Supporting Information

Boosting Activity of PdAg alloy nanoparticles during H_2 production from formic acid induced by CrO_x as inorganic interface modifier

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Table S1. The content of C, H, N wt% over amine-MSC estimated from C.H.N elemental analysis.

element	wt%
Carbon	97.0
Hydrogen	0.0
Nitrogen	1.7

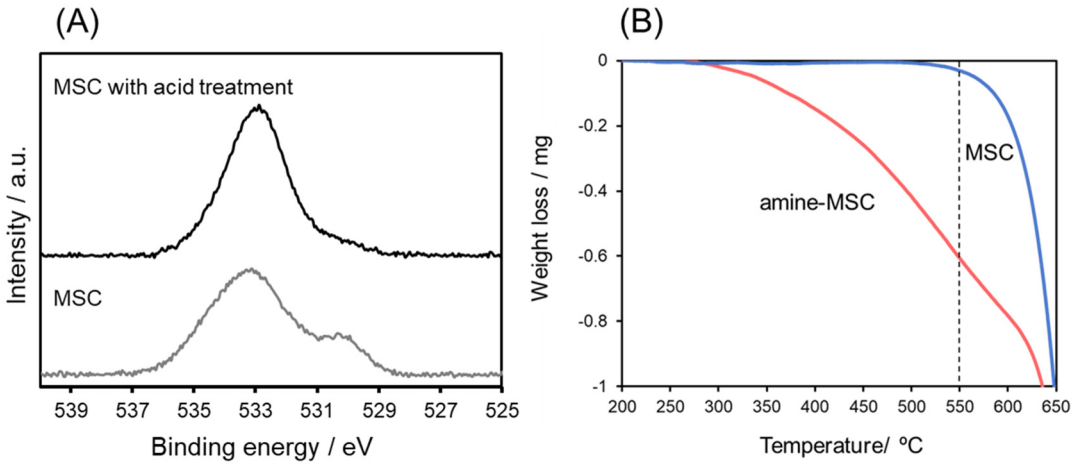

Figure S1. (A) O 1S XPS spectra of MSC and MSC with acid treatment, and (B) the weight loss associated to the amine functionality of amine-MSC observed from TG analysis

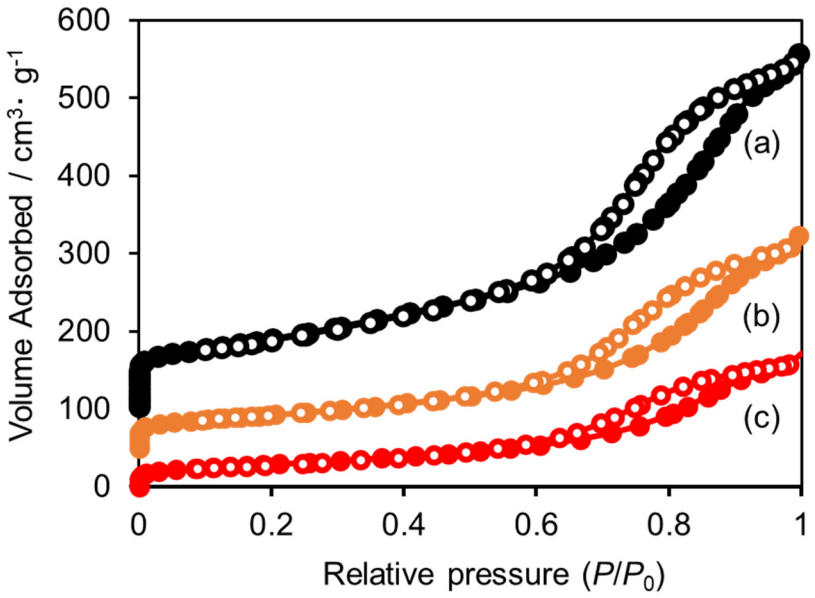

Figure S2. N_2 adsorption-desorption isotherms of (a) MSC, (b) amine-MSC, and (c) PdAgCr/amine-MSC.

Table S2. The BET surface area and pore volume of each sample.

	Surface area (S_{BET}) [m^2g^{-1}]	Pore volume (V_p) [cm^3g^{-1}]
MSC	320	0.64
amine-MSC	153	0.39
PdAgCr/ amine-MSC	104	0.24

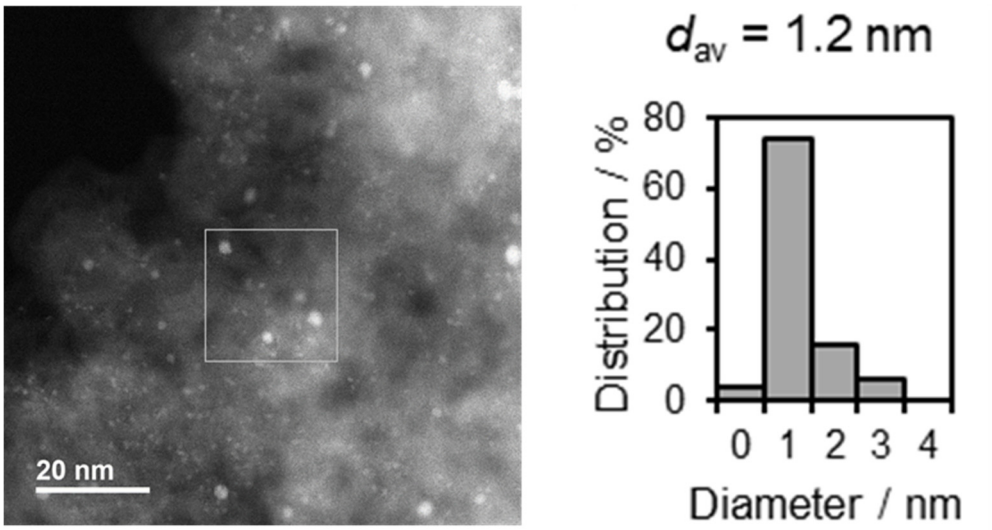

Figure S3. STEM image and size distribution of PdAg/amine-MSC.

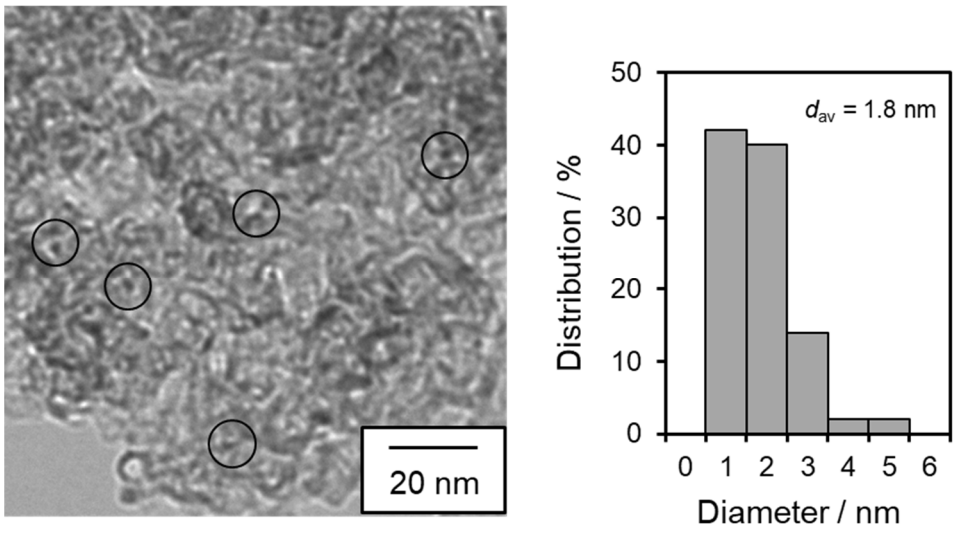

Figure S4. TEM image and size distribution of Pd/amine-MSC.

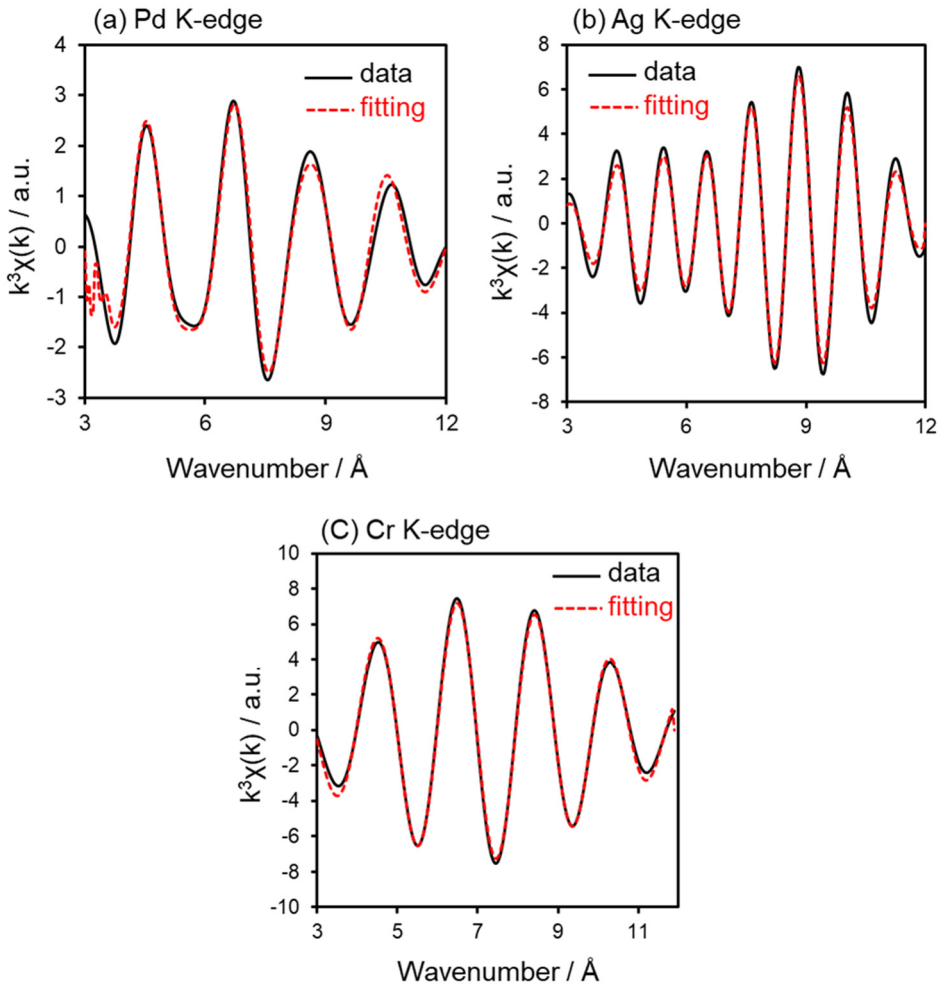

Figure S5. Inverse-FT of k^3-weighted EXAFS (black line) and Curve-fitting results (red dot) for PdAgCr/amine-MSC at (a) Pd K-edge, (b) Ag K-edge, and Cr K-edge.

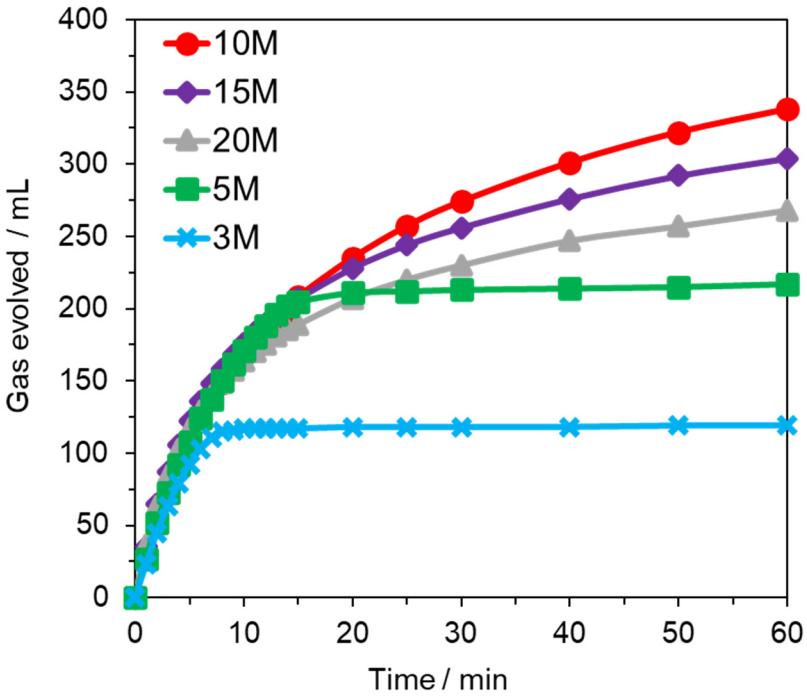

Figure S6. Effect of formic acid concentration in the H_2 production from formic acid.

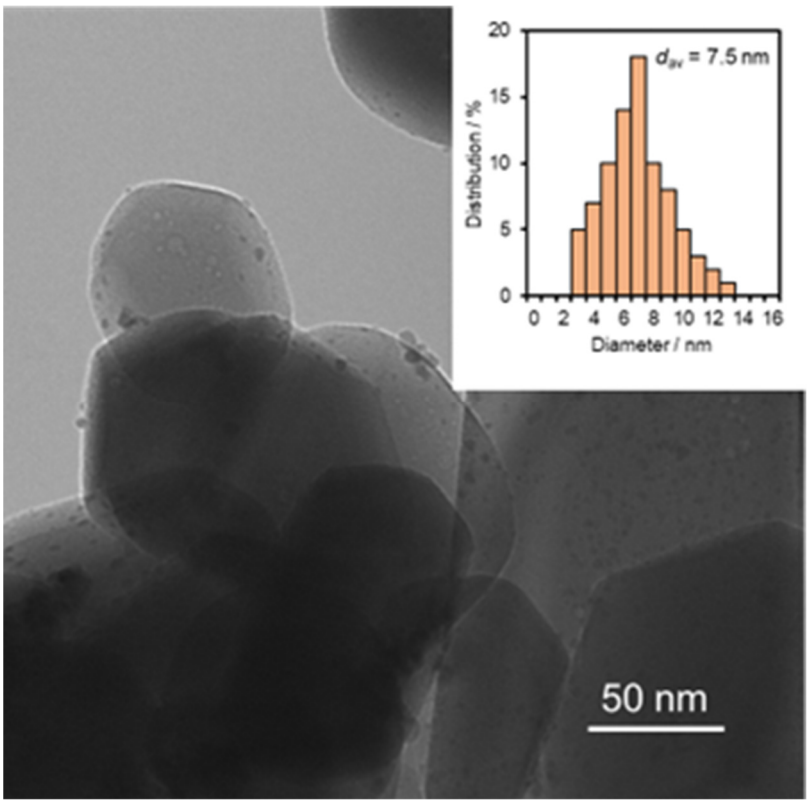

Figure S7. TEM image and size distribution diagram of PdAg/Cr_2O_3.

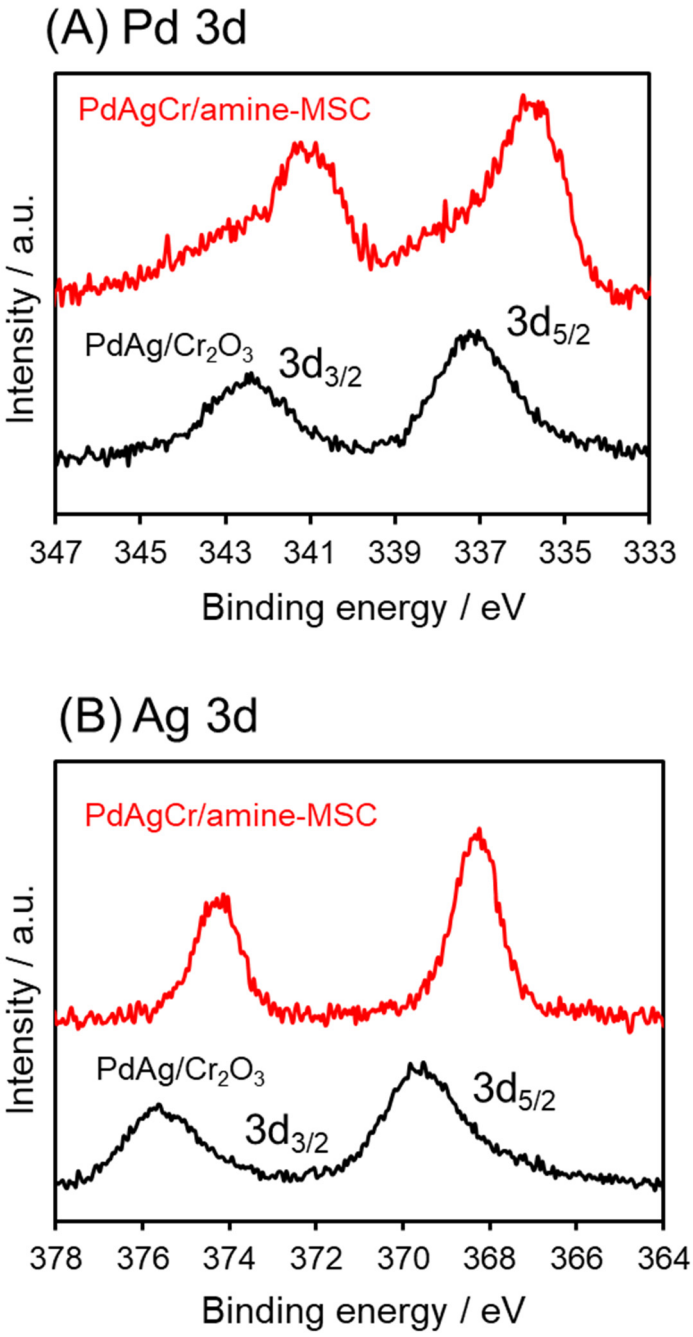

Figure S8. (A) Pd 3d and Ag 3d XPS spectra of PdAgCr/amine-MSC and $PdAg/Cr_2O_3$.

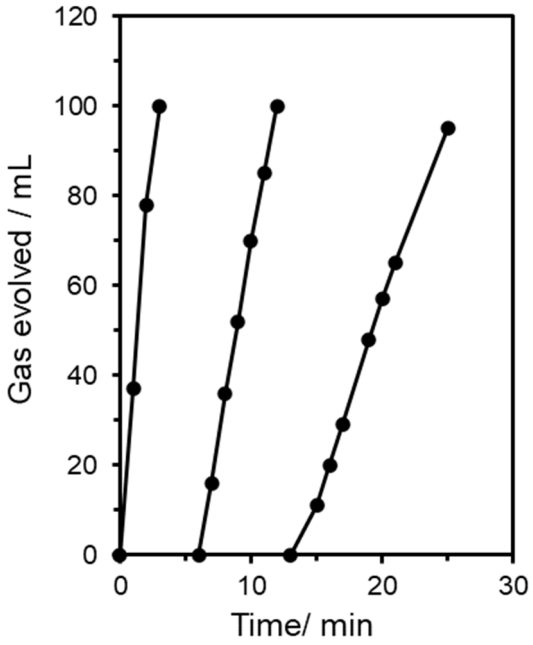

Figure S9. Durability test in the dehydrogenation from FA using PdAgCr/amine-MSC.

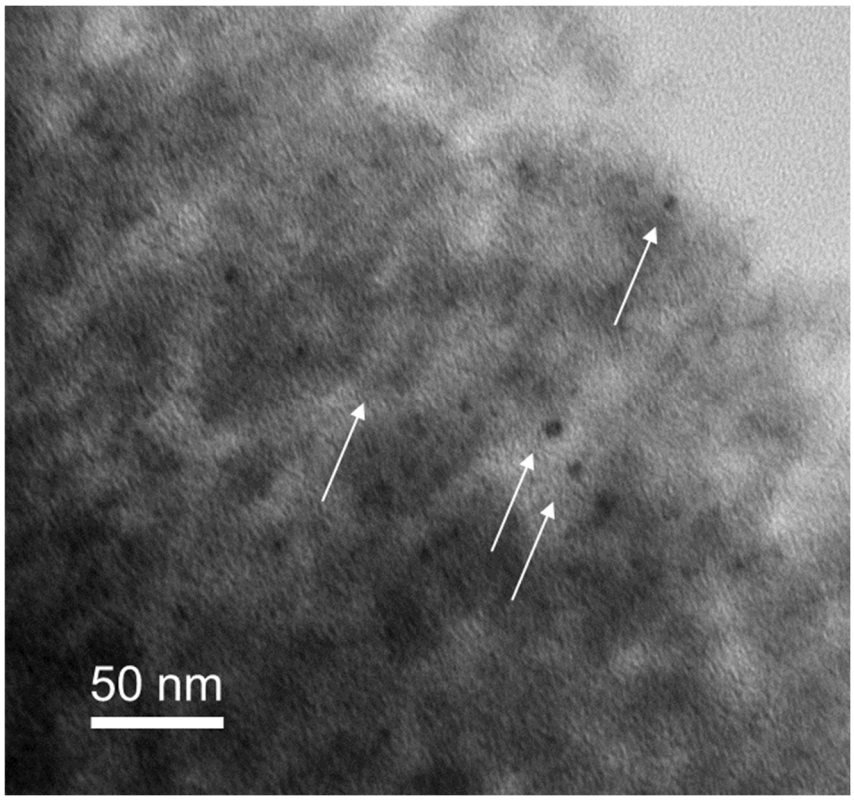

Figure S10. TEM image of the recovered PdAgCr/amine-MSC after the dehydrogenation from FA.

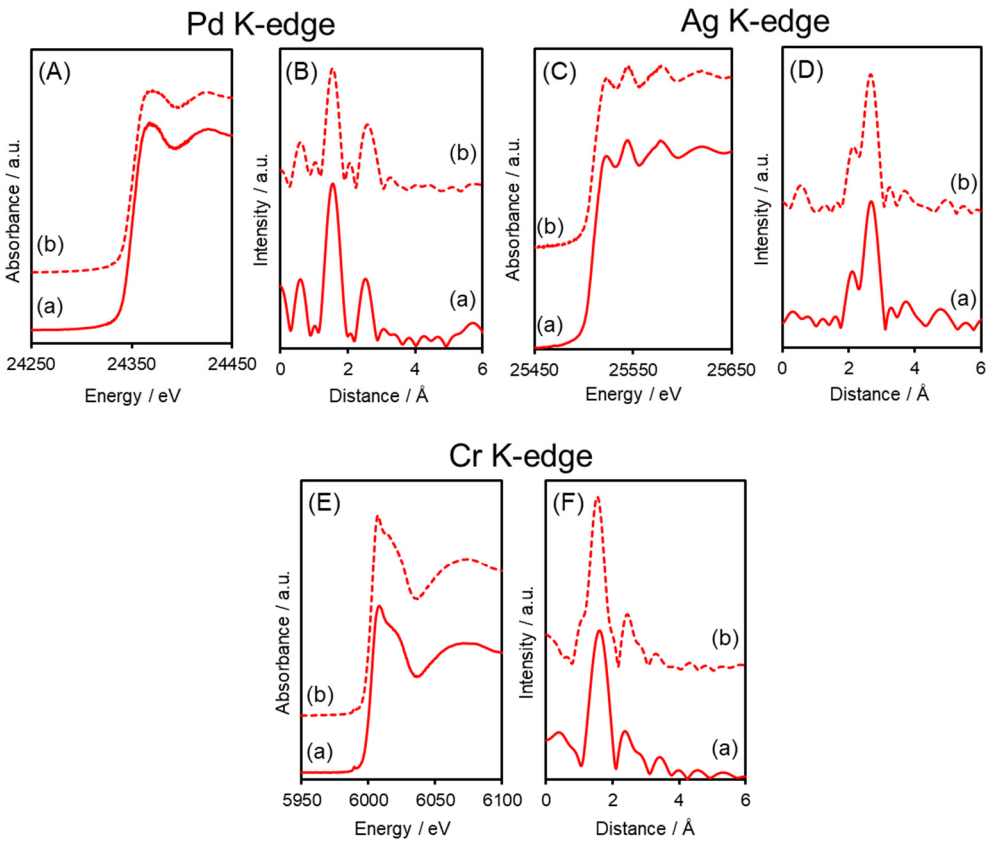

Figure S11. (A) Pd K-edge XANES and (B) FT-EXAFS spectra of (a) recovered PdAgCr/amine-MSC, (b) fresh PdAg/amine-MSC, (C) Ag K-edge XANES and (D) FT-EXAFS spectra of (a) (a) recovered PdAgCr/amine-MSC, (b) fresh PdAg/amine-MSC, and (E) Cr K-edge XANES and (F) FT-EXAFS spectra of (a) recovered PdAgCr/amine-MSC, (b) fresh PdAg/amine-MSC.

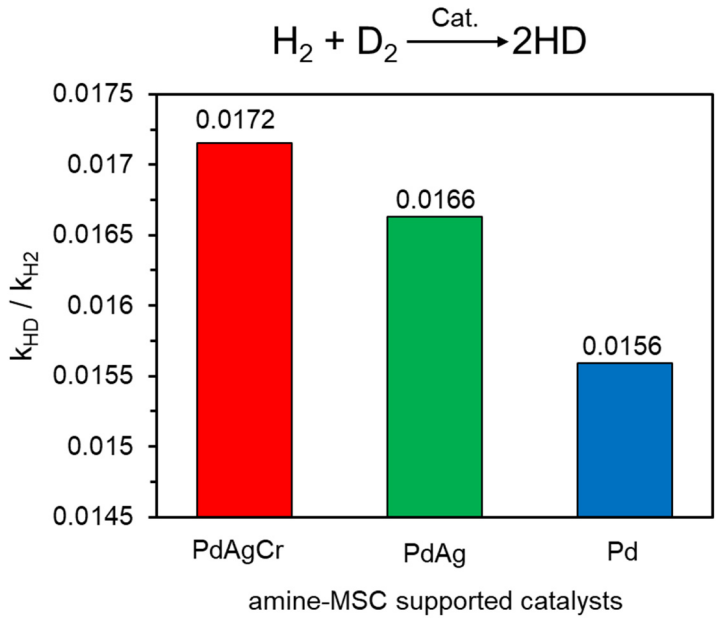

Figure S12. Comparison of activity during HD exchange reaction using various amine-MSC supported catalysts.