Electronic Supplementary Material (ESI) for Sustainable Energy & Fuels.

Electronic Supplementary Information (ESI)

Rationally Tuning the Active Sites of Copper-Based Catalysts towards Formaldehyde Reforming into Hydrogen

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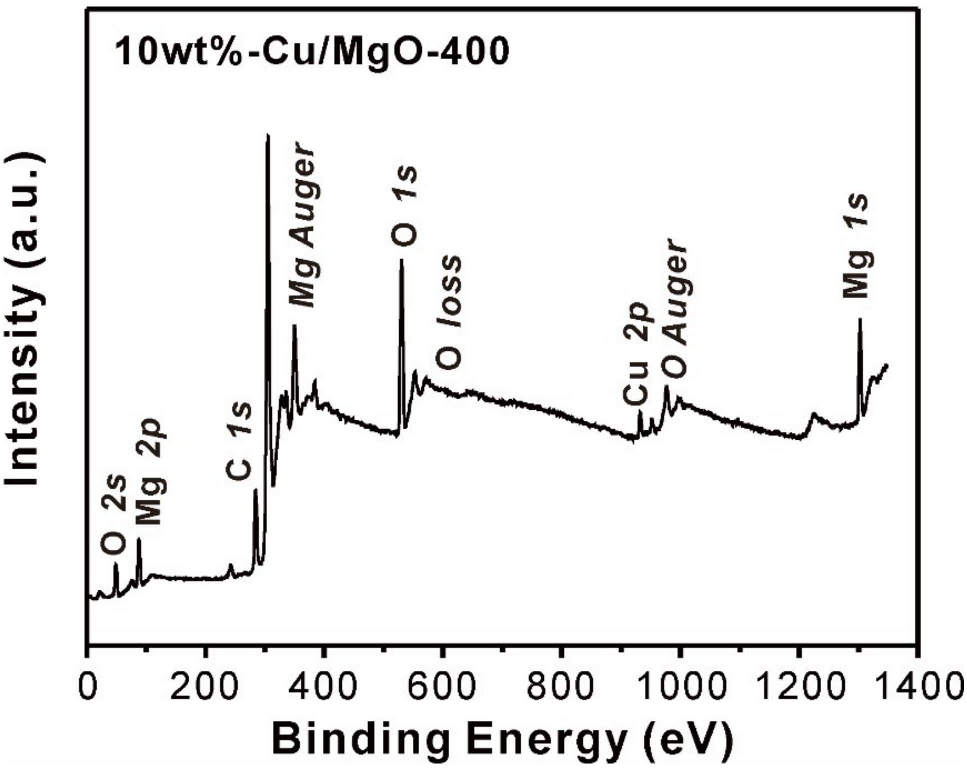

Figure S1 XPS spectra of 10 wt%-Cu/MgO-400.

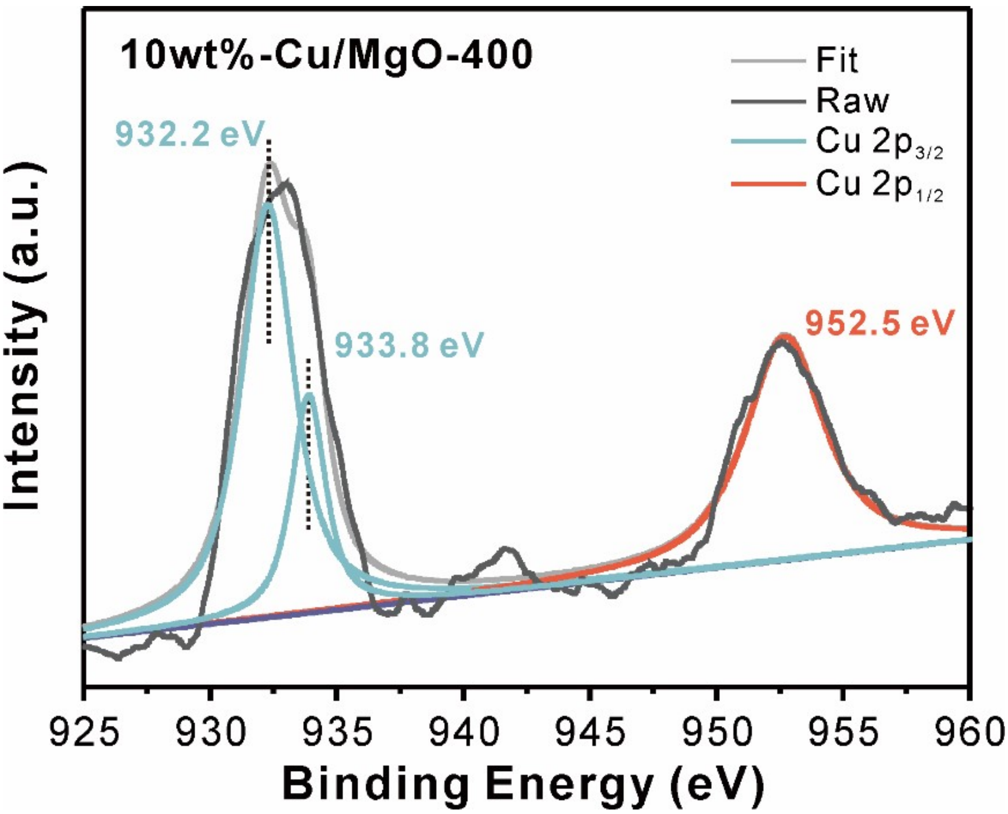

Figure S2 Cu 2p XPS spectra of 10 wt%-Cu/MgO-400.

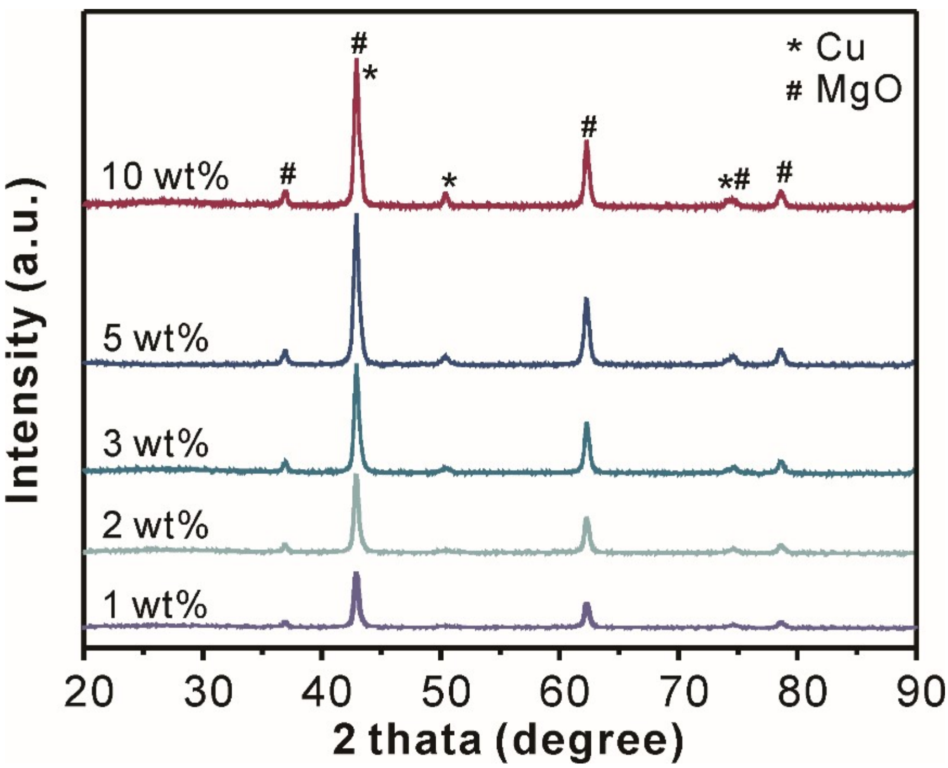

Figure S3 XRD diffraction patterns of Cu/MgO-400 catalysts with different Cu contents calcined at 400 °C in H_2/Ar for 3 h**.**

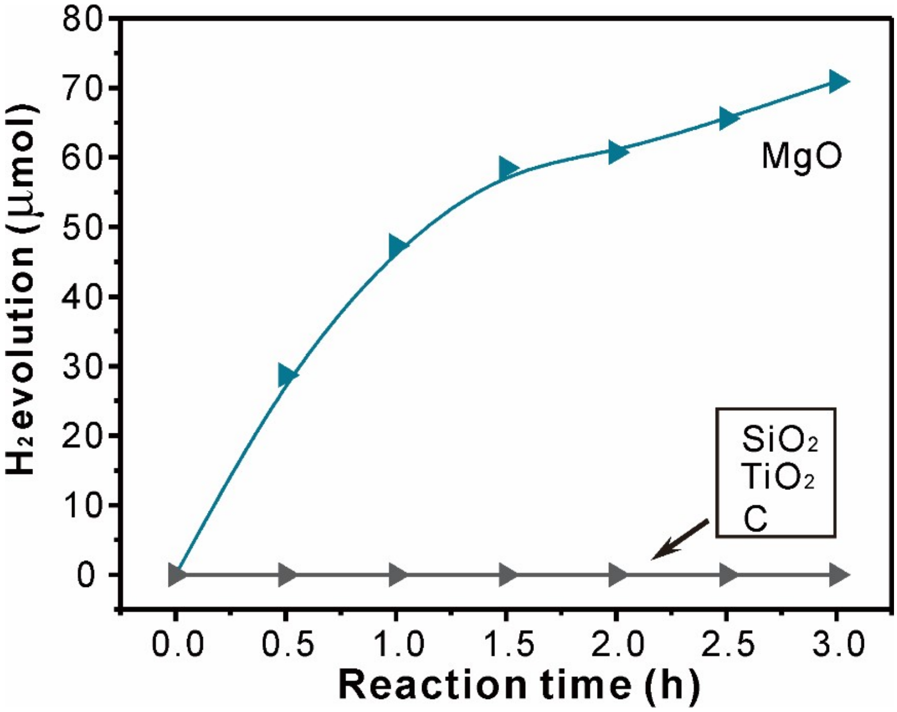

Figure S4 The catalytic performance of 10 wt%-CuNPs-400 supported on different supports in anaerobic HCHO dehydrogenation reaction at room temperature.

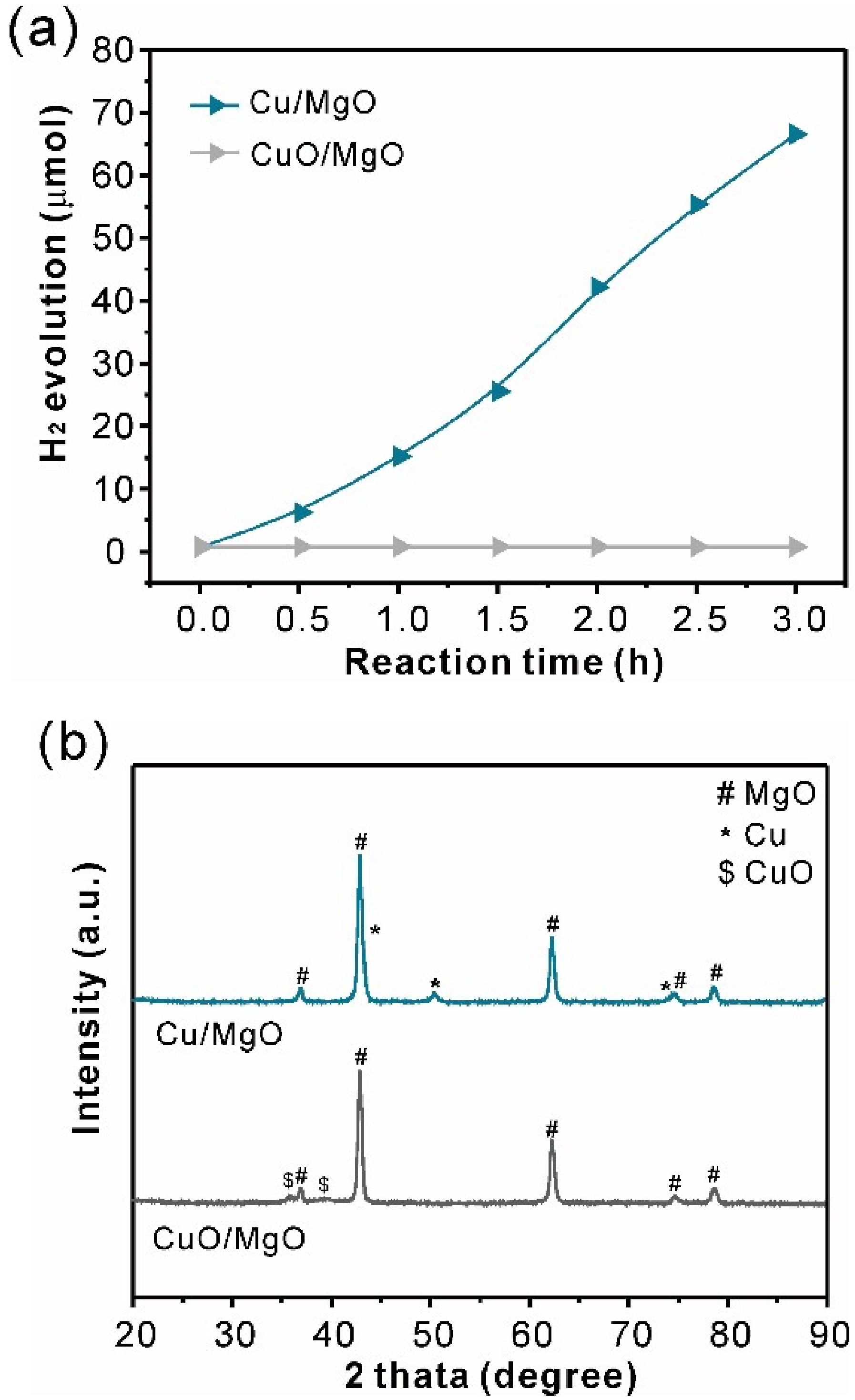

Figure S5 (a) The catalytic performance and (b) XRD patterns of 10 wt%-Cu/MgO-400 and 10 wt%-CuO/MgO-400 catalyst.

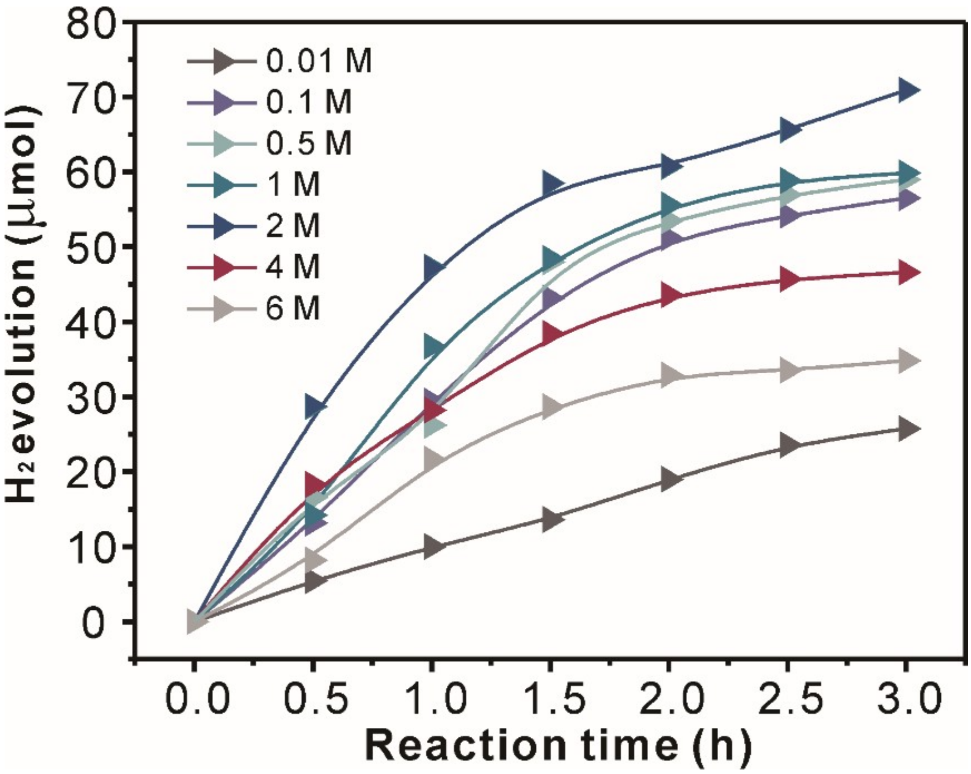

Figure S6 The effect of HCHO concentration on catalytic hydrogen production over 10wt%-Cu/MgO-400 in N_2 at room temperature.

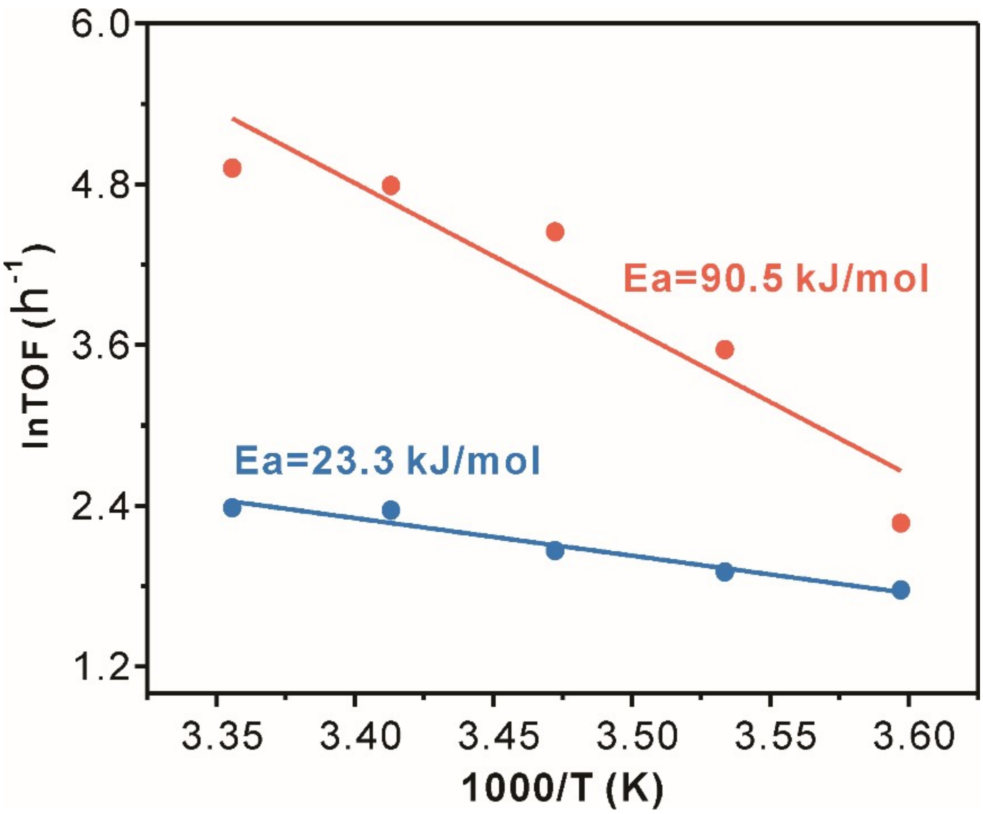

Figure S7 Arrhenius plots of lnTOF *vs* (1000/T) over 10 wt%-Cu/MgO in anaerobic (blue line) and aerobic (orange line) systems.

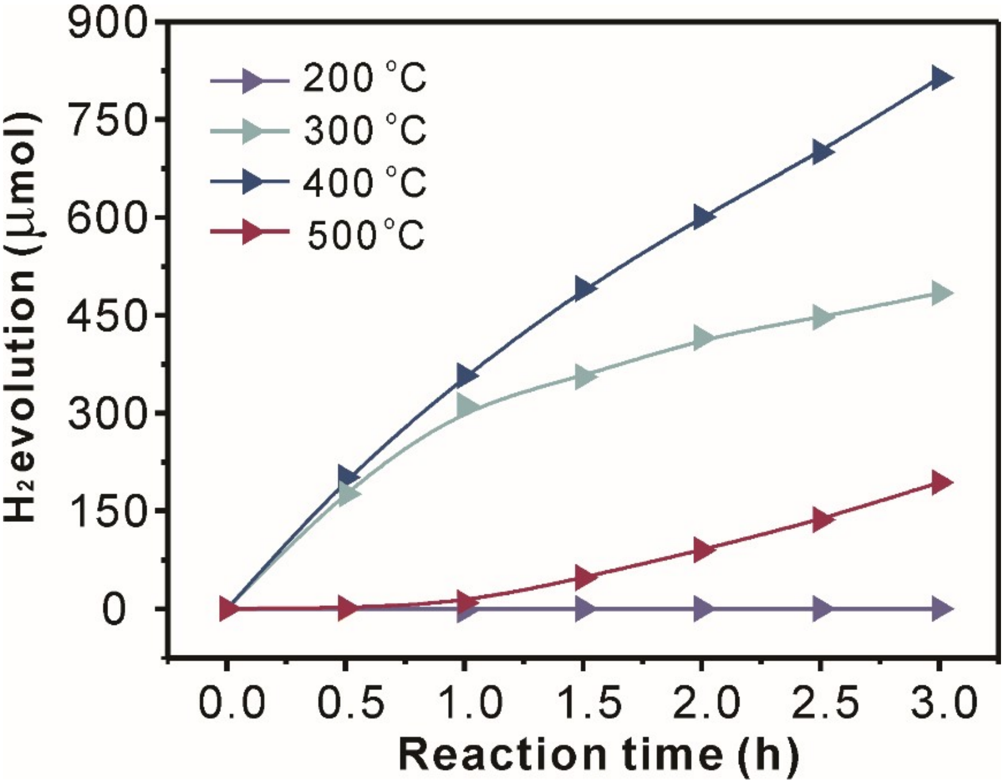

Figure S8 The catalytic H_2 production performance of 10 wt%-Cu/MgO obtained under 400, 500, 600, and 700 °C.

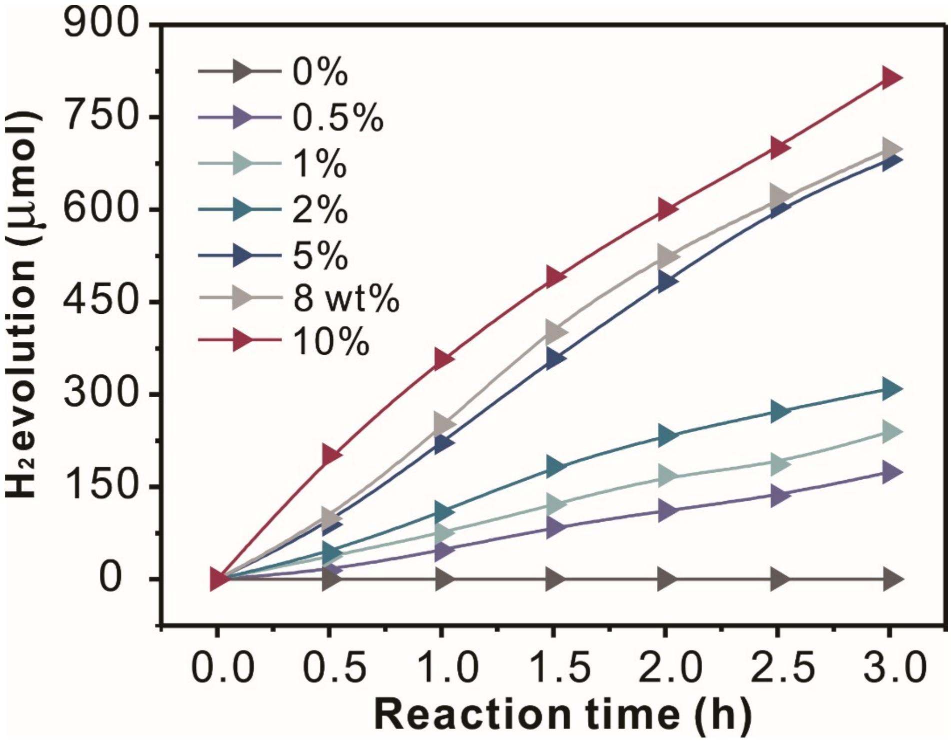

Figure S9 The effect of Cu loading amount on the hydrogen evolution rate in air at room temperature.

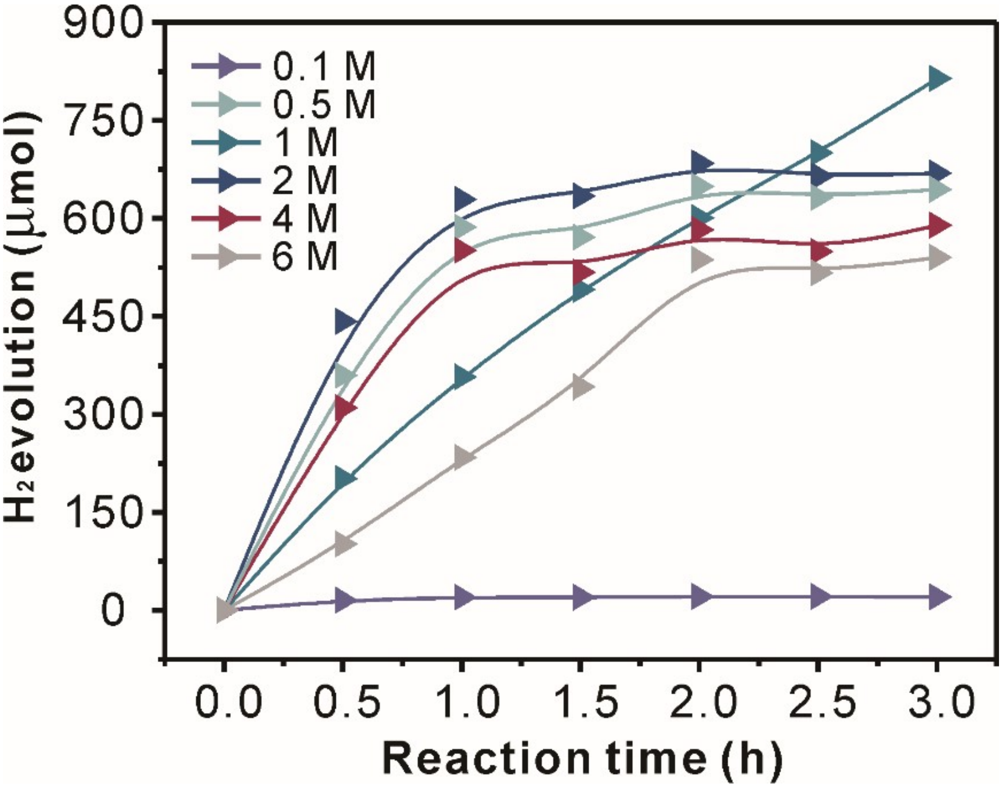

Figure S10 The effect of HCHO concentration on catalytic hydrogen production over 10wt%-Cu/MgO-400 in air at room temperature.

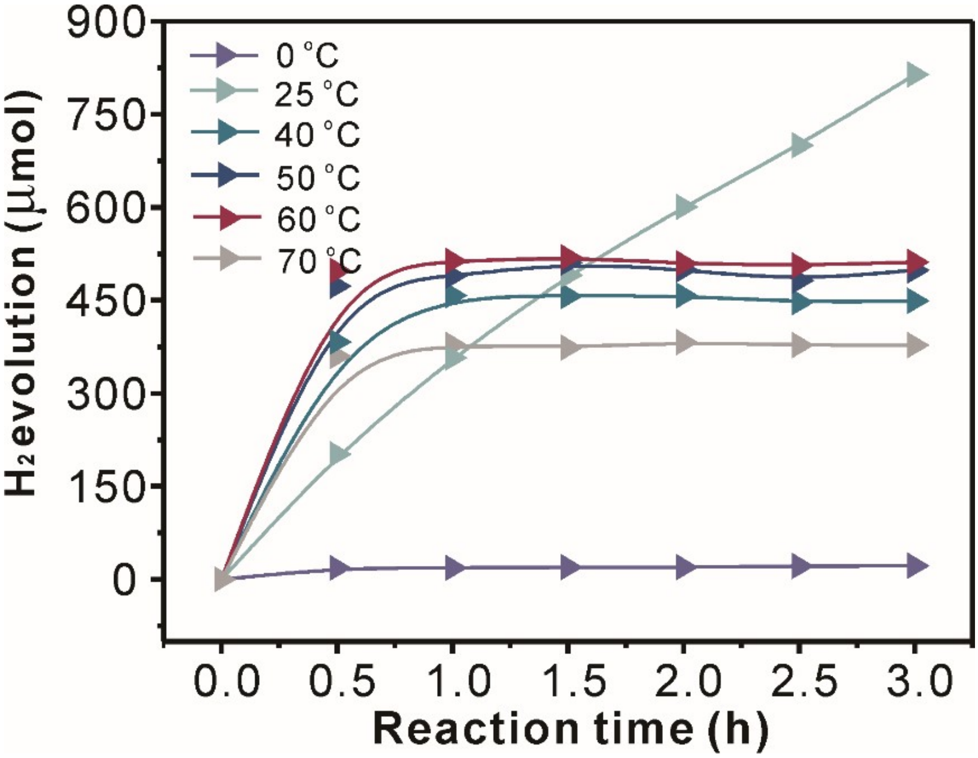

Figure S11 The effect of reaction temperature on catalytic hydrogen production over 10wt%-Cu/MgO-400 in air at room temperature.

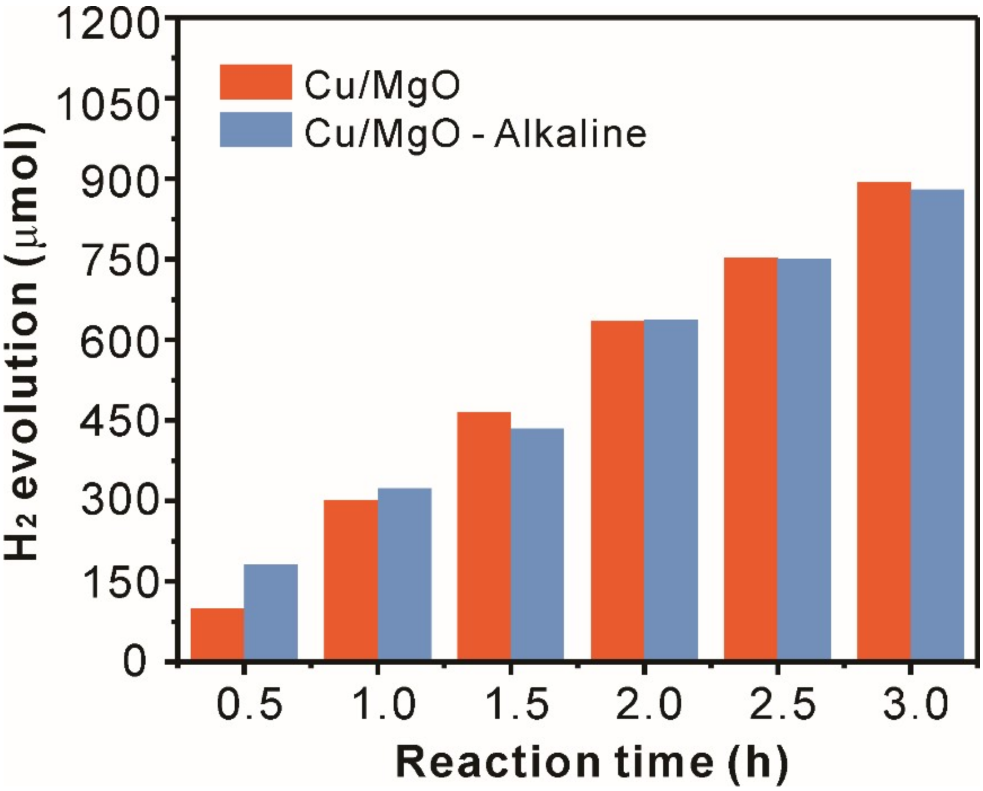

Figure S12 The catalytic performance of 10wt%- Cu/MgO-400 in neutral and alkaline $HCHO/H_2O$ solution.

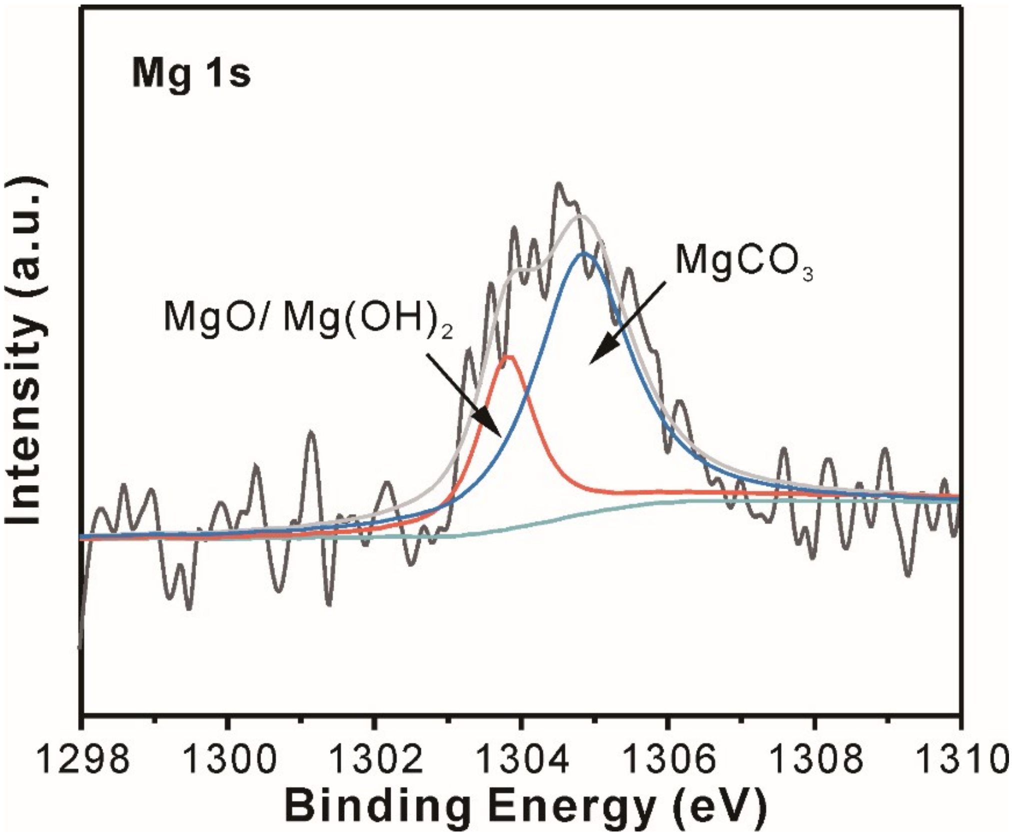

Figure S13 Mg 1s XPS spectra of 10 wt%-Cu/MgO-400 after the catalytic test.