SUPPORTING INFORMATION

Honeycomb-like Co–B amorphous alloy catalysts assembled by a solution plasma process show enhanced catalytic hydrolysis activity for hydrogen generation

Dong Ge Tong, ^{*a,b} Wei Chu, ^{*c} Ping Wu, ^{a,b} and Li Zhang^{a,b}

^aMineral Resources Chemistry Key Laboratory of Sichuan Higher Education Institutions, College of Materials and Chemistry & Chemical Engineering, Chengdu University of Technology, Chengdu 610059, China. E-mail: tongdongge@163.com; Fax: +86-28-8407 9074

^bInstitute of green catalysis and synthesis, College of Materials and Chemistry & Chemical Engineering, Chengdu University of Technology, Chengdu 610059, China ^cCollege of Chemical Engineering, Sichuan University, Chengdu 610065, China. E-mail: chuwei65@yahoo.com.cn; Fax: +86-28-8540 3397

Summary: 6 Pages; 8 Figures;





Fig.S1 (a) Overall XPS spectrum; (b)Co 2p XPS spectrum and (c) B1s XPS spectrum of the honeycomb-like Co-B.







Fig.S2. SEM images of the Co-B products prepared by SPP with (a) P123; (b) ethylenediamine; (c) SDBS; (d) PVA; (e, f) either of (a)-(d) after additional of triethanolamine at different magnifications.



Fig.S3 Plot of log R^m vs. 1/T to determine the activation energy of honeycomb-like Co-B in the hydrolysis of H₂NNH₂



Fig.S4 Hydrogen released from 200 mL aqueous H_2NNH_2 solution with different concentrations in the presence of 0.5g honeycomb-like Co-B



Fig.S5 Hydrogen selectivity for 0.5g honeycomb-like Co-B in 200 mL aqueous H_2NNH_2 solution with different concentrations



Fig.S6 (A) Overall XPS spectra; (B) Co2p3/2 XPS spectra; (C) B1s XPS spectra and (D) O1s XPS spectra of the deactivated honeycomb-like Co–B (a) before reactivation and (b) after reactivation by solution plasma process



Fig.S7 XRD patterns of the deactivated honeycomb-like Co–B (a) before reactivation and (b) after reactivation by solution plasma process



Fig.S8 (a) Hydrogen release and (b) H_2/N_2 molar ratio from 0.5M aqueous H_2NNH_2 solution (200 mL) at 298K in the presence of 0.5 g fresh and reactivated honeycomb-like Co-B, respectively; (c) H_2/NH_3BH_3 molar ratio vs. reaction time of hydrogen generated from 50 mL 0.5 wt% NH₃BH₃ aqueous solution at 298K in the presence of 5 mg fresh and reactivated honeycomb-like Co-B, respectively; (d) H_2 yield generated from 50 ml of 2wt% NaBH₄ + 7wt% NaOH solution at 298K in the presence of 13mg fresh and reactivated honeycomb-like Co-B, respectively.