Visible-Light-Driven CO_2 Reduction on a Hybrid Photocatalyst Consisting of a Ru(II) Binuclear Complex and a Ag-Loaded TaON in Aqueous Solutions

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Supporting Information

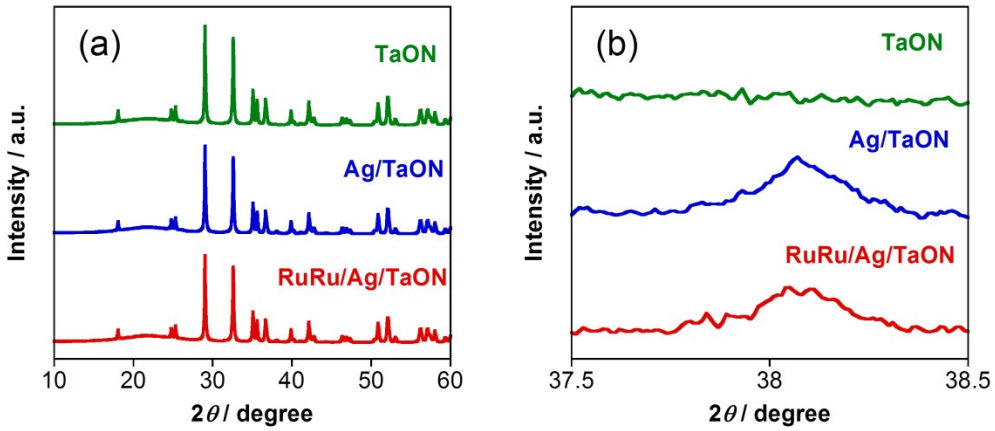

Fig. S1 (a) XRD patterns of **RuRu**/Ag/TaON (red), Ag/TaON (blue), and TaON (green). (b) Enlarged patterns of (a).

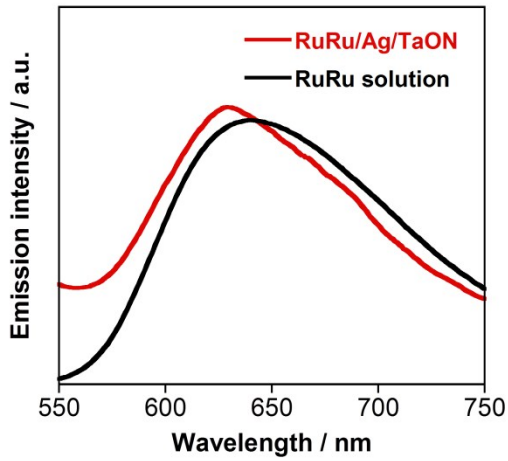

Fig. S2 Emission spectra of **RuRu**/Ag/TaON and **RuRu** in water.

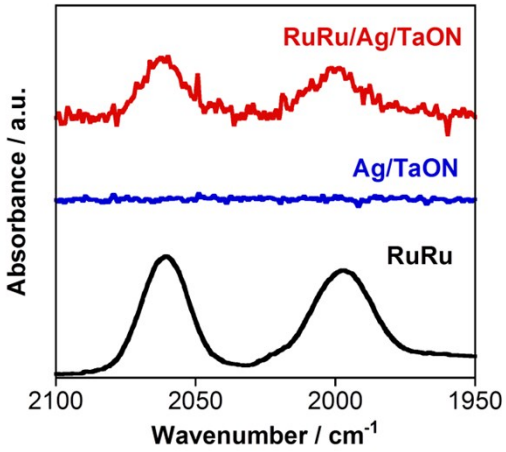

Fig. S3 FT-IR spectra of **RuRu**/Ag/TaON (red), Ag/TaON (blue), and **RuRu** (black) in KBr pallets.

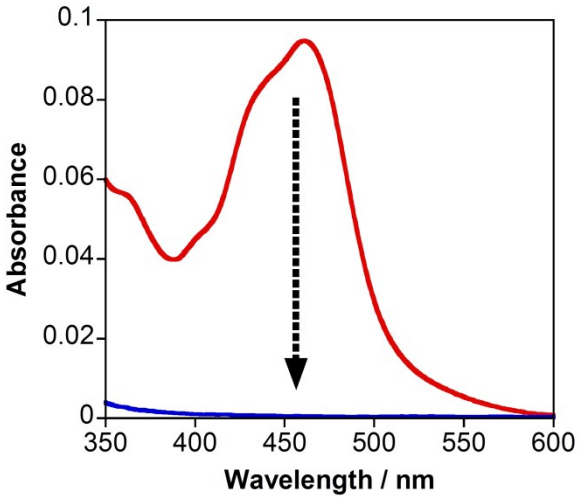

Fig. S4 UV-vis absorption spectra of **RuRu** solution in acetonitrile before (red) and after (blue) soaking with Ag/TaON.

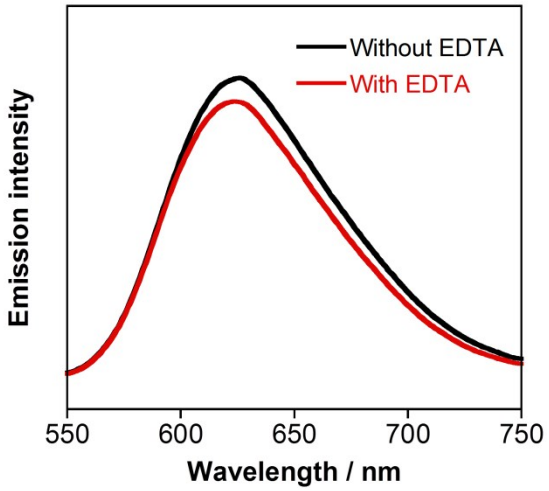

Fig. S5 Emission spectra of **RuRu** adsorbed on Al_2O_3 (4 mg) in aqueous solution (4 mL) without (black) and with (red) EDTA·2Na (10 mM). The excited wavelength was 444.

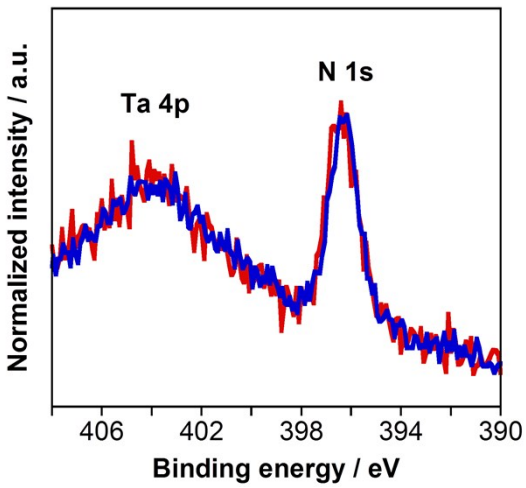

Fig. S6 XPS spectra for Ta 4p and N 1s of **RuRu**/Ag/TaON normalized by the peak area for Ta 4f before (red) and after (blue) photocatalytic reaction corresponding to Table 1, entry 1.

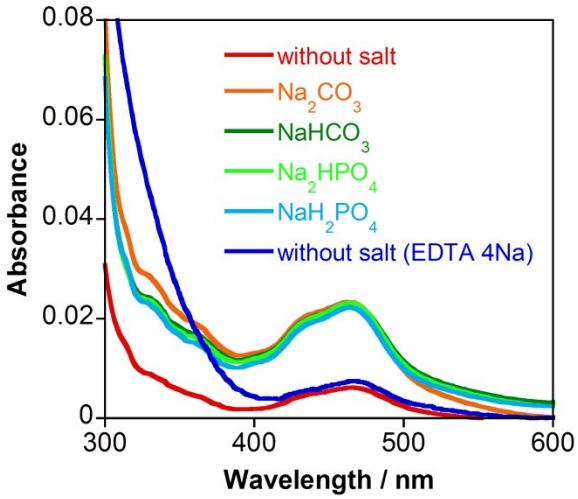

Fig. S7 UV-vis absorption spectra after photocatalytic reaction corresponding to Table 2 entry 1-4, 6, and 11.

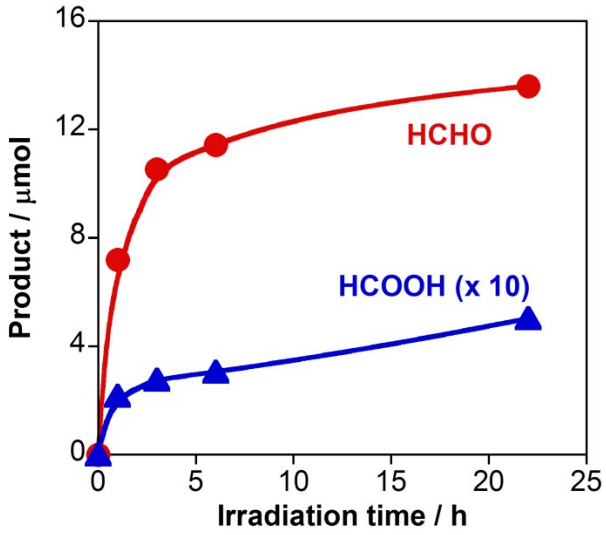

Fig. S8 Time-dependent produced amounts of HCHO (red) and HCOOH (blue) via photocatalytic MeOH oxidation over TaON (4mg) in $AgNO_3$ (10 mM) aqueous solution (4 mL) with a visible-light ($\lambda > 400$ nm) irradiation under an Ar atmosphere.