Supporting Information

Surface-modified Pd/C catalysts for Electrochemical CO_2 Reduction

Rong Xia[ab], Sheng Zhang*[a], Xinbin Ma[a], Feng Jiao*[b]

Affiliations:

[a]Key Laboratory for Green Chemical Technology of Ministry of Education, Collaborative Innovation Center of Chemical Science and Engineering, School of Chemical Engineering and Technology, Tianjin University, Tianjin 300072, China

[b]Center for Catalytic Science and Technology, Department of Chemical and Biomolecular Engineering, University of Delaware, Newark, Delaware 19716, United States

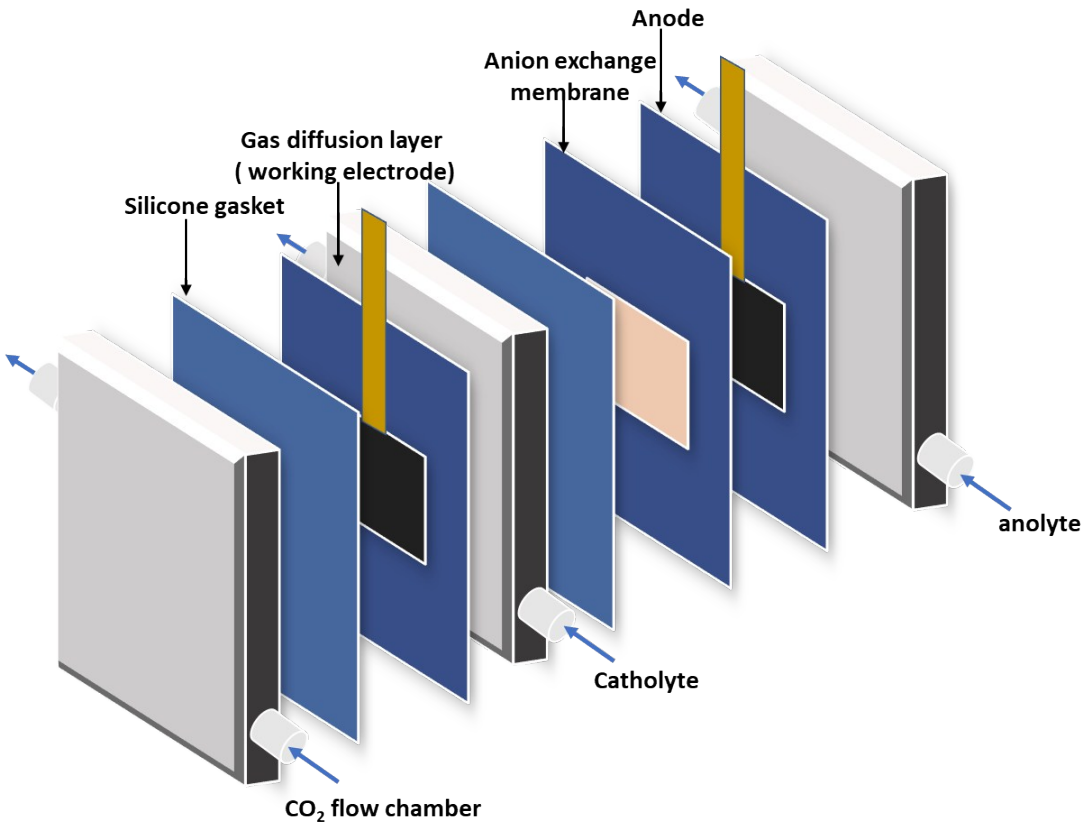

Figure S1: A schematic diagram of 3-compartment microfluidic flow cell configuration.

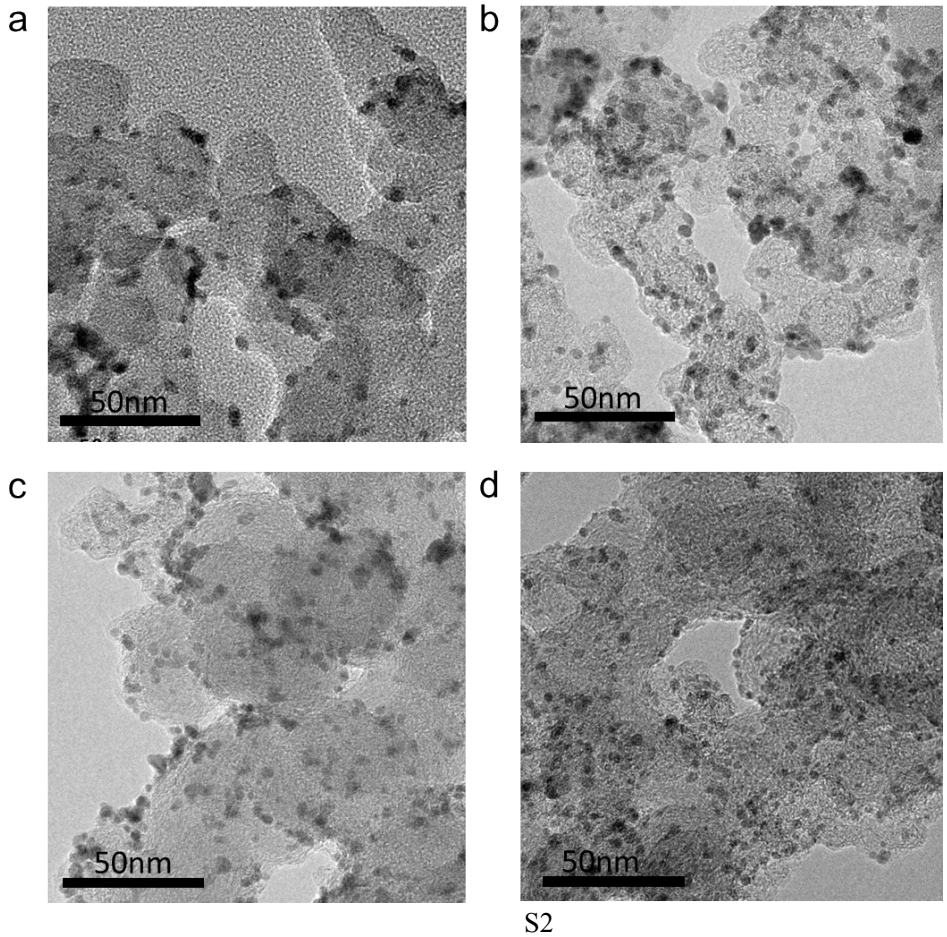

Figure S2: Transition electron microscope (TEM) images of Pd/C-PDDA-X. (a) Pd/C-PDDA-0; (b) Pd/C-PDDA-10; (c) Pd/C-PDDA-20 and (d) Pd/C-PDDA-40.

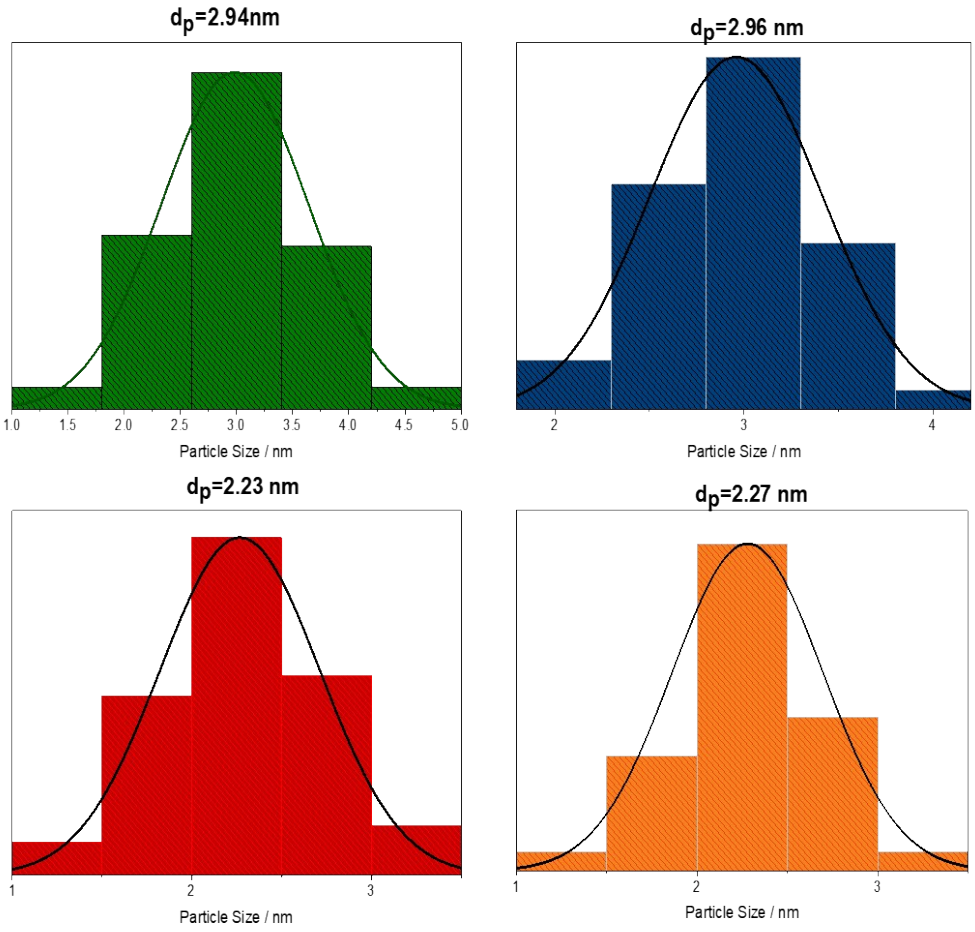

Figure S3: Particle size distribution histograms of (a) Pd/C-PDDA-0, (b) Pd/C-PDDA-10, (c) Pd/C-PDDA-20 and (d) Pd/C-PDDA-40.

Table S1: Pd loading determined by Inductively Coupled Plasma Optical Emission Spectroscopy analysis (ICP-OES).

Sample	Pd theoretical loading / wt.%	Pd practical loading / wt.%
Pd/C-PDDA-0	20	19.3
Pd/C-PDDA-10	20	19.7
Pd/C-PDDA-20	20	19.6
Pd/C-PDDA-40	20	19.8

Table S2: Mean particle size of different Pd/C-PDDA catalysts.

Sample	Particle size / nm
Pd/C-PDDA-0	3.0
Pd/C-PDDA-10	2.9
Pd/C-PDDA-20	2.5
Pd/C-PDDA-40	2.6

$$D = \frac{K\lambda}{\beta cos\theta} \qquad \text{(Eq. S1)}$$

D is the mean size of the ordered crystalline domains;
K is the dimensionless shape factor;
λ is the wavelength of X-ray;
β is the subtraction of line broadening at full width at half maximum (FWHM) from the instrumental line broadening;
θ is the Bragg angle.