Supporting information for

Palladium Nanoparticles Supported on Exfoliated g-C_3N_4 As Efficient Catalysts for Selective Oxidation of Benzyl Alcohol by Molecular Oxygen

Xin-Tong Yi, Tong Zhao, Fei Wang, Jie Xu *, Bing Xue **

Jiangsu Key Laboratory of Advanced Catalytic Materials and Technology, School of Petrochemical Engineering, Changzhou University, Gehu Middle Road 21, Changzhou, Jiangsu 213164, PR China

Preparation of mesostructured g-C_3N_4

The mesoporous g-C_3N_4 (mp-C_3N_4) was prepared according to an established nanocasting method reported by Antonietti et al [1]. 4 g of cyanamide was dissolved in 16 g of aqueous suspensions (40wt%) of 12-nm silica spheres (Ludox HS40, Aldrich) under vigorous stirring. The mixture was heated in an oil bath at 50 °C under stirring overnight to remove water. Next, the resultant white solid was ground in a mortar, transferred into a covered crucible, and heated at 3 °C min^{-1} up to 550 °C and then treated for further 4 h. Afterwards, the as-synthesized yellow powder was ground and immersed into 200 mL of NH_4HF_2 aqueous solution (4 mol L^{-1}, 100 mL) for 2 d to remove the template. Then, the dispersion was centrifuged and the yellow precipitate was washed using distilled water and ethanol for several times. Finally, the yellow sample was dried at 50 °C under vacuum overnight and the mass of the obtained g-C_3N_4 was *ca.* 1.8 g.

* Corresponding author. Tel.: +86-519-86330135; E-mail: shine6832@163.com (J. Xu)
** Corresponding author. Tel.: +86-519-86330135; E-mail: xuebing_cn@163.com (B. Xue)

Fig. S1 TEM images of g-C_3N_4.

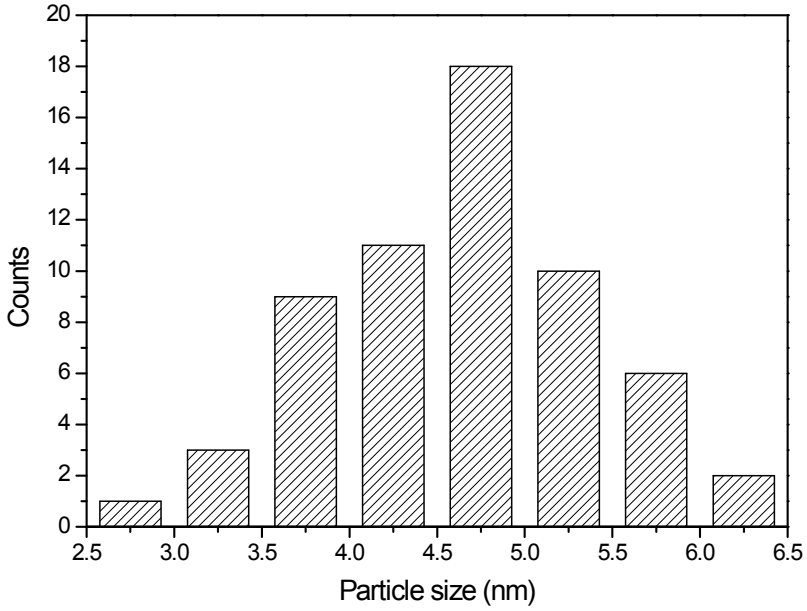

Fig. S2 The histogram of the particle size distribution of Pd in 3Pd/eg-C_3N_4.

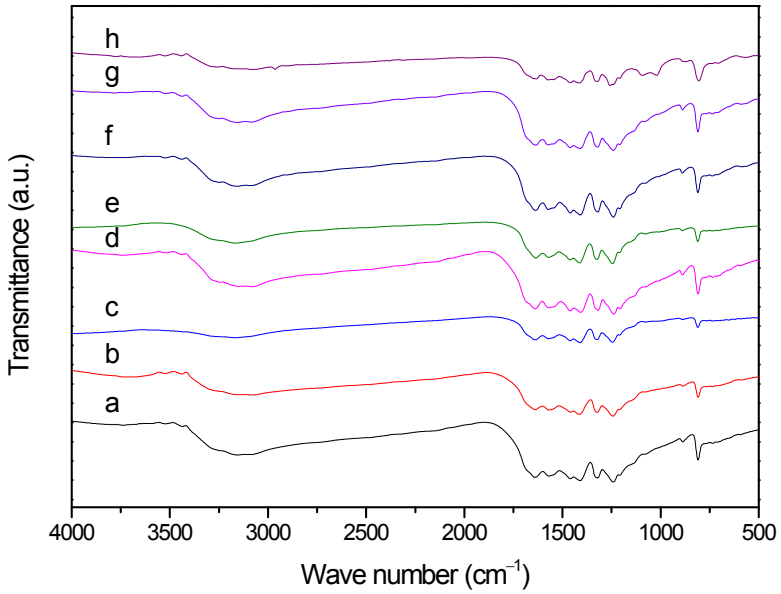

Fig. S3 FT-IR spectra of g-C_3N_4 (a), eg-C_3N_4-450 (b), eg-C_3N_4-500 (c), eg-C_3N_4-550 (d), 3Pd/eg-C_3N_4 (e), 3Pd/eg-C_3N_4-IMP (f), 3Pd/eg-C_3N_4-H_2Ar (g), and 3Pd/eg-C_3N_4-R (h).

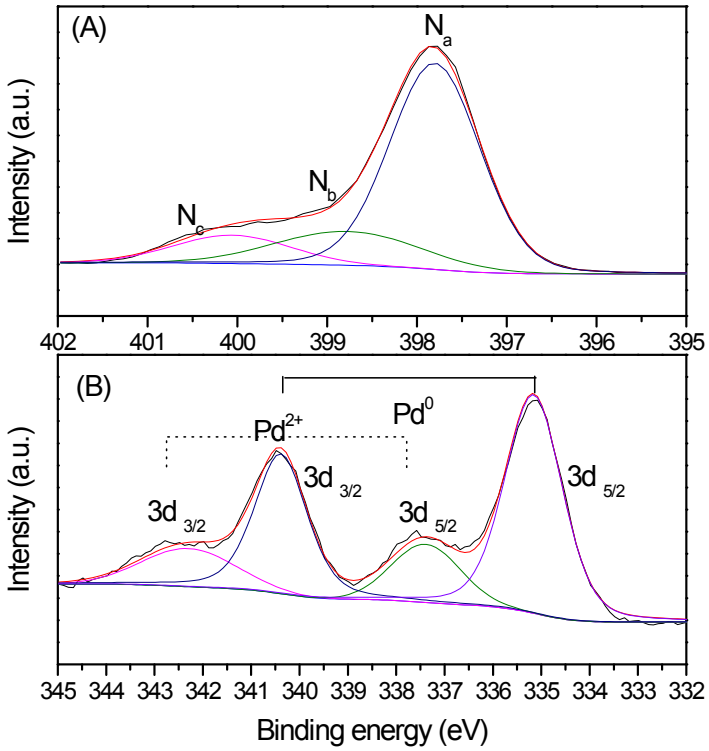

Fig. S4 N 1s (A) and Pd 3d (B) spectra of the recycled 3Pd/eg-C_3N_4 catalyst.

Table S1 Catalytic performances of 3Pd/eg-C_3N_4 in selective oxidation of BZA in the presence of various solvents [a].

Solvent	Con. (%)	Sel. (%)
toluene	70	>99
n-heptane	72	>99
trifluorotoluene	81	>99
ethanol	25	>99
water	9	>99

[a] The reaction conditions are as follows: 3 mL of BZA, 3 mL of solvent, $v_{(O2)}$ = 20 mL min^{-1} , $W_{catal.}$= 50 mg, T = 90 °C, and t = 4 h.

References

1 F. Goettmann, A. Fischer, M. Antonietti and A. Thomas, *Angew. Chem. Int. Ed.*, 2006, **45**, 4467-4471.