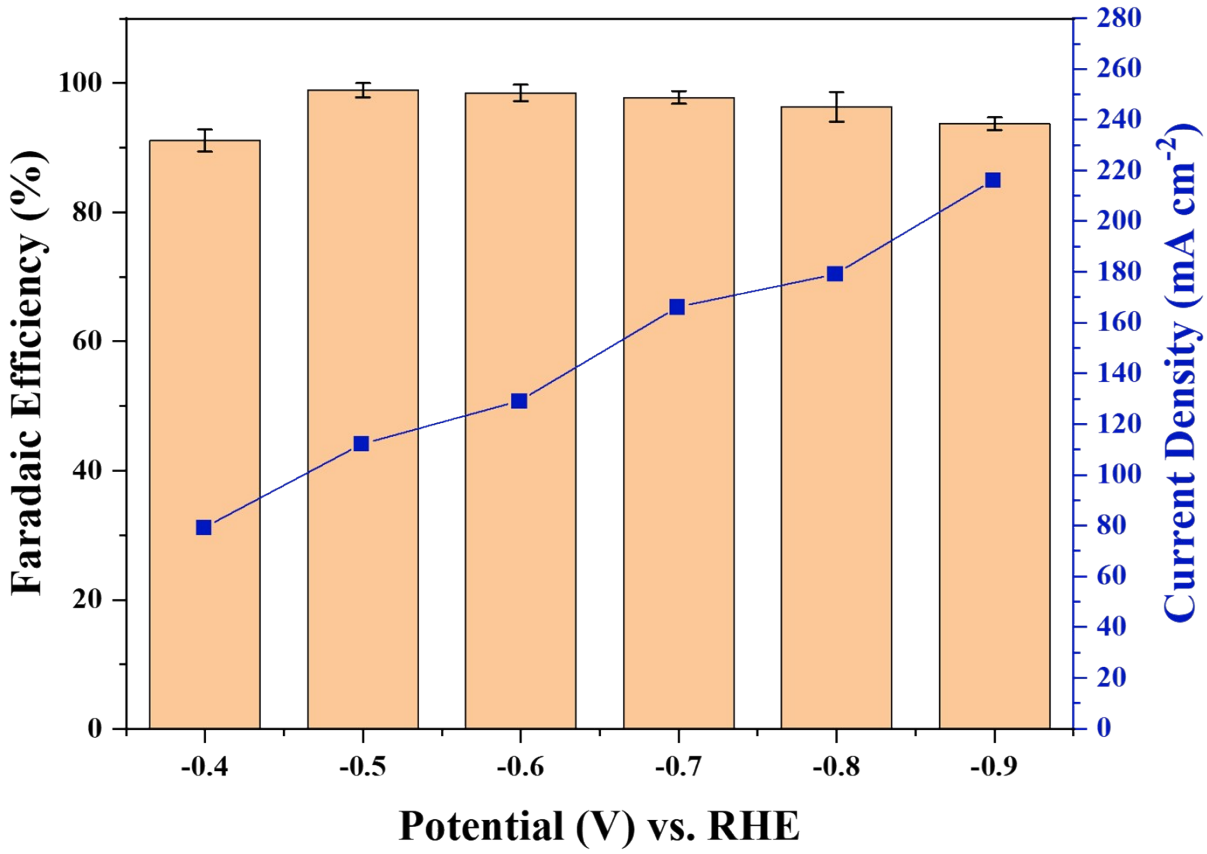

Fig. S11. The $FE_{formate}$ and current density of the YBO@800 catalyst at different potentials in the flow-cell.

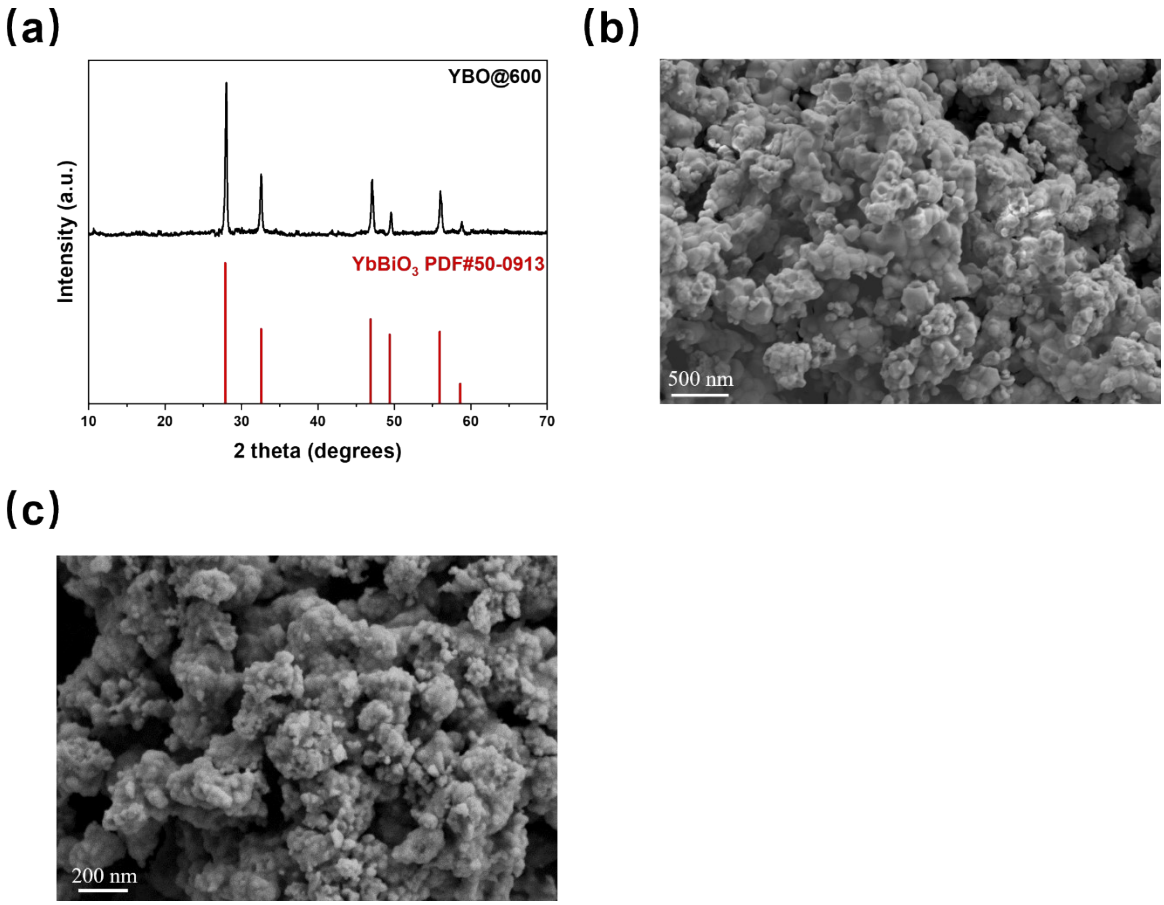

Fig. S12. (a) XRD pattern of YBO@600, SEM images of (b) YBO@600, (c) YBO@600 after electroreduction.

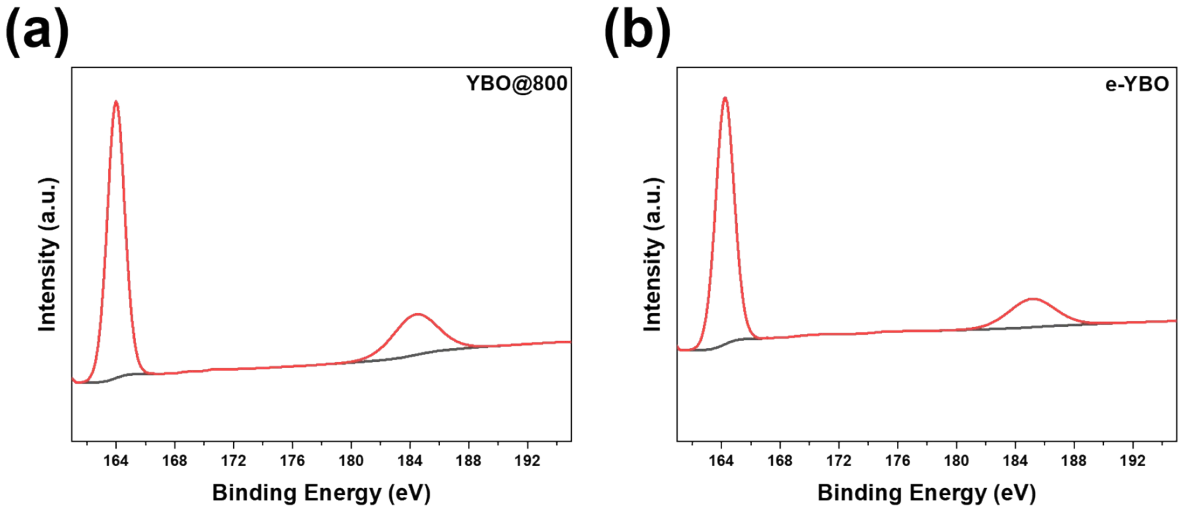

Fig. S13. Yb 4d XPS spectra of YBO@800 and e-YBO.

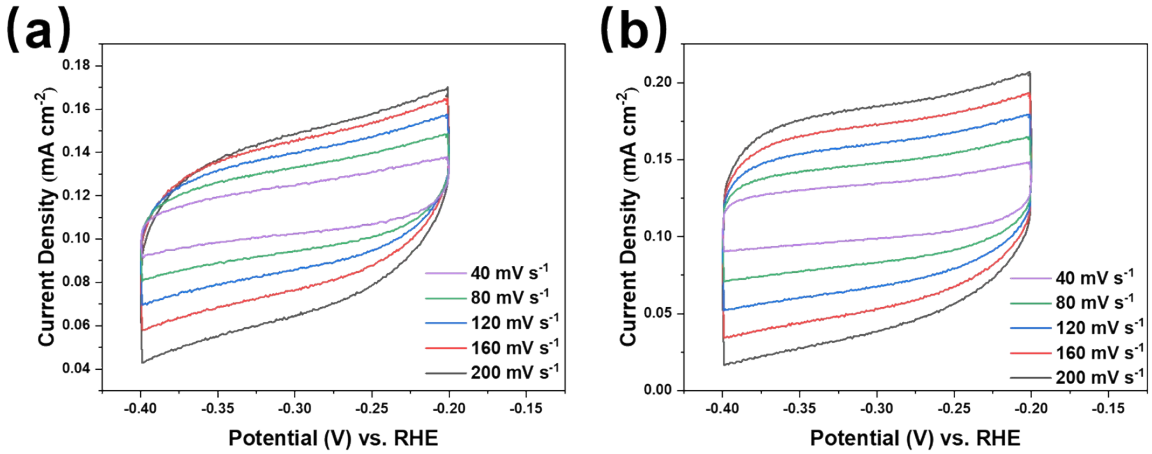

Fig. S14. CV curves of the catalysts at different sweep speeds: (a) YBO@800, (b) e-YBO.

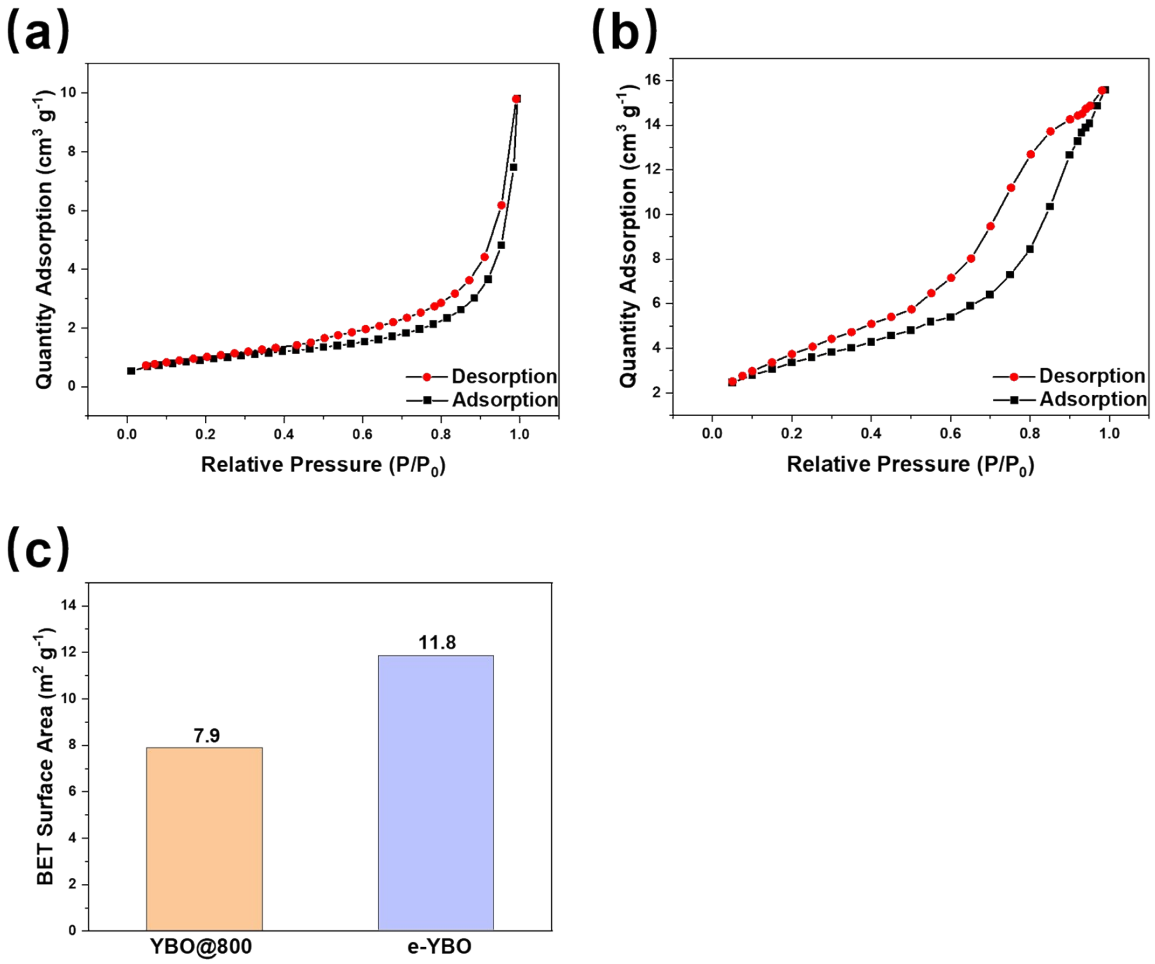

Fig. S15. (a) N_2 adsorption–desorption isotherms of YBO@800, (b) e-YBO. (c) BET surface area of YBO@800 and e-YBO.

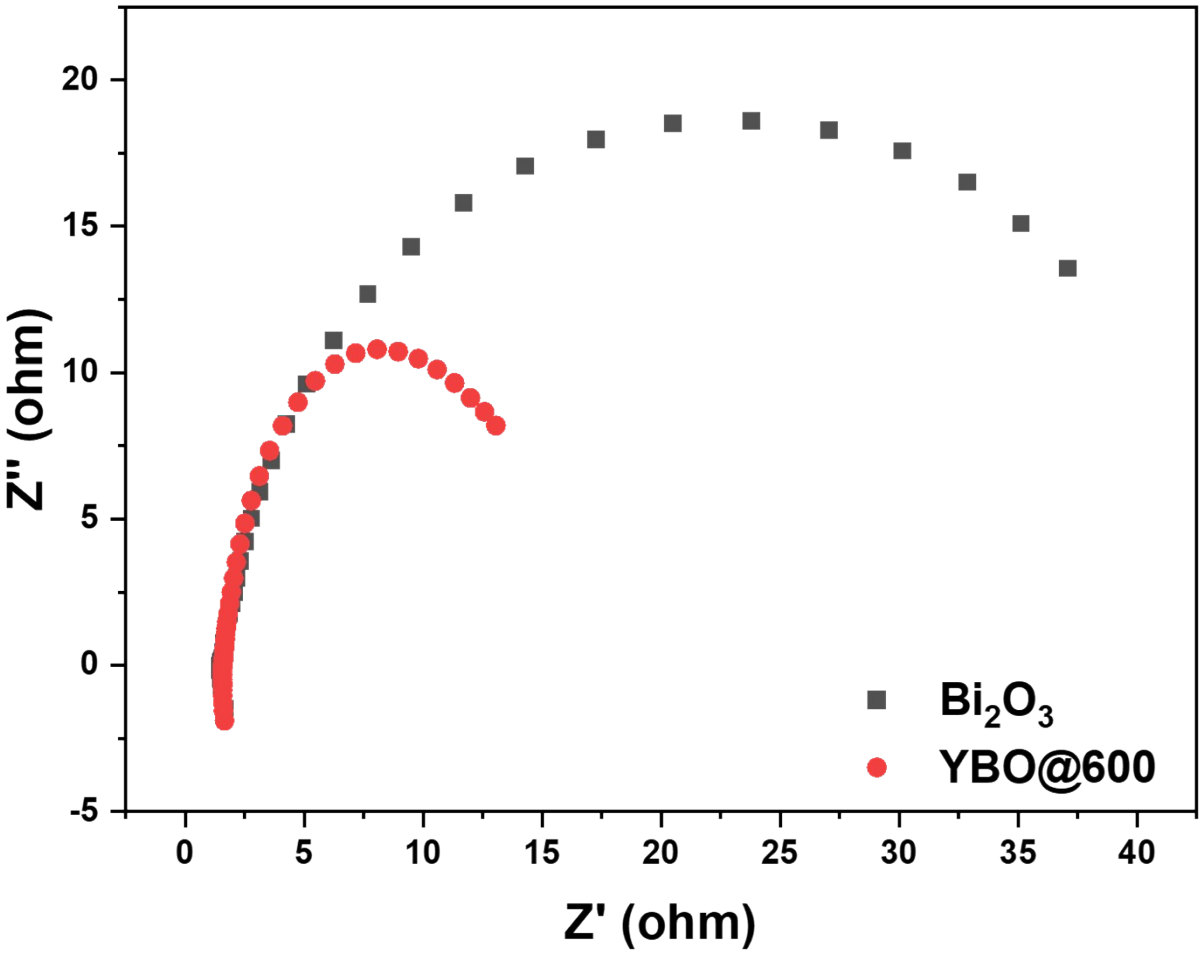

Fig. S16. EIS plots of Bi_2O_3 NPs and YBO@600.

Table. S1. Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES) results for mole ratio of Bi and Yb in YBO@800.

Sample	ICP-OES (mole ratio, Bi:Yb)
YBO@800	1:0.97