Supporting Information

Effect of carbon black supports on the hydrogen evolution reaction activity of Pd nanoparticle electrocatalysts synthesized *via* solution plasma sputtering

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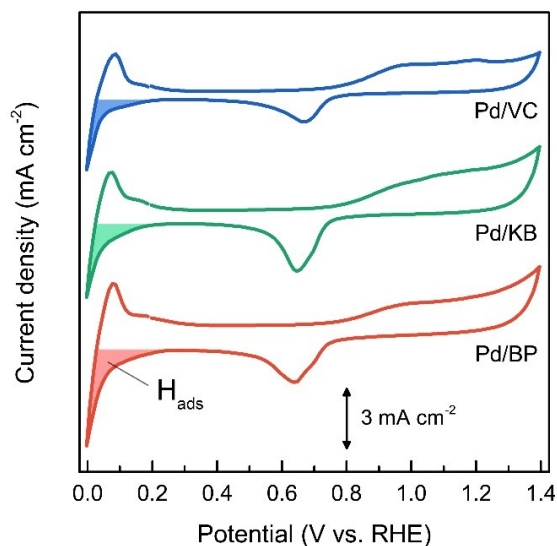
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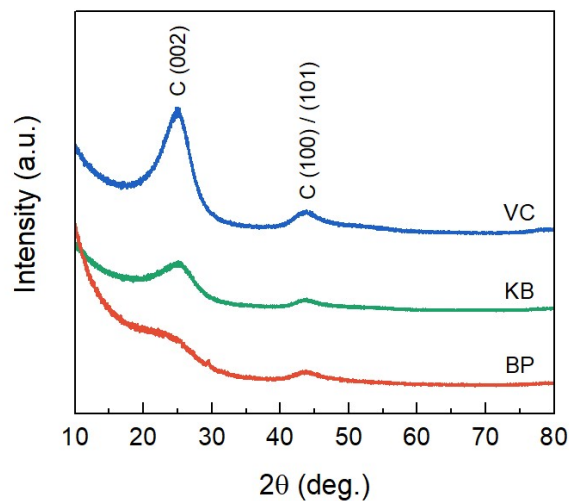
Fig. S1. XRD patterns of bare VC, KB, and BP supports. A small peak at 29.4° observed in BP is likely associated with trace metals from the manufacturing process or residual inorganic materials remaining after the combustion process.
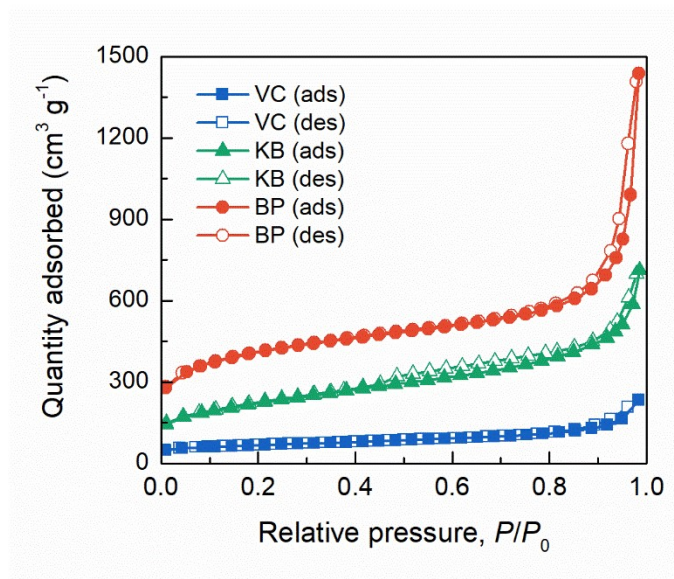

Fig. S2. N$_2$ adsorption-desorption isotherms of bare CB supports.

Fig. S3. CV curves measured in N_2-saturated 0.5 M H_2SO_4 solution of Pd/VC, Pd/KB, and Pd/BP. The shaded area in the CV curves represents the hydrogen adsorption (H_{ads}) used for the ECSA calculation.
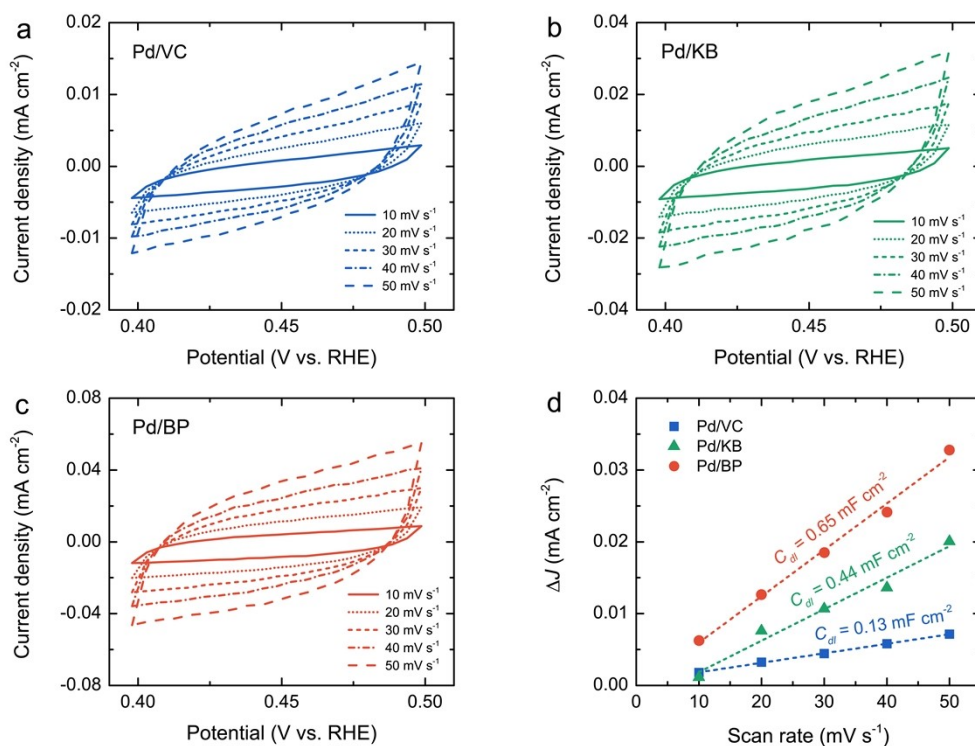
Fig. S4. CV curves recorded in the non-Faradic regions (0.4–0.5 V) in N_2-saturated 0.5 M H_2SO_4 solution at various scan rates from 10 to 50 mV s^{-1} of (a) Pd/VC, (b) Pd/KB, and (c) Pd/BP. (d) Average non-Faradaic current density ($\Delta J = (J_{anode} - J_{cathode})/2$) obtained from CV curves at 0.45 V as a function of the scan rate.
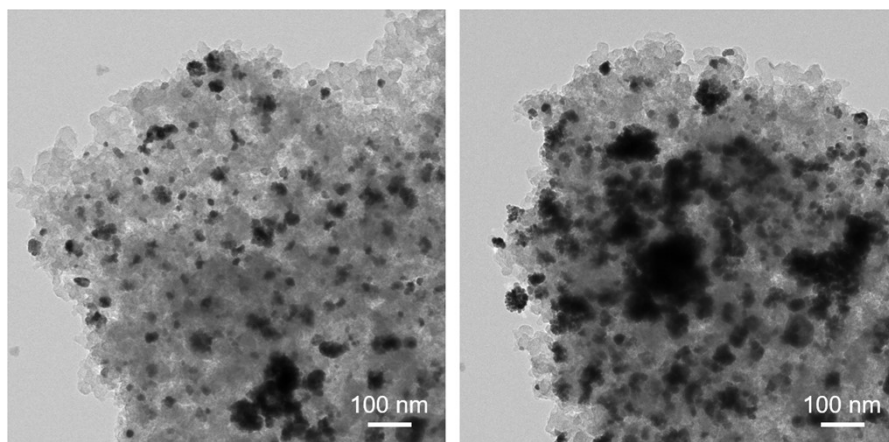
Fig. S5. FE-TEM images of Pd/BP after stability tests for 2000 cycles.