

Electronic Supplementary Information

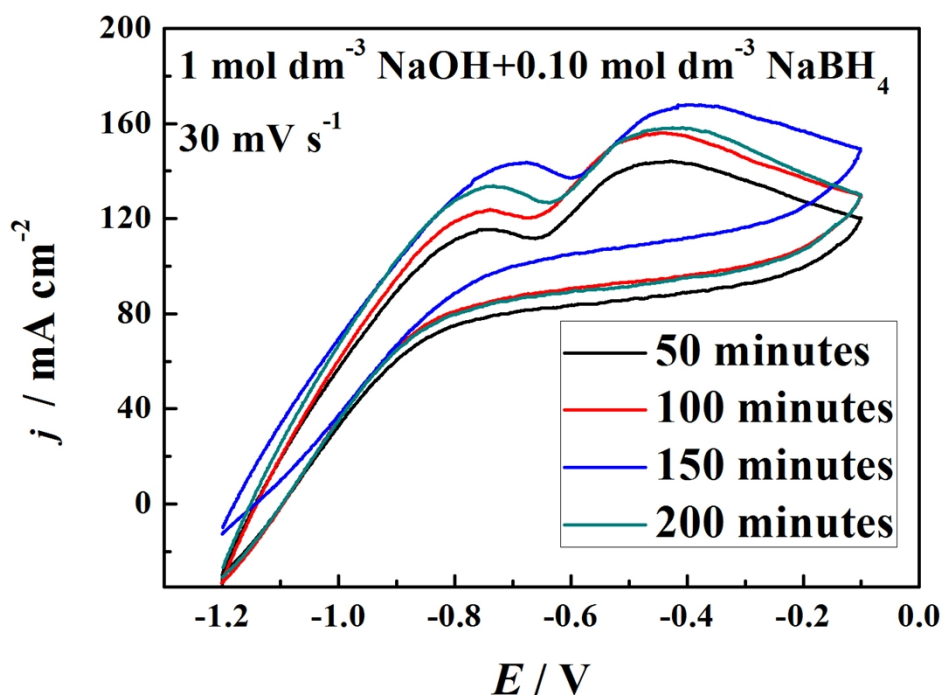


Fig. S1 NaBH₄ electrooxidation activities on the CGP electrodes prepared with different electrodeposition time (50, 100, 150, 200 min) in 1 mol dm⁻³ NaOH and 0.1 mol dm⁻³ NaBH₄.

Fig. S1 shows the NaBH₄ electrooxidation activities on the CGP electrodes prepared with different electrodeposition time (50, 100, 150, 200 min) in 1 mol dm⁻³ NaOH and 0.1 mol dm⁻³ NaBH₄. It is obvious that the current densities of the NaBH₄ electrooxidation at around -0.4 V reach to 140, 155, 160 and 180 mA cm⁻² with the electrodeposition time of 50, 100, 200 and 150 min, respectively. Similar to the result of the NaBH₄ electrooxidation, the current densities of the hydrogen electrooxidation is the highest when the electrodeposition time is fixed at 150 min. At low electrodeposition time (50 and 100 min), the mass of the Co on the CGP electrode are about 3.3 and 5.9 mg, respectively. The amount of catalyst is insufficient, so the

catalytic performance at the two electrodes is lower than it at the electrode prepared with 150 min (8 mg). However, the over Co catalyst (11.8 mg) prepared with 200 min may cause the agglomeration of the magnetic Co and then deteriorate the diffusion of the fuel during the test process, both of which may be the reasons that lead a lower catalytic performance.

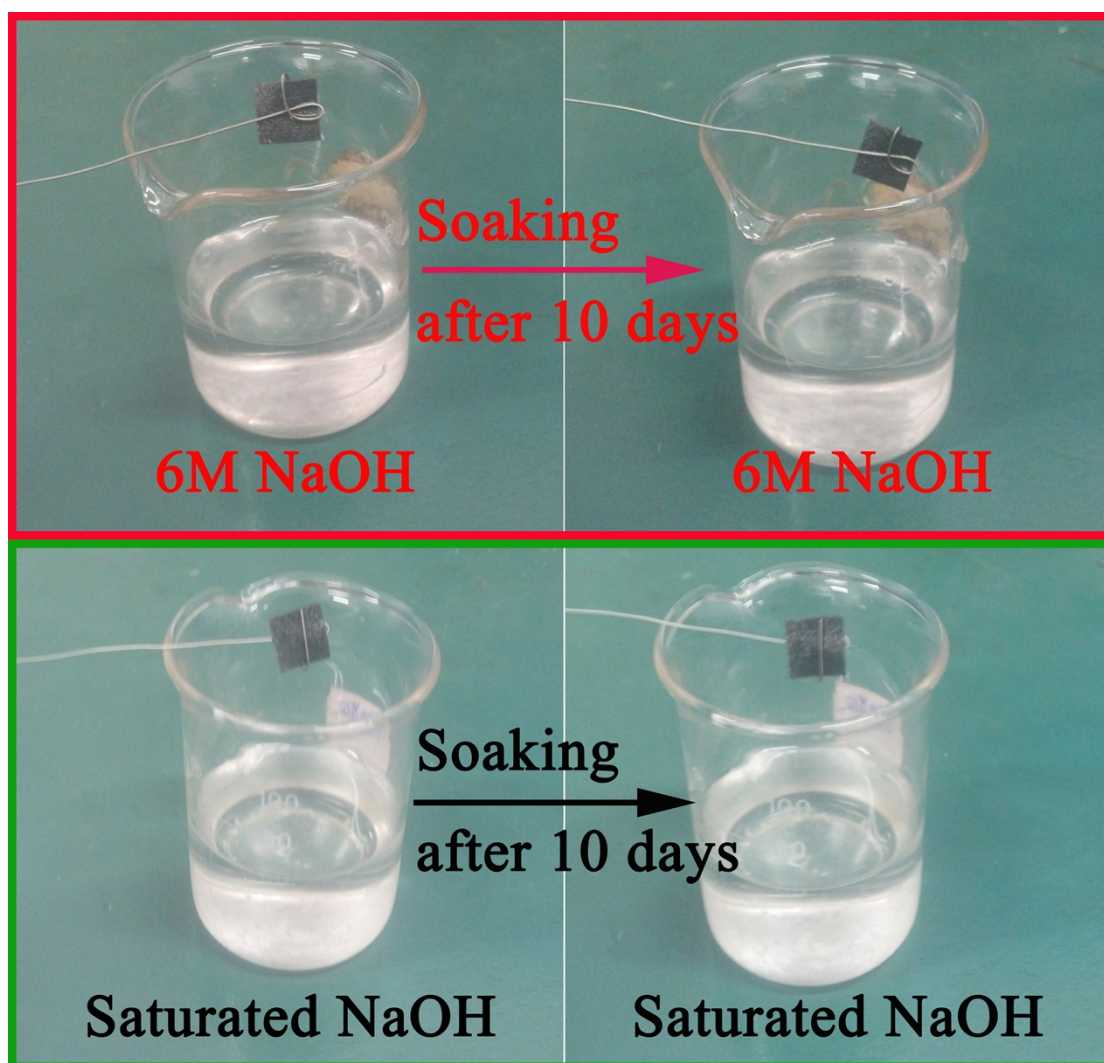


Fig. S2 The electrode stability test in highly alkaline medium

Fig. S2 shows the electrode stability test in highly alkaline medium. It is obvious that the CGP electrode almost have no change after being soaked in both 6 mol dm^{-3} and saturated NaOH solution for 10 days, which demonstrated that the CGP electrode

have a high stability.