Article: Supplementary Materials

Selective Oxidation of Toluene to Benzaldehyde Using Co-ZIF Nano-Catalyst

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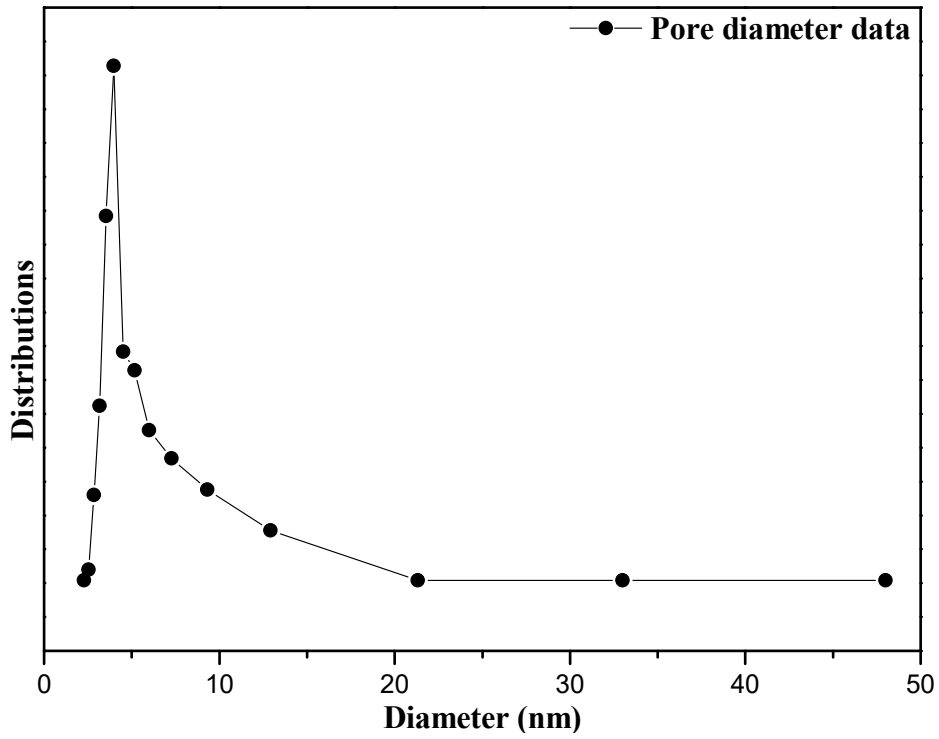

Figure S1. Pore size distributions of the Co-ZIF catalyst.

Table S1 Effects of the mass amount of the Co-ZIF catalyst.

The mass amount of catalyst (g)	Conversion (%)	Selectivity (%)			
		Benzyl alcohol	Benzaldehyde	Benzoic acid	Others
0.16	87.76	12.19	79.76	3.42	4.63
0.18	90.46	8.13	80.18	4.78	6.91
0.20	92.30	3.42	91.31	5.13	0.14
0.22	93.55	2.37	88.75	6.01	2.87
0.24	94.49	1.16	86.49	8.78	3.57

Reaction conditions 0.500 mmol toluene, 20 mL HFIP, 0.004 g NHPI, 0.12 MPa O_2, 313 K and 240 min.

Table S2 Effects of solvent.

Solvent	Conversion (%)	Selectivity (%)			
		Benzyl alcohol	Benzaldehyde	Benzoic acid	Others
acetone	14.35	43.25	21.46	23.57	11.72
cyclohexane	12.34	34.68	13.47	37.65	14.20
trichloromethane	25.46	25.68	31.49	29.42	13.41
ethyl acetate	36.72	31.45	30.27	29.41	8.87
ethanol	62.89	26.77	29.43	32.56	11.24
tetrahydrofuran	57.96	22.38	32.71	26.92	17.99
DMF	63.12	30.46	35.46	24.59	9.49
isopropanol	82.35	12.92	61.63	15.51	9.94
HFIP	92.30	3.42	91.31	5.13	0.14

Reaction conditions 0.20 g Co-ZIF, 0.500 mmol toluene, 20 mL HFIP, 0.004 g NHPI, 0.12 MPa O_2 , 313 K and 240 min.