

**Immobilizing AgPd Alloy on Vulcan XC-72 carbon: a novel
catalyst for highly efficient hydrogen generation from
formaldehyde aqueous solution**

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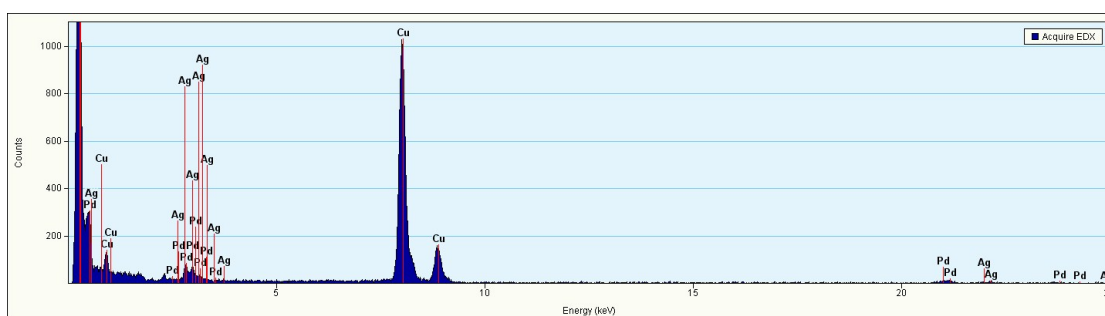


Figure S1 Energy-dispersive X-ray spectroscopy of the $\text{Ag}_1\text{Pd}_4@C-72$.

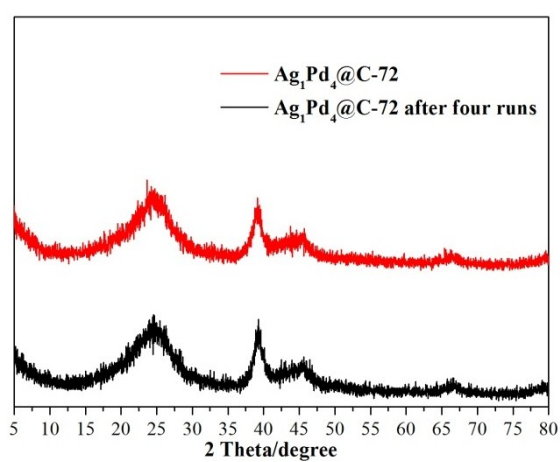


Figure S2 Powder X-ray diffraction patterns for $\text{Ag}_1\text{Pd}_4@C-72$ and after four runs.

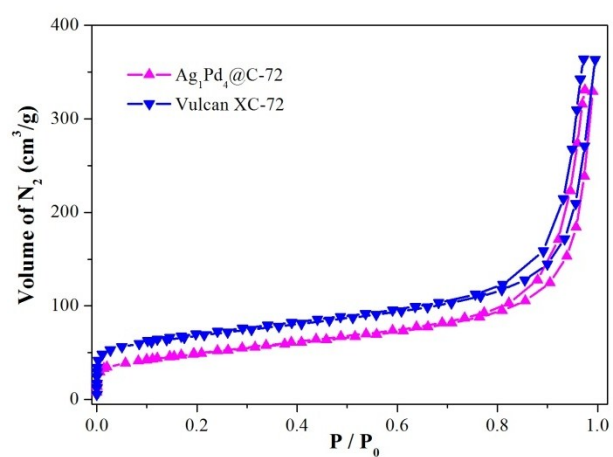


Figure S3 N_2 adsorption-desorption isotherms of $\text{Ag}_1\text{Pd}_4@C-72$ and Vulcan XC-72.

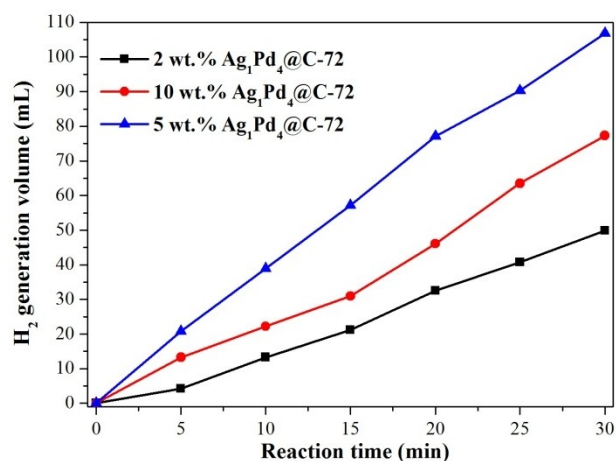


Figure S4 Hydrogen generation by decomposition of HCHO with different content of AgPd supported on Vulcan XC-72 versus time at 30 °C, NaOH: 1.0 mol/L, HCHO: 0.26 mol/L, catalyst: 15 mg.

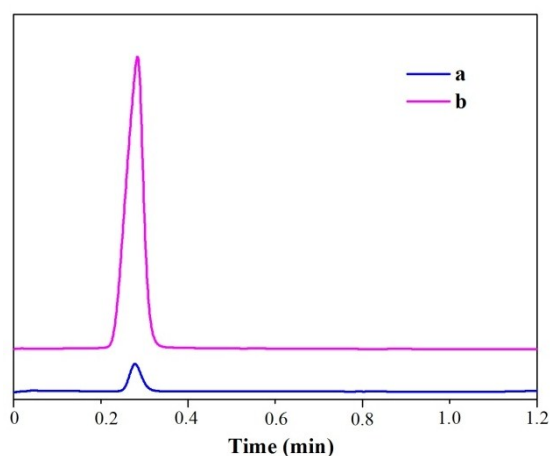


Figure S5 GC spectrum of the (a) evolved H₂ from alkaline formaldehyde solution at 30 °C over Ag₁Pd₄@C-72 catalysts and (b) commercial pure H₂.

Table S1 ICP-AES results of AgPd@C-72 catalysts

catalyst	Ag (wt%)	Pd (wt%)	Ag-Pd initial composition	Ag-Pd final composition
Ag ₁ Pd ₄ @C-72	1.08	4.12	1:4	1:3.90
Ag ₁ Pd ₁ @C-72	2.54	2.81	1:1	1:1.08
Ag@C-72	5.37	0	5:0	4.97:0
Pd@C-72	0	5.57	0:5	0:5.21