Electronic Supplementary Material (ESI) for RSC Advances.

Immobilising cobalt cubane catalyst on a dye-sensitised TiO_2 photoanode via electrochemical polymerisation for light-driven water oxidation

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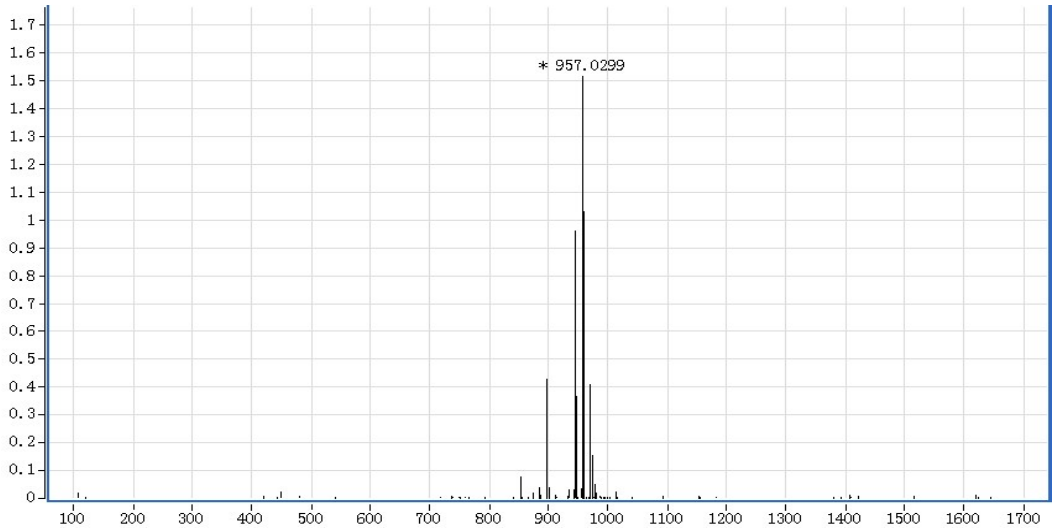
Supporting Information



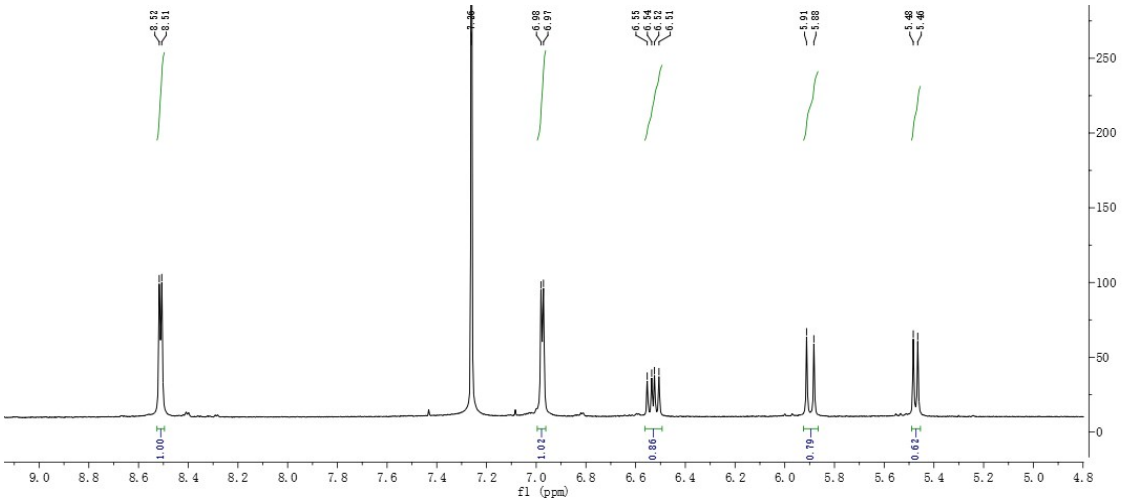


Fig. S1 The MS and H-NMR of $Co_4O_4(O_2CMe)_4(4\text{-vinylpy})_4$.

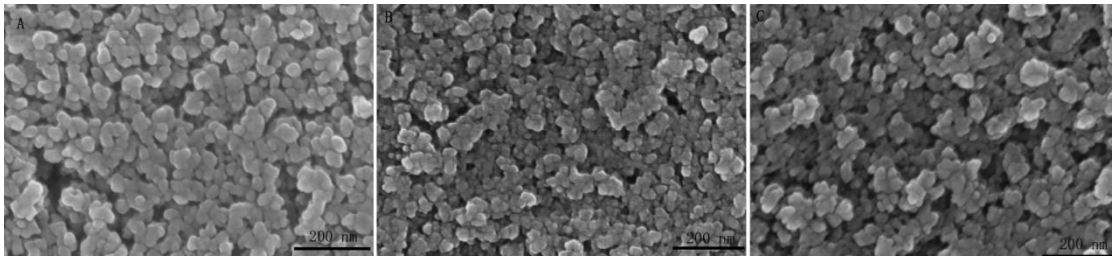


Fig. S2 SEM images of TiO_2 (A), RuP/TiO_2 (B), Poly-Co_4O_4+RuP/TiO_2 (C).

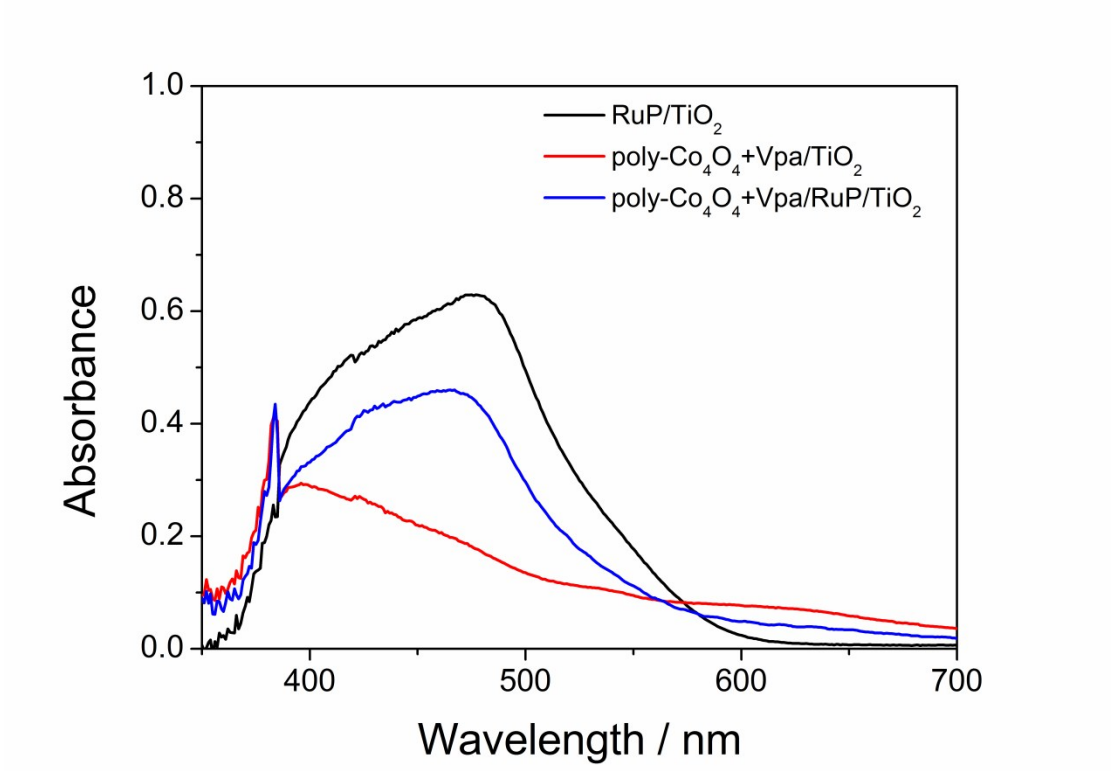


Fig. S3 The UV-Vis absorption spectra of RuP/TiO_2, Poly-Co_4O_4+Vpa/TiO_2, and Poly-Co_4O_4+$Vpa/RuP/TiO_2$.

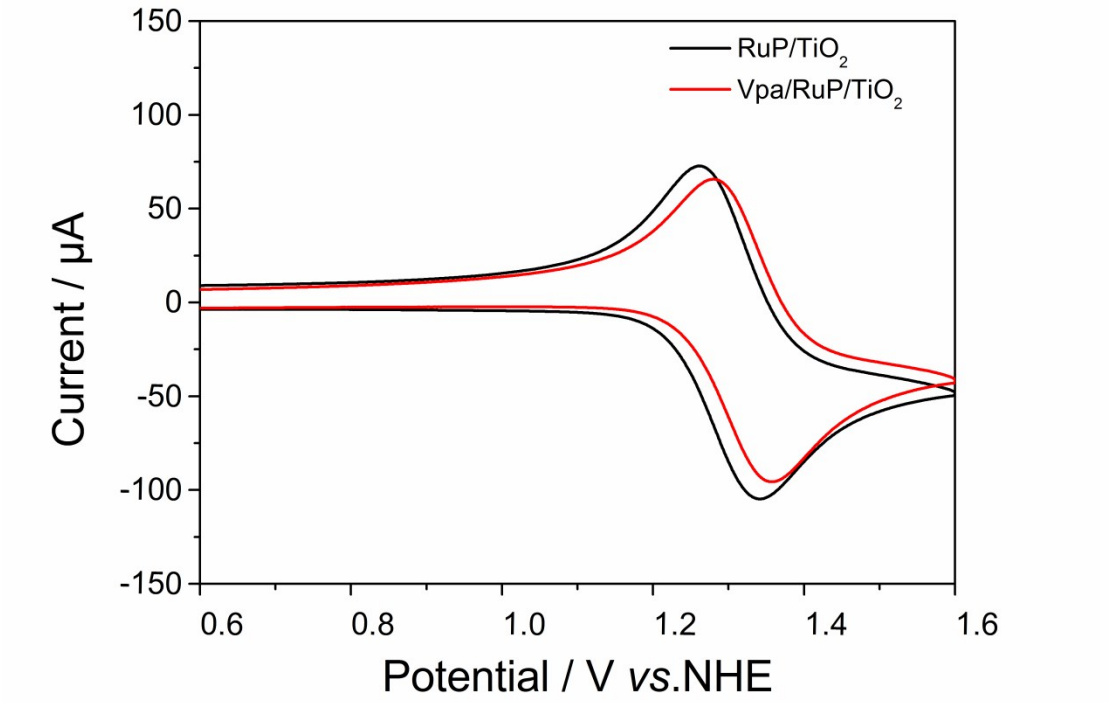


Fig. S4 CV curves of RuP/TiO_2 (black line) and $Vpa/RuP/TiO_2$ (red line) in pH 7.0 Na_2SO_4 electrolyte (100 mM).

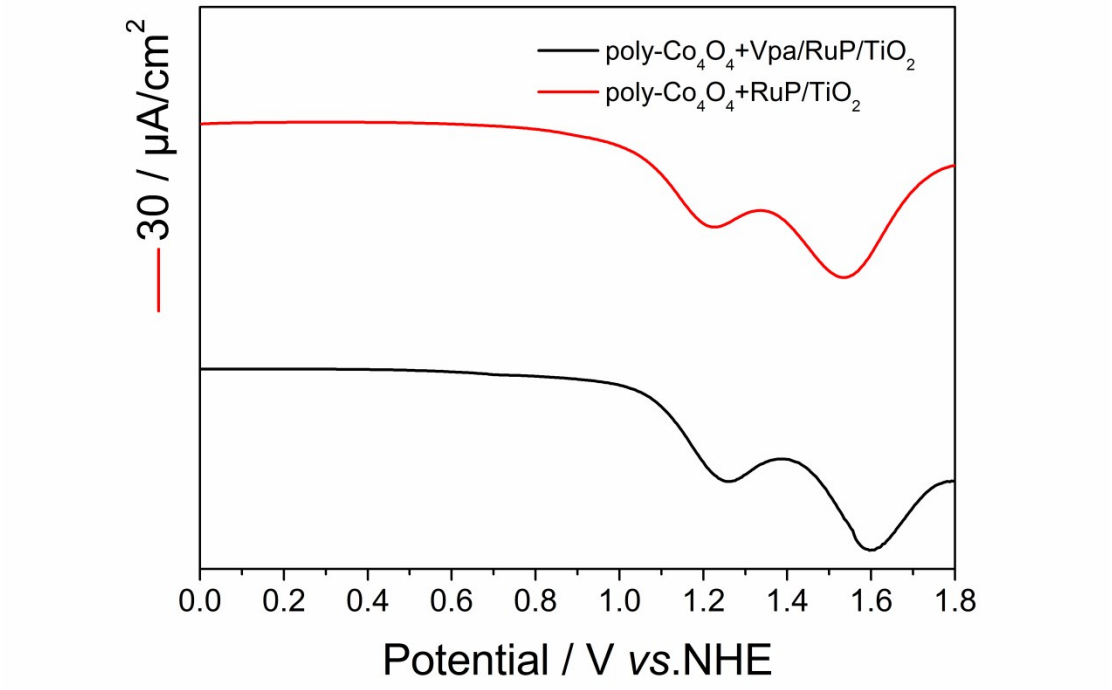


Fig. S5 DPV curves of Poly-Co_4O_4+$Vpa/RuP/TiO_2$ (black line) and Poly-Co_4O_4+RuP/TiO_2 (red line) in acetonitrile.

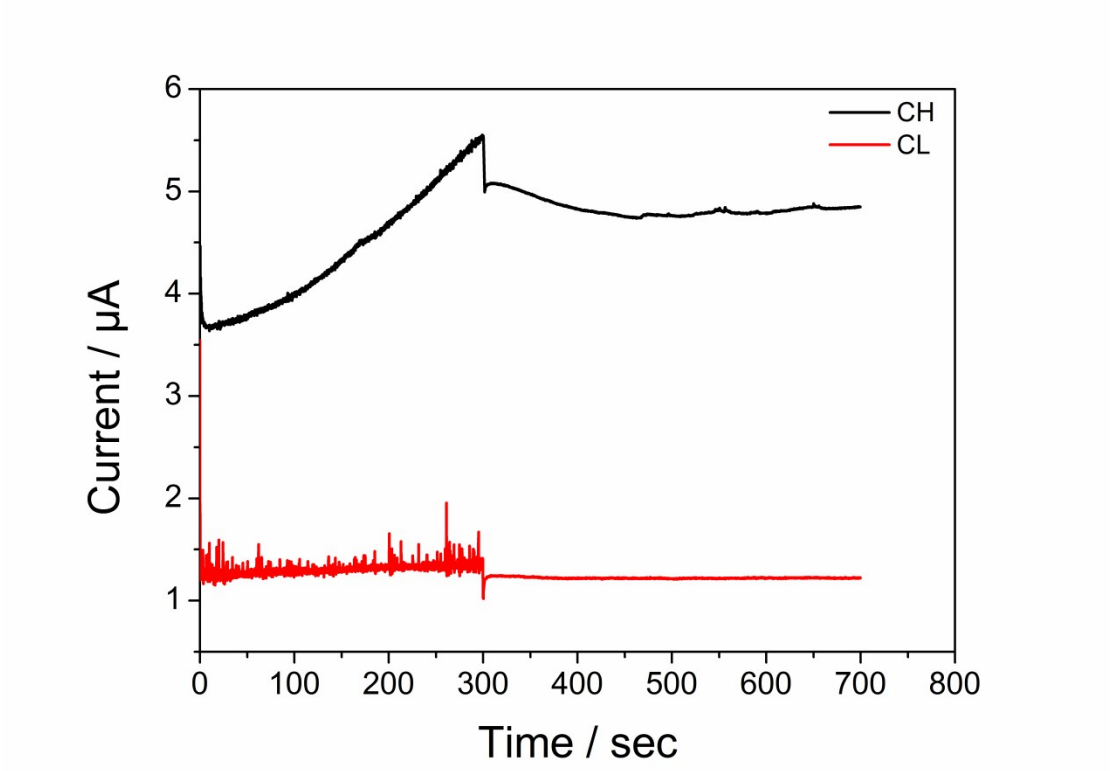
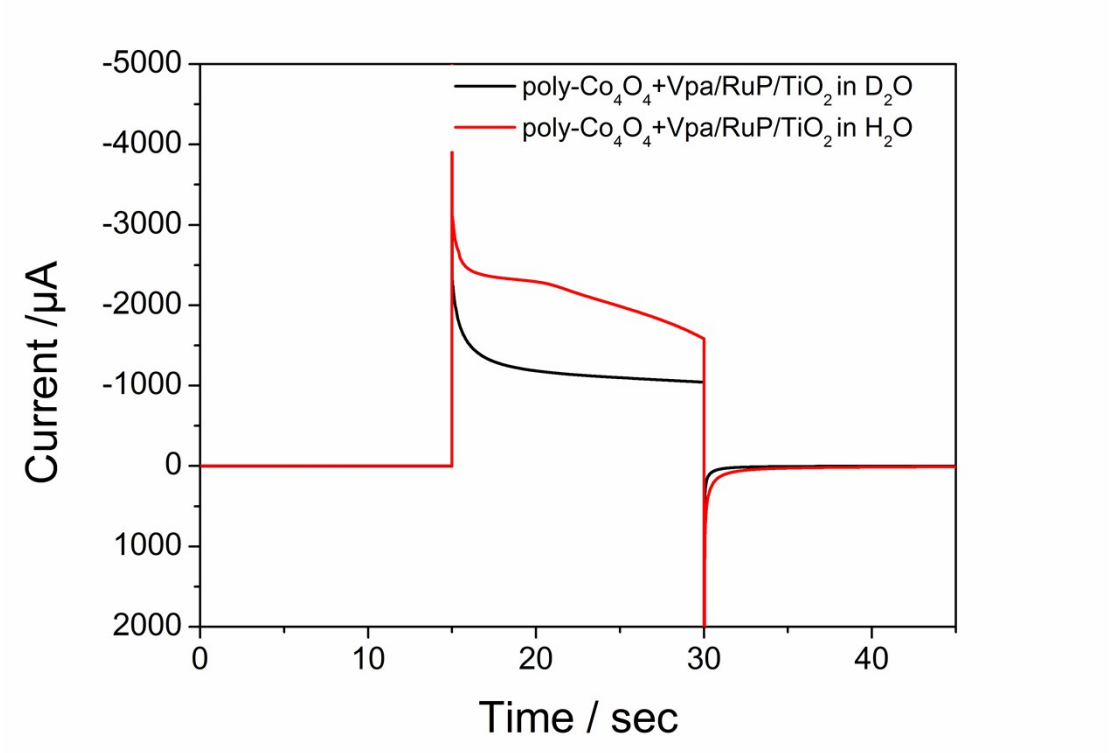


Fig. S6 Current–time traces of the collector at -1.05 V vs. NHE (black traces CH) and at -0.55 V vs. NHE (red traces CL) in Na_2SO_4 solution (100 mM) with the generator at 0.4 V vs. NHE under illumination from 0 to 300 s and darken from 300 to 700 s.



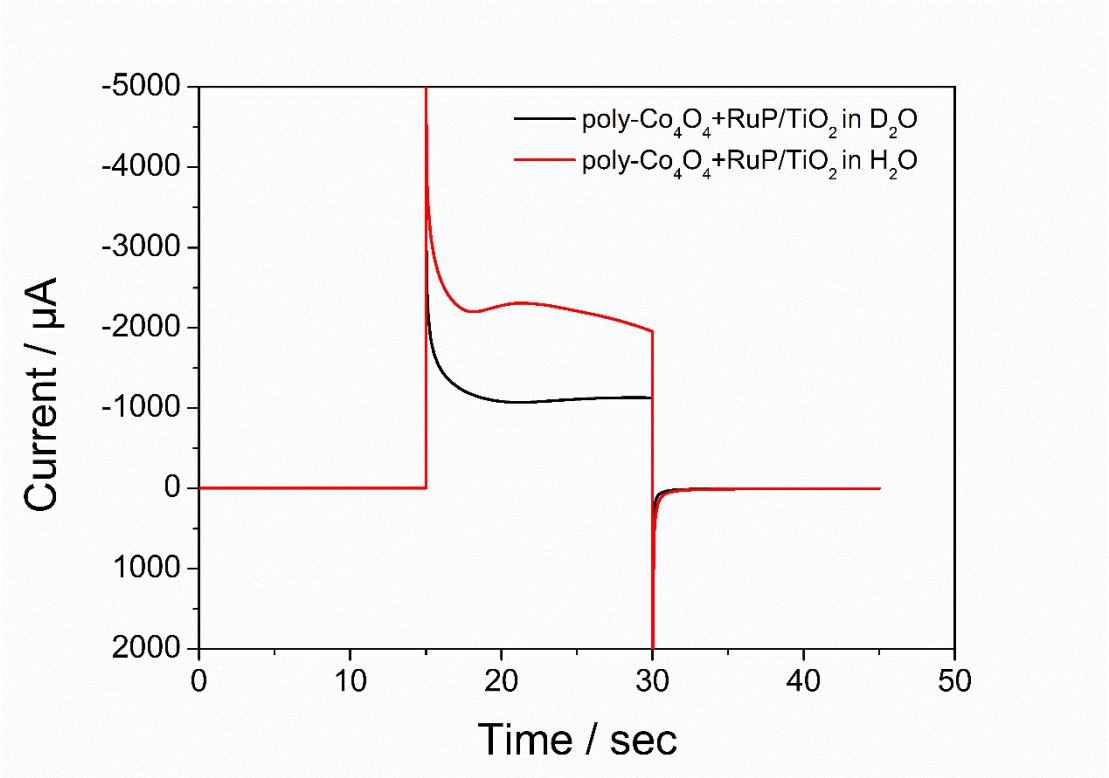


Fig. S7 Chronoamperometric current densities measured in 100 mM Na_2SO_4 aqueous (H_2O or D_2O) solution under application of sequential potential steps with 1.7 V vs. NHE.