Green Chemistry

Electronic Supporting Information for

Synthesis of Task-specific Imidazolium-based Porous Triazine Polymer Decorated with Ultrafine Pd Nanoparticles toward Alcohol Oxidation

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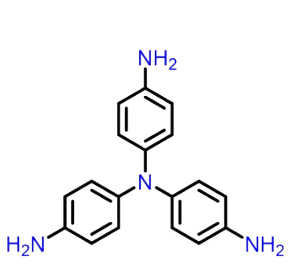
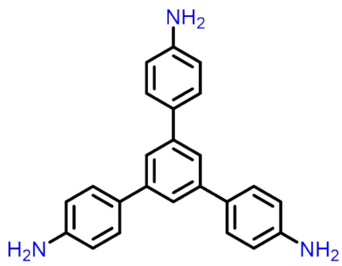


APA



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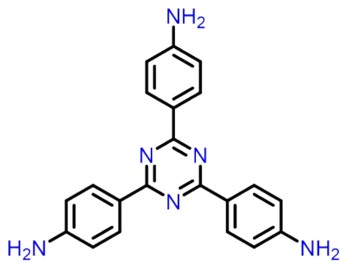

APT

Fig. S1 Molecular formulas for the synthesis of porous organic polymers.

Table S1 Porous polymers prepared under different conditions and their physicochemical properties.

Entry			Solvent	V (mL)	SSA BET ($m^2\ g^{-1}$)	SSA Langmuir ($m^2\ g^{-1}$)	$V_{total}{}^{a}$ ($cm^3\ g^{-1}$)	$V_{micro}{}^{b}$ ($cm^3\ g^{-1}$)
1	APA	**2b**	HOAc	24	0	0	0	0
2	APB	**2b**	HOAc	24	0	0	0	0
3	APT	**2b**	HOAc DMSO	12 12	234	329	0.11	0.096
4	APT	**2b**	HCl	24	12.0	16	0.018	0.004
5	APT	**2b**	H_3PO_4	24	0	0	0	0
6	APT	**2b**	HOAc	24	177.0	251	0.33	0.068
7	APT	**2b**	HOAc	24	147.0	203	0.32	0.059
8[a]	APT	**2b**	HOAc	24	10	14	0.02	0.004
9[b]	APT	**2b**	HOAc	24	147	203	0.32	0.059

[a]The preparation of IPTP was conducted under a microwave condition. [b]IPTP was collected by centrifugation and dried under vacuum, instead of dialysis and freeze drying.

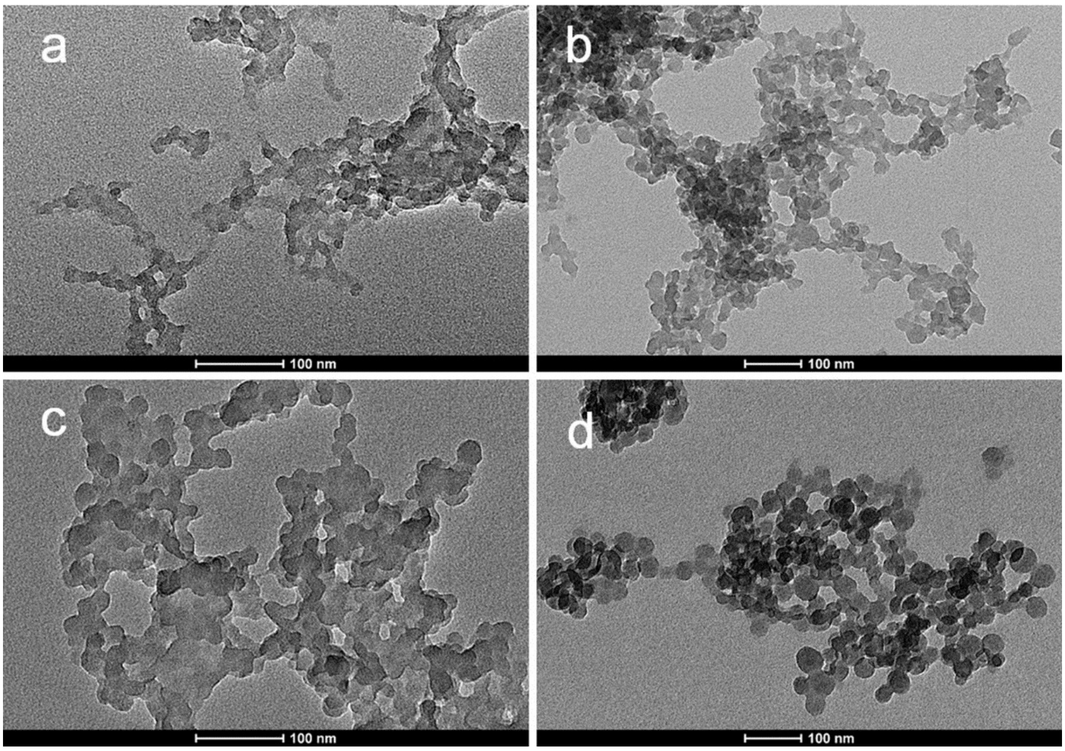

Fig. S2 TEM images of (a) IPTP-4, (b) IPTP-5, (c) IPTP-6, and (d) IPTP-7.

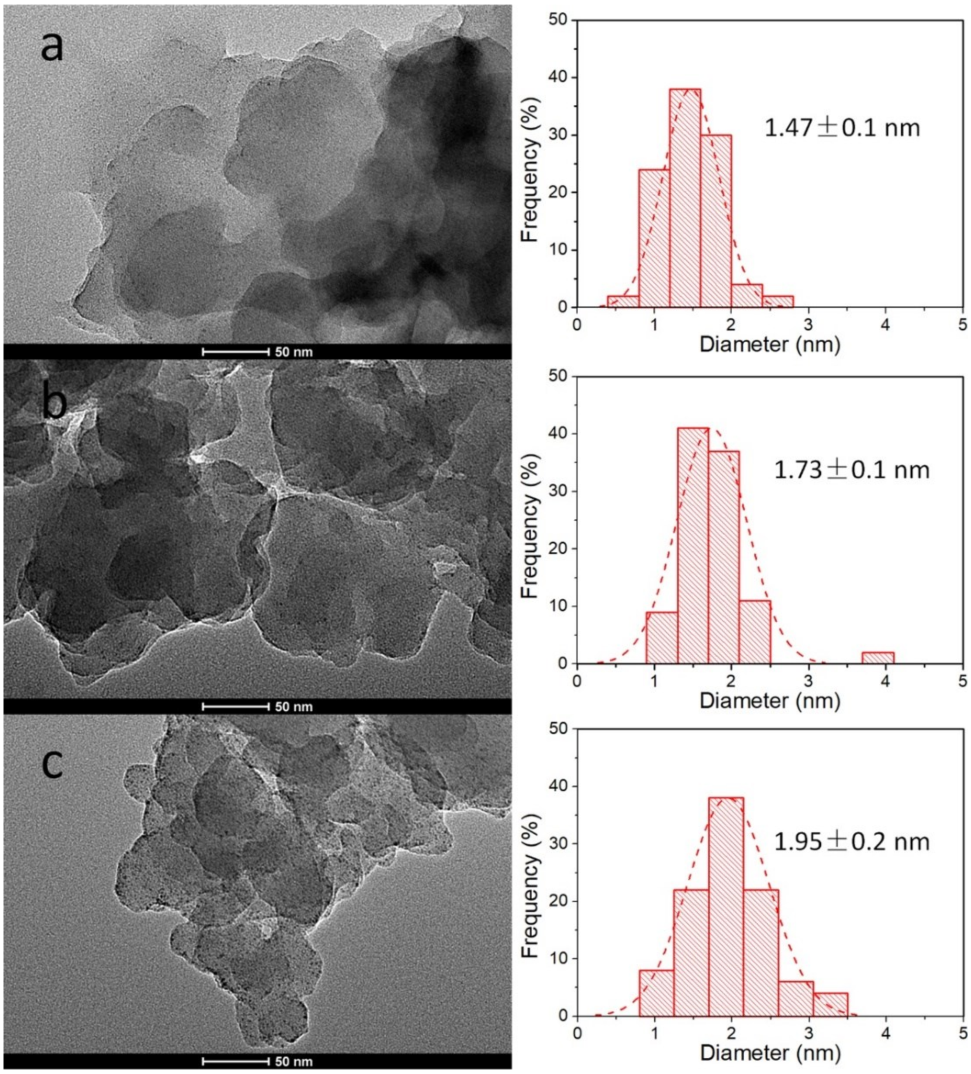

Fig. S3 TEM images of (a) 0.25Pd/IPTP-2, (b) 4Pd/IPTP-2, and (c) 8Pd/IPTP-2.

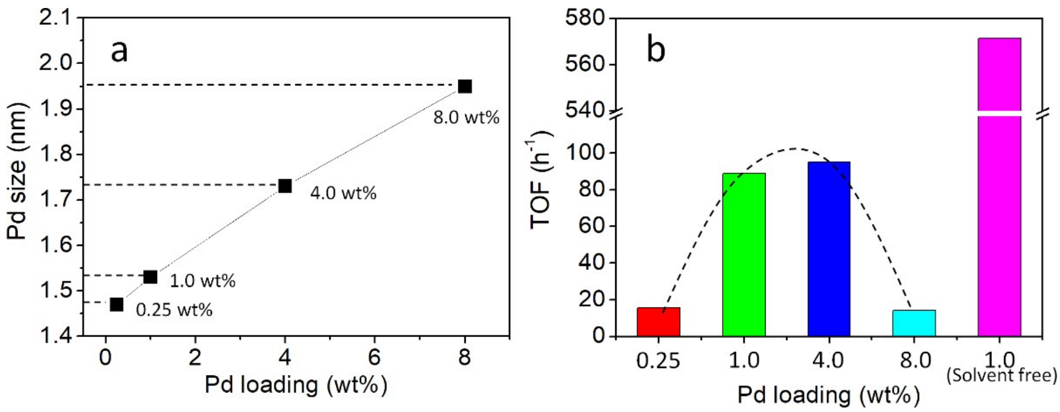

Fig. S4 Relationship of the Pd loading with (a) particle size and (b) TOF values in the oxidation of BA to BzH.

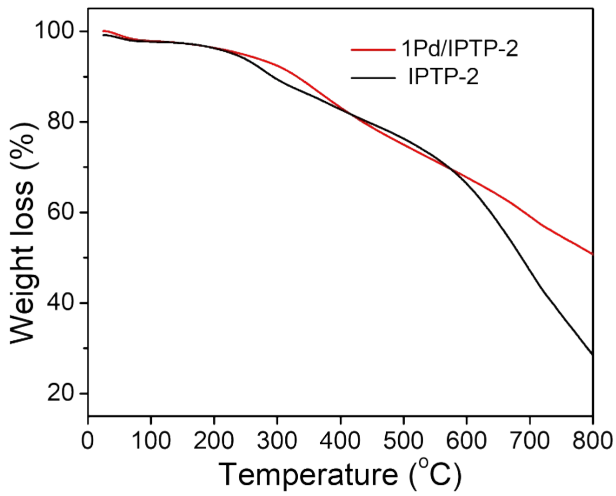

Fig. S5 TGA traces of IPTP-2 and 1Pd/IPTP-2 from 20 ^oC to 800 ^oC.

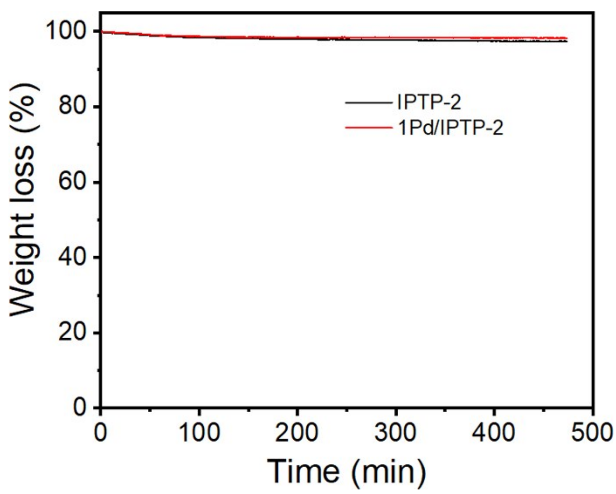

Fig. S6 Isothermal TGA traces of IPTP-2 and 1Pd/IPTP-2 at 110 ^oC.

Table S2 Comparison of the catalytic performance of 1Pd/IPTP-2 in benzyl alcohol oxidation with that of different reported catalysts

Catalyst	Reaction conditions	TOF (h^{-1})	Ref.
Au-$Pd_{1.2}$@γ-Al_2O_3	80 °C, H_2O, air	22.3	1
Pd@Cu(II)-MOF	130 °C, xylene, air	0.76	2
Au-Pd@PANI	100 °C, toluene, NaOH, O_2	16	3
Pd@U-E15	90 °C, H_2O, K_2CO_3, 1 atm O_2	10.8	4
Pd@E10A20	80 °C, toluene, K_2CO_3, 5 bar air	15.6	5
Pd@MNP	90 °C, toluene, K_2CO_3, air	10.7	6
Pd@pol	100 °C, H_2O, K_2CO_3, 1 atm O_2	5.5	7
LDH/Pd(II)	65 °C, H_2O, pyridine, O_2 30 mL/min	31	8
1Pd/IPTP-2	**110 °C, toluene, 1 atm O_2**	**88.7**	**This work**
Pd/NaX zeolite	100 °C, solvent free, O_2 3 mL/min	626	9
Au−Pd/TiO_2	90 °C, solvent free, O_2 1 atm	589	10
Pd/MagSBA	85 °C, solvent free, O_2 1 atm	633	11
Pd(2wt%)/NaTNT	120 °C, solvent free, air 1atm	205	12
Pd/Fe_3O_4@CeO_2	100 °C, solvent free, O_2 20 mL/min	443.5	13
Pd/SiO_2	70 °C, solvent free, O_2 3 mL/min	26	14
1Pd/IPTP-2	**solvent free, 110 °C**	**751.8**	**This work**

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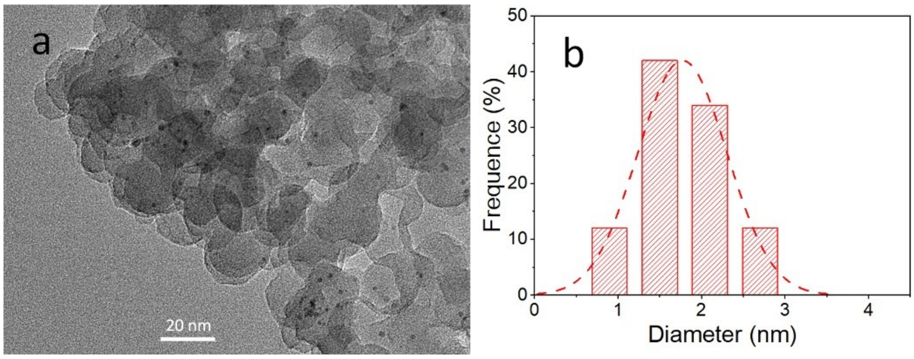

Fig. S7 (a) TEM image and (b) the Pd particle size distribution of used 1Pd/IPTP-2.

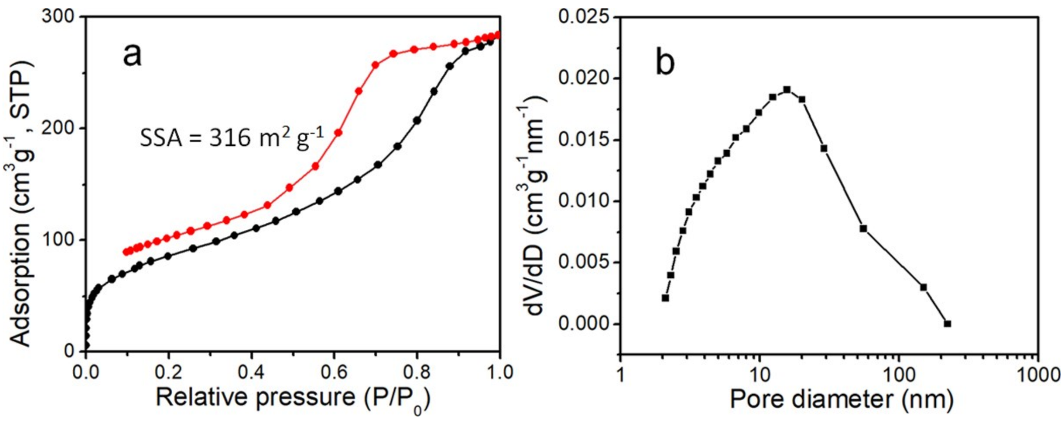

Fig. S8 (a) N_2 adsorption-desorption isotherm and (b) the pore size distribution of used 1Pd/IPTP-2.