
Palladium Catalyst Supported on Boron-Doped Porous Carbon for Efficient Dehydrogenation of Formic Acid

Hui Liu¹, Mengyuan Huang¹, Wenling Tao¹, Liangliang Han¹, Jinqiang Zhang³ and Qingshan Zhao^{2,*}

¹ College of Chemistry and Chemical Engineering, Yantai University, Yantai 264005, China

² State Key Laboratory of Heavy Oil Processing, College of Chemistry and Chemical Engineering, China University of Petroleum (East China), Qingdao 266580, China

³ School of Chemical Engineering, The University of Adelaide, North Terrace, Adelaide, SA 5005, Australia

* Correspondence: qszhao@upc.edu.cn

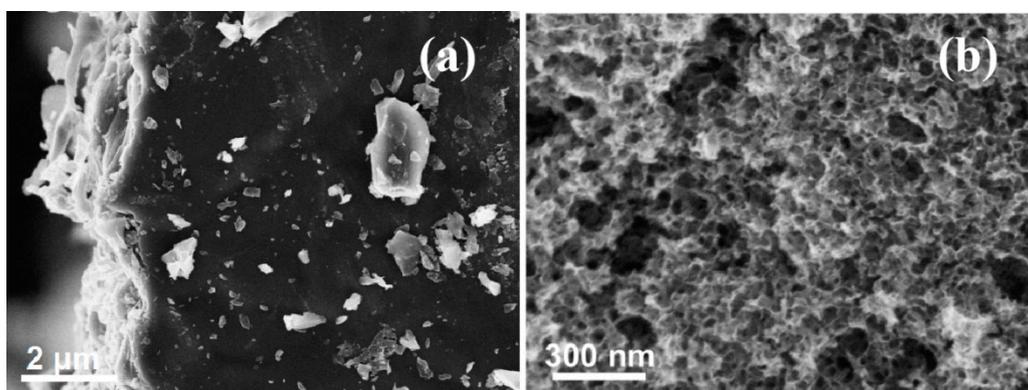


Figure S1. SEM images of petroleum asphalt (a) and PC (b).

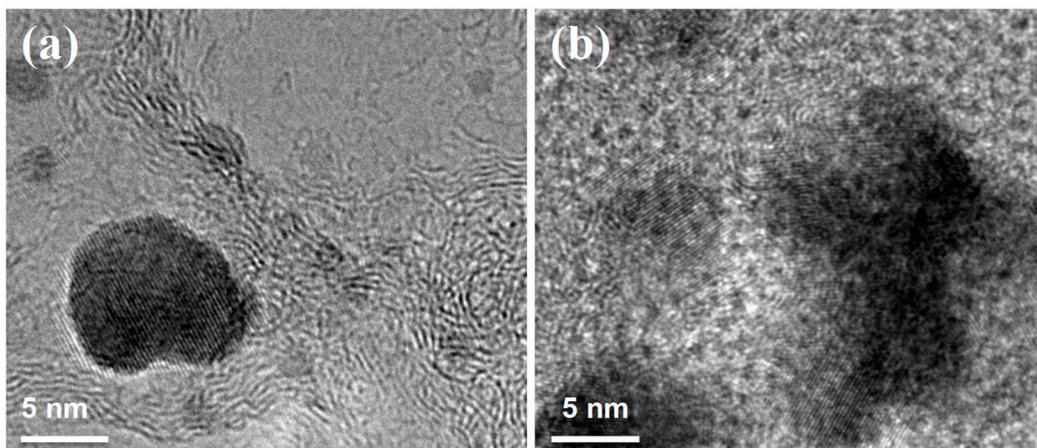


Figure S2. HRTEM images of (a) Pd/BPC and (b) Pd/PC.

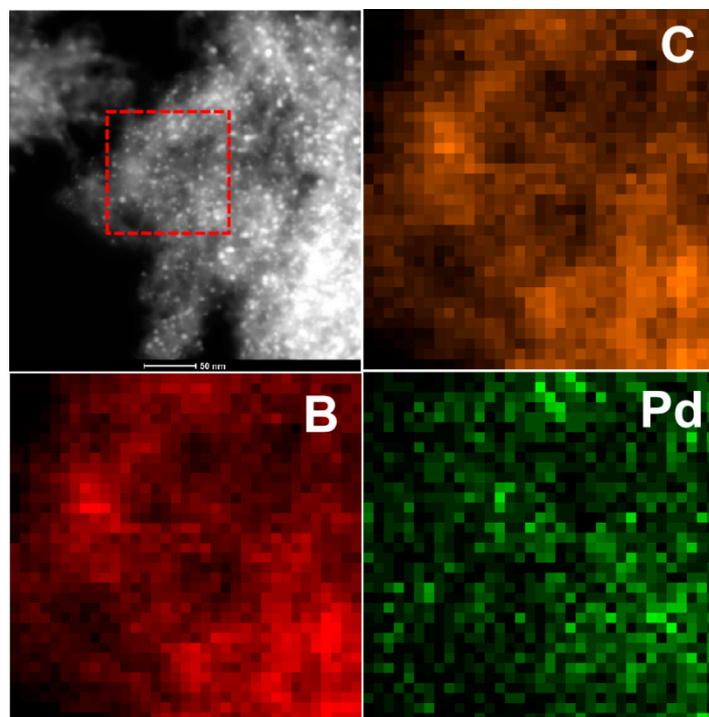


Figure S3. TEM image of Pd/BPC and corresponding EDS mapping for the C, B, and Pd elements.

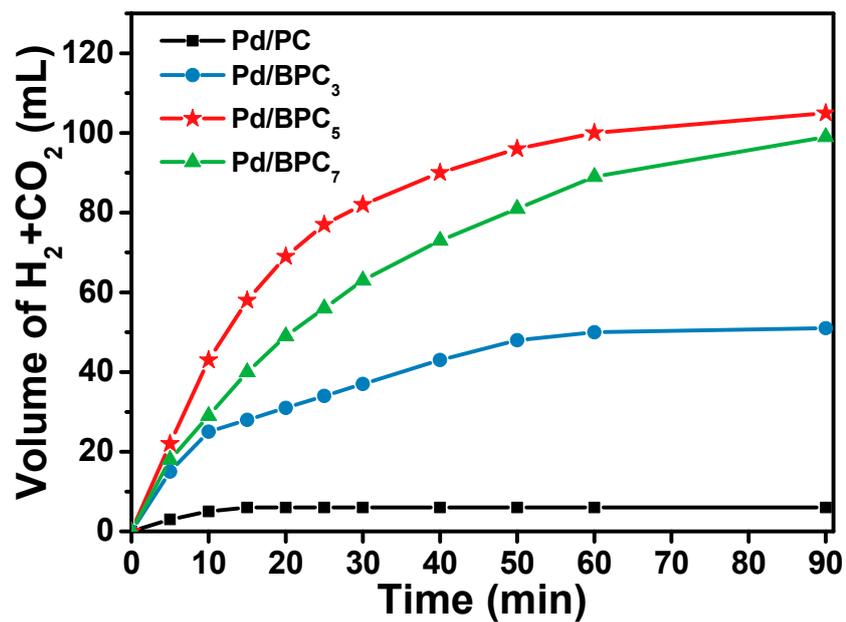


Figure S4. The catalytic performance of Pd/BPC_r (r=3, 5, 7) catalysts for dehydrogenation of formic acid.

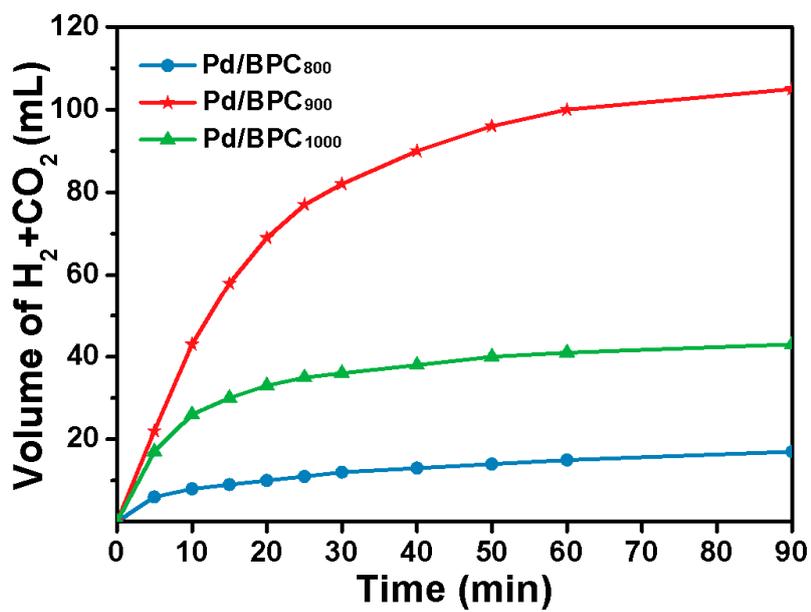


Figure S5. The catalytic performance of Pd/BPC_T (T=800, 900, 1000 °C) for dehydrogenation of formic acid.

Table S1. The catalytic performance of Pd/BPC_t (t=0, 20, 40, 60, 80 °C) for dehydrogenation of formic acid.

Entry	Catalyst	Reduction temperature (°C)	V_{gas} (mL)
1	Pd/BPC	0	8
2	Pd/BPC	20	18
3	Pd/BPC	40	36
4	Pd/BPC	60	105
5	Pd/BPC	80	73

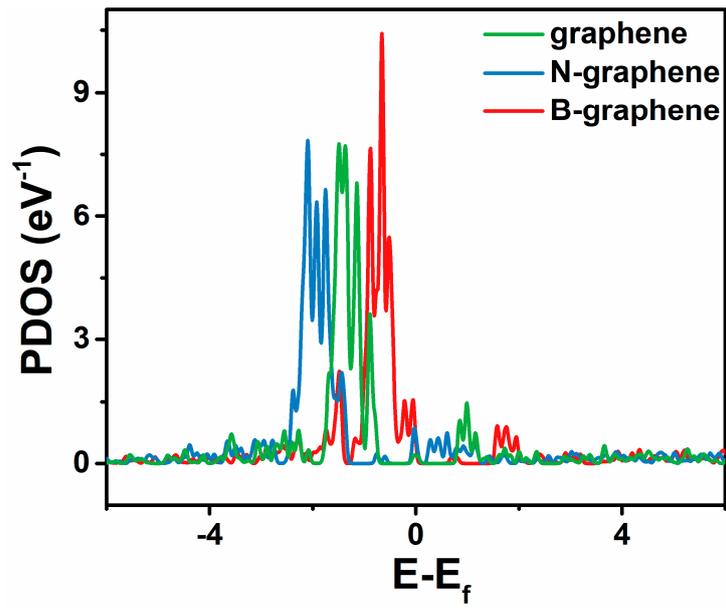


Figure S6. The partial DOS of (a) graphene, (b) N-graphene, and (c) B-graphene.