

Supporting Information

Highly Active Palladium-Decorated Reduced Graphene Oxides for Heterogeneous Catalysis and Electrocatalysis: Hydrogen Production from Formaldehyde and Electrochemical Formaldehyde Detection

Xiaogang Liu *, Wenjie Chen and Xin Zhang

College of Chemistry and Chemical Engineering, Xinyang Normal University, Xinyang 464000, China; chen2wen9jie5@163.com (W.C.); and zhangxin109zz@163.com (X.Z.)

* Correspondence: lxg133298@163.com

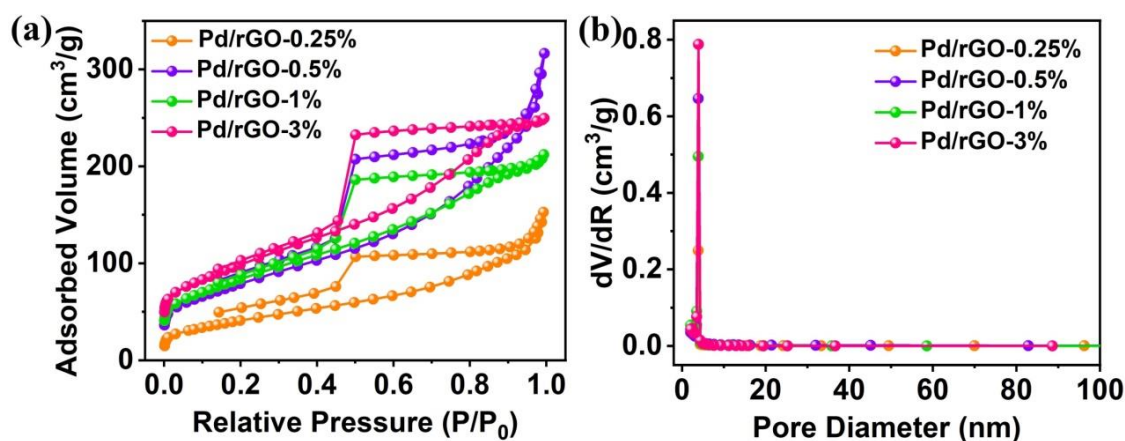


Figure S1. (a) N₂ adsorption/desorption isotherms and (b) the corresponding pore size distributions over prepared Pd/rGO-x% catalysts.

Table S1. Summary of the specific surface area (S_{BET}), pore volume (V_{p}) and average pore diameter (D_{ap}) for Pd/rGO-x% samples.

Samples	S_{BET} (m ² g ⁻¹)	V_{p} (cm ³ g ⁻¹)	D_{ap} (nm)
Pd/rGO-0.25%	149.97	0.25	4.74
Pd/rGO-0.5%	286.85	0.54	5.24
Pd/rGO-1%	302.43	0.36	4.04
Pd/rGO-3%	352.97	0.43	4.25

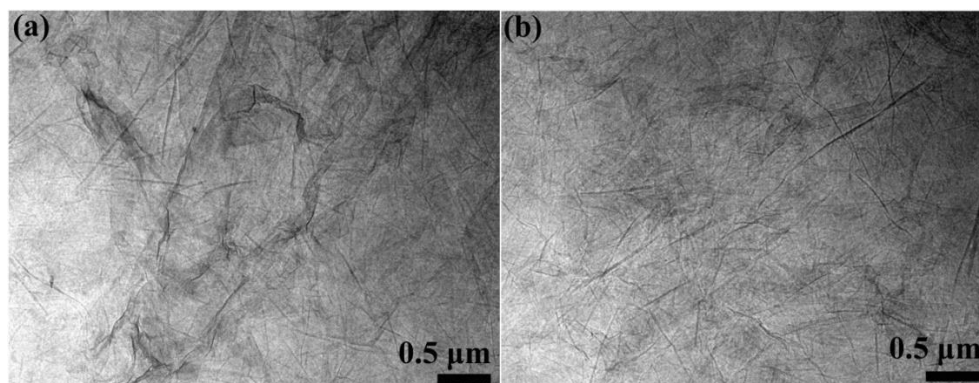


Figure S2. (a,b) TEM images of GO.

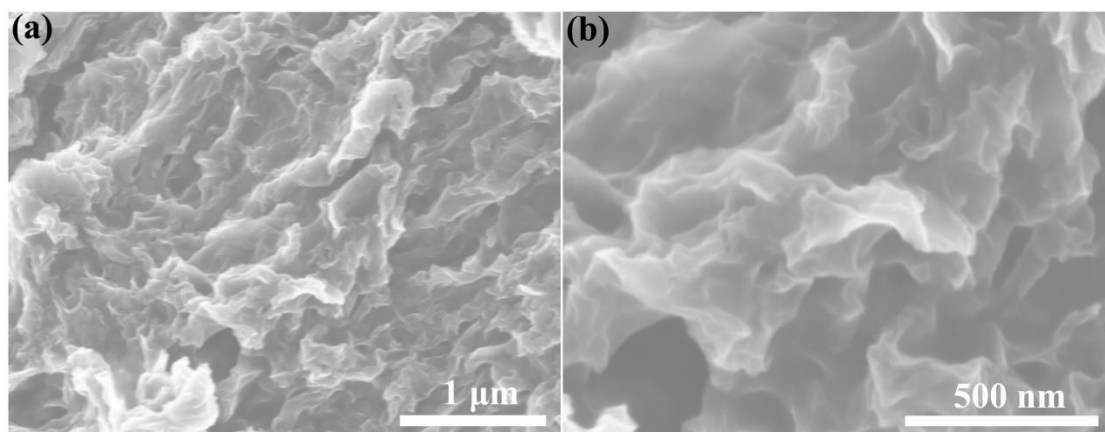


Figure S3. (a,b) SEM images of Pd/GO-0.25% with different magnification.

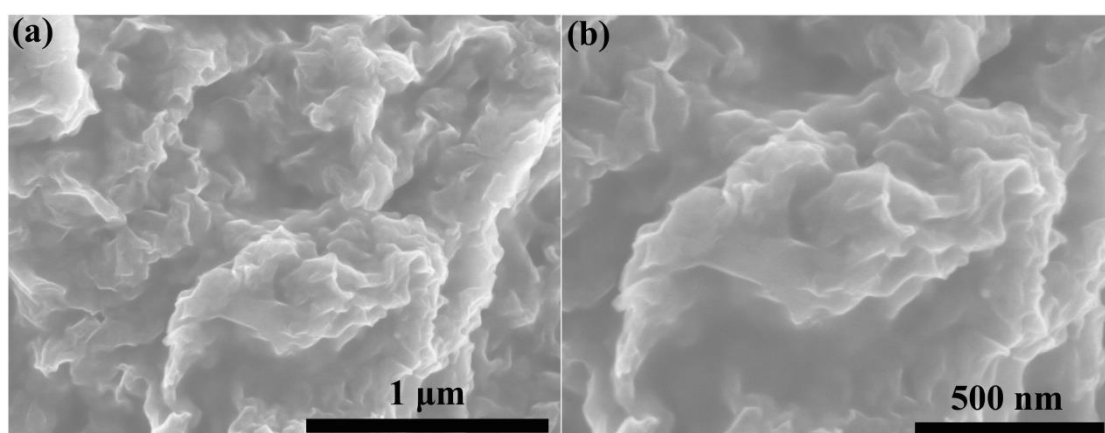


Figure S4. (a,b) SEM images of Pd/GO-1% with different magnification.

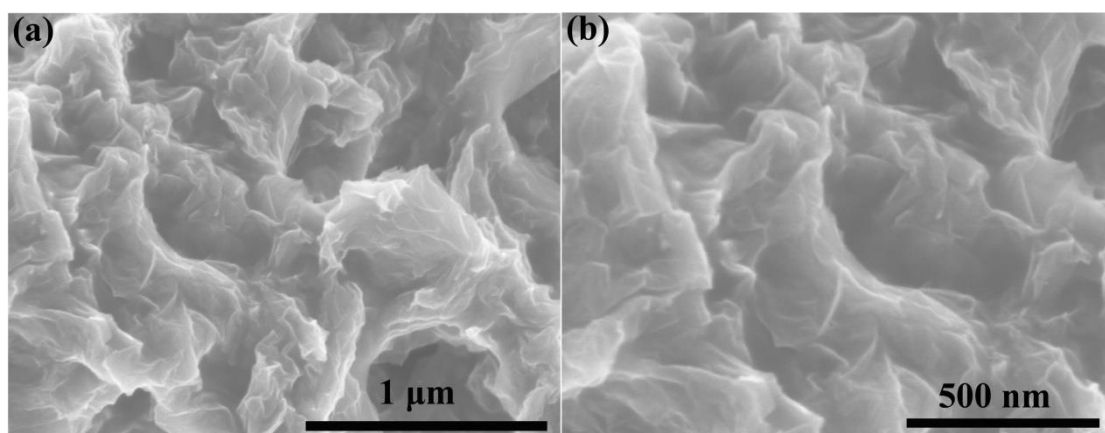


Figure S5. (a,b) SEM images of Pd/rGO-3% with different magnification.

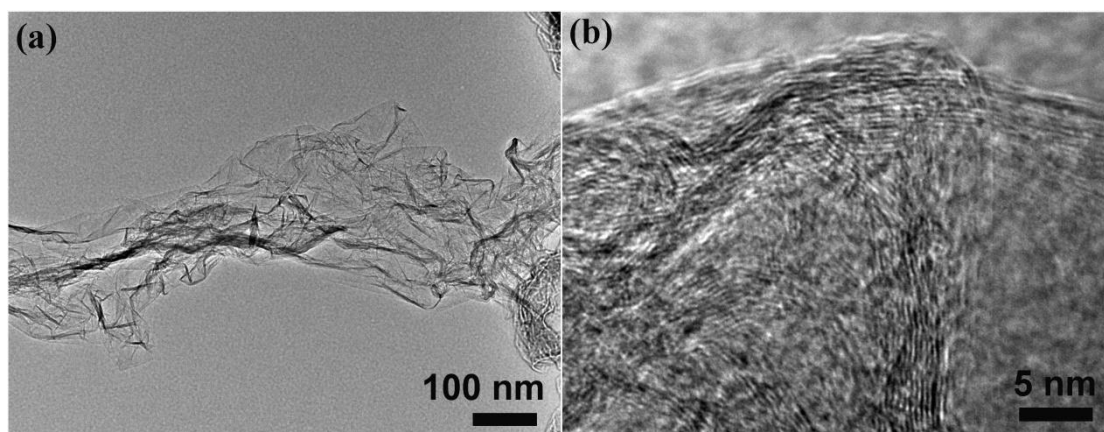


Figure S6. (a,b) TEM images of Pd/rGO-0.25% with different magnification.

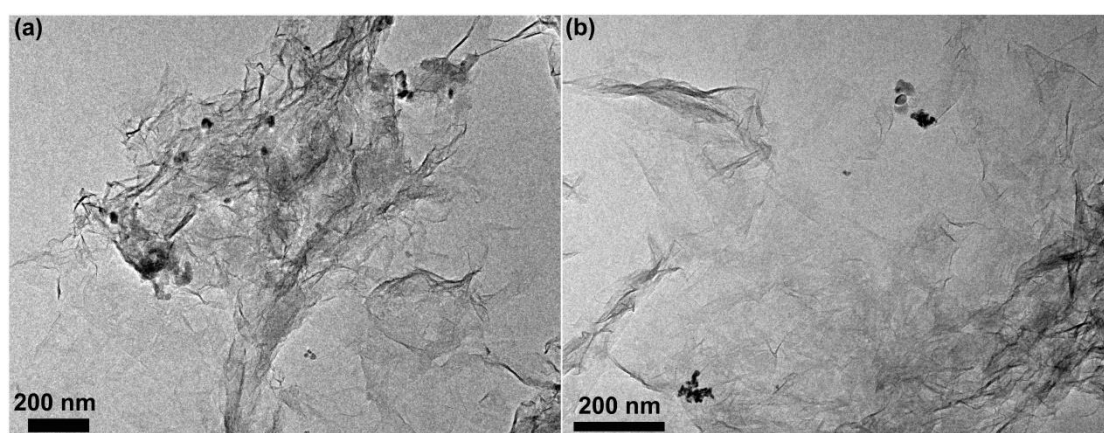


Figure S7. (a,b) TEM images of Pd/rGO-1% with different magnification.

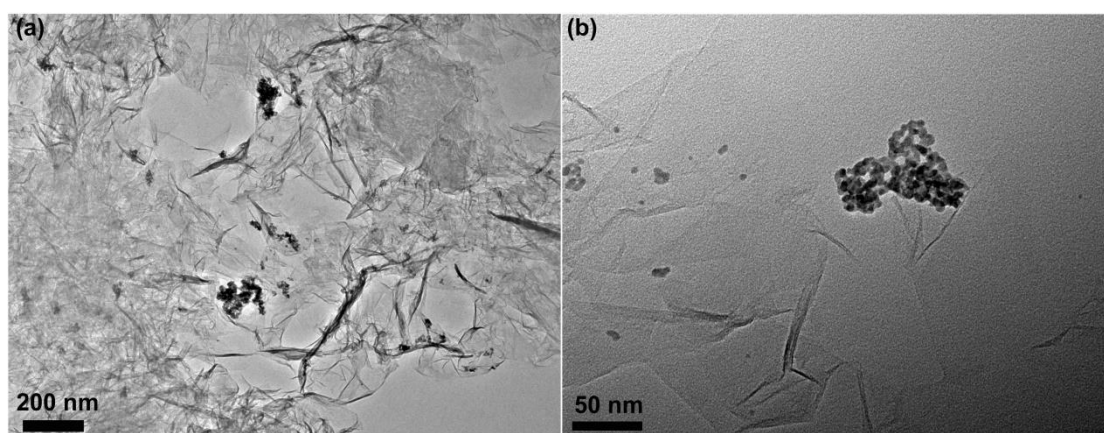


Figure S8. (a,b) TEM images of Pd/rGO-3% with different magnification.

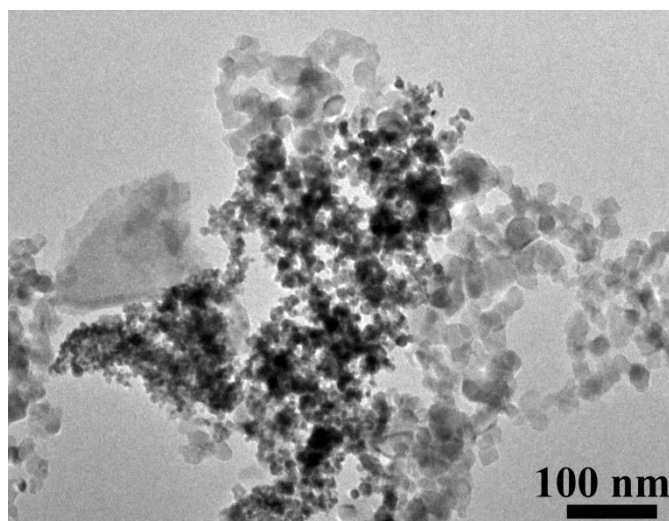


Figure S9. TEM image of prepared Pd NPs.

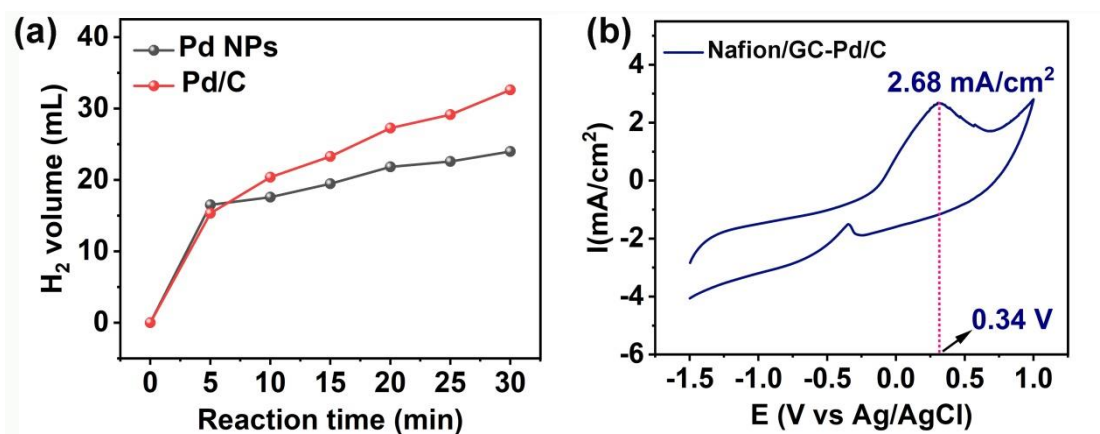


Figure S10. (a) H₂ production over Pd/C and Pd NPs. Reaction condition: T = 25 °C; HCHO concentration: 0.6 M; NaOH concentration: 1M; catalyst dosage: 8 mg. (b) The CV curves of the Nafion/GC-Pd/C electrode. Testing conditions: NaOH: 0.5 M; HCHO: 0.5 M; scanning rate: 100 mV/s.