Supporting Information:

Copper-Supported Catalysts for Sustainable PET Depolymerization: A Cost-Effective Approach towards Dimethyl Terephthalate (DMT) Production

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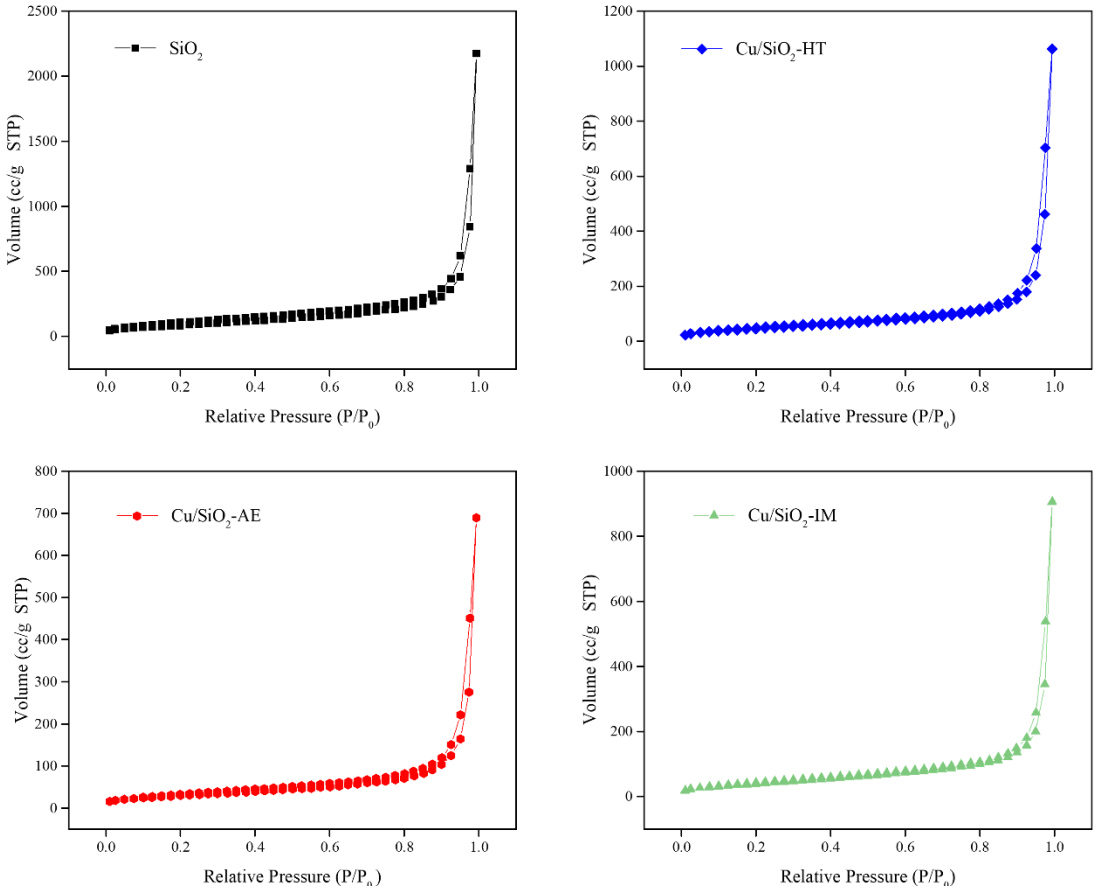

Fig.S1 Low-temperature nitrogen adsorption-desorption curves of catalysts obtained by different preparation methods.

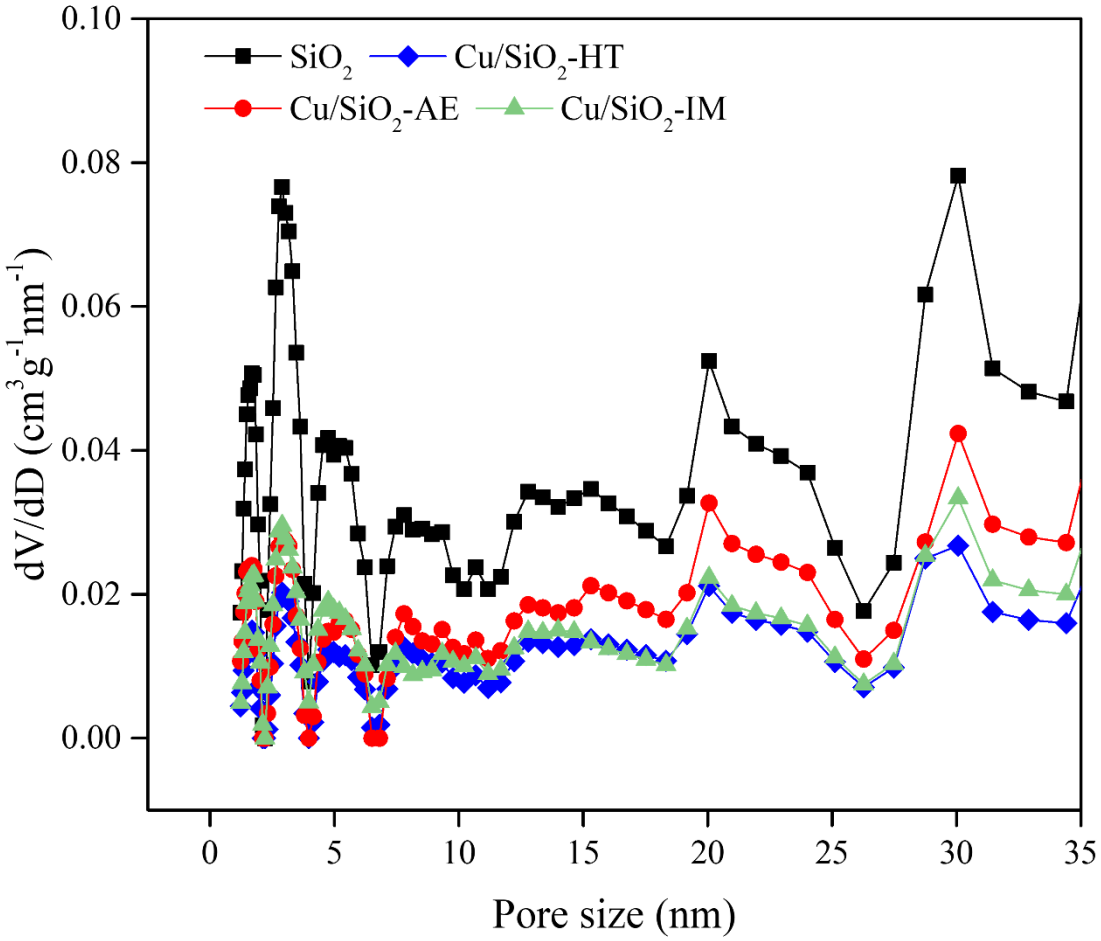

Fig.S2 Pore size distribution diagram of catalysts obtained by different preparation methods.

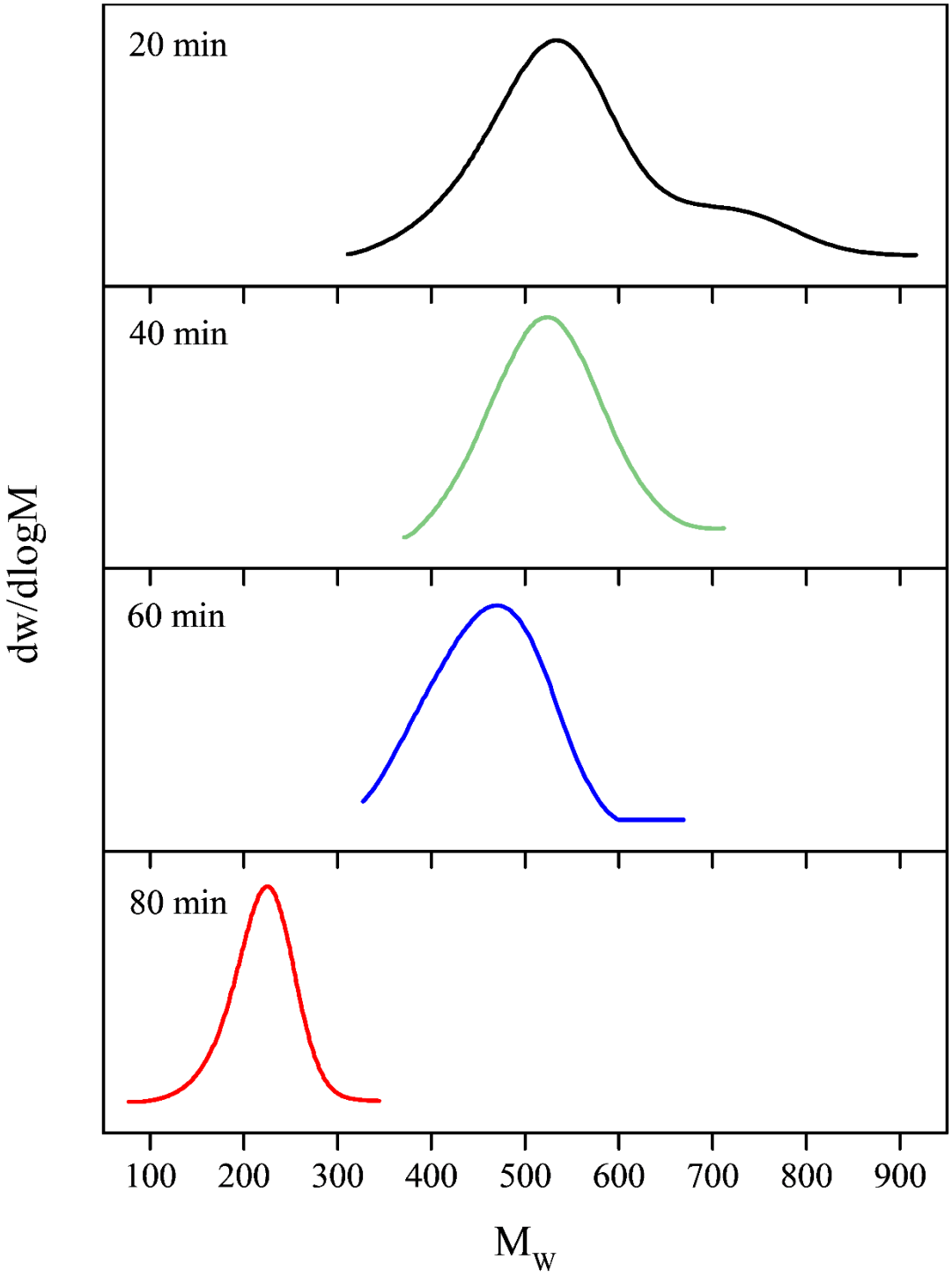

Fig.S3 GPC spectrum of PET catalyzed methanolysis process.

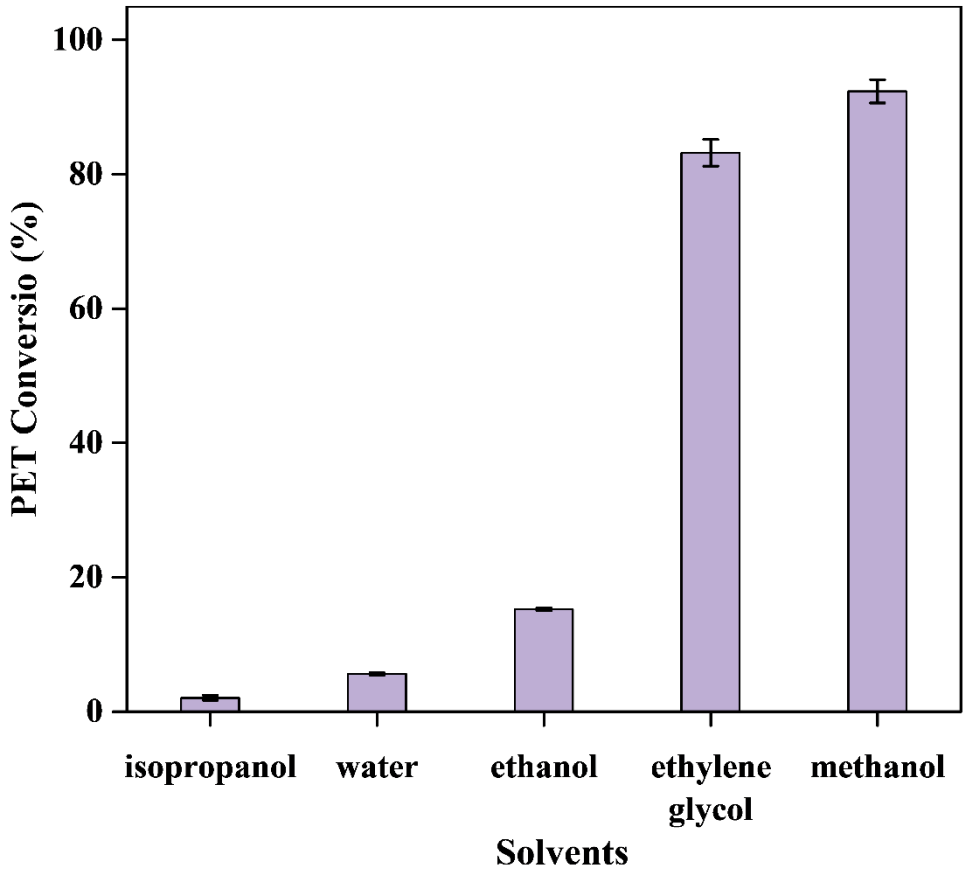

Fig.S4 Catalytic performance of different solvent.

Experimental conditions: 40 mL MeOH, 0.6 g PET, 0.24 g Cu/SiO_2, 200 ^oC, 90 min.

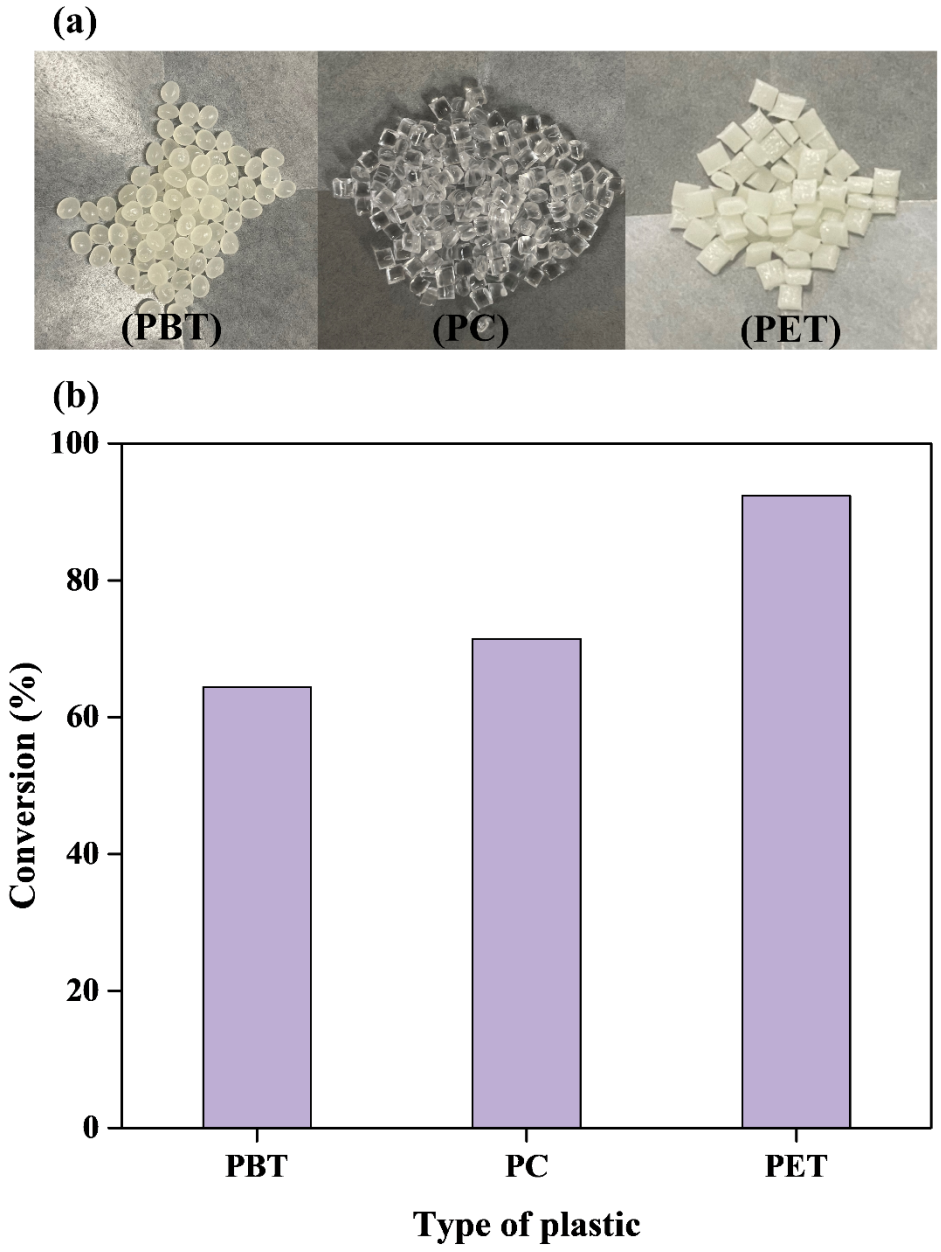

Fig.S5 Depolymerization studies of different types of plastic.

Experimental conditions: 40 mL MeOH, 0.6 g PET, 0.24 g Cu/SiO_2, 200 ^oC, 90 min.

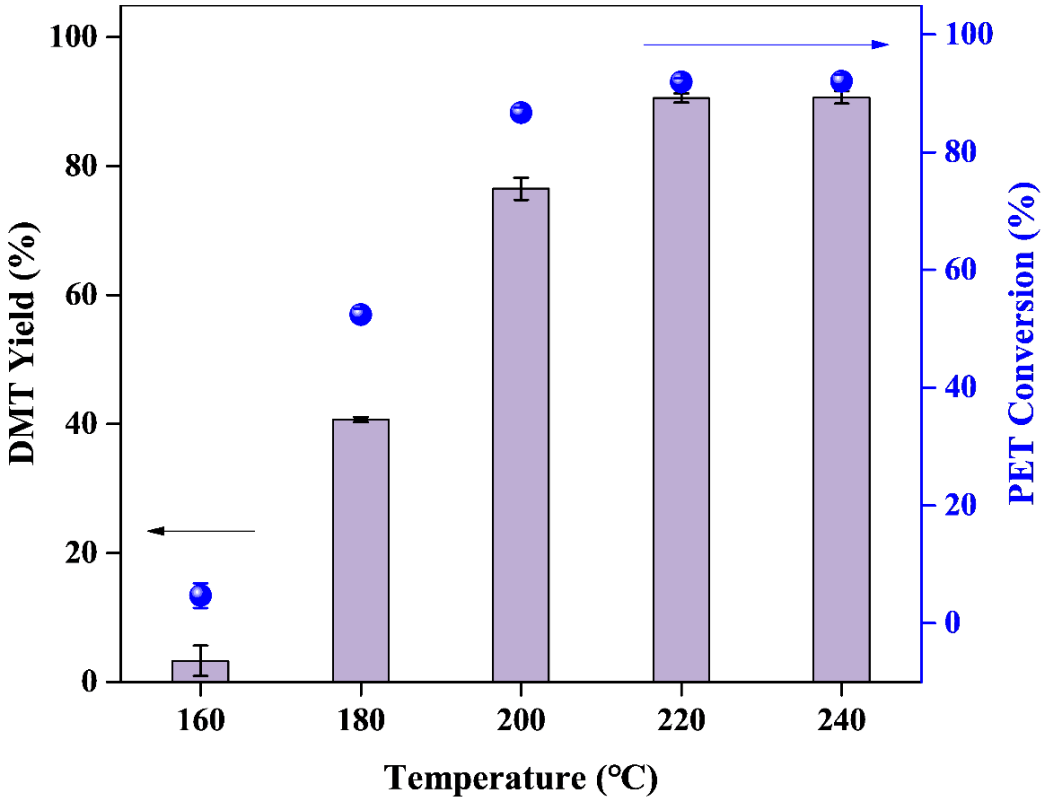

Fig.S6 Depolymerization studies of consumer packaging at different temperatures.

Experimental conditions: 40 mL MeOH, 0.6 g consumer packaging, 0.24 g Cu/SiO_2, 90 min.

Table S1 Physical properties of the catalysts.

Catalyst	BET surface area (m^2/g)	Total pore volume (cm^3/g)	Average pore diameter (nm)	Micropore volume (cm^3/g)	Micropore radio (%)
SiO_2	170.4	1.65	38.62	31.64	24.93
Cu/SiO_2-AE	112.2	1.07	38.02	15.33	18.89
Cu/SiO_2-HT	124.34	1.32	42.53	28.53	31.12
Cu/SiO_2-IM	154.8	1.40	36.21	20.23	19.37

Table S2 The proportion of Cu^0, Cu^+, and Cu^{2+} loaded on SiO_2 with different preparation method.

Catalyst	Relative atomic percentage (%)		
	Cu^0	Cu^+	Cu^{2+}
Cu/SiO_2-AE	32.84	67.16	/
Cu/SiO_2-HT	/	75.01	24.99
Cu/SiO_2-IM	28.95	71.05	/

Table S3 Research on PET methanolysis.

Catalyst	Solvent	Reaction condition	Products yield/%	References
HO_3S-$(CH_2)_3$-NEt_3]Cl-[$ZnCl_2$]$_{0.67}$	methanol	195 °C 30 min	78.4	1
$Zn(CH_3COO)_2 \cdot 2H_2O$	methanol	200 °C microwave irradiation	92.4	2
BLA	methanol	200 °C 120 min	78	3
[Cho][OAc]	ethylene glycol	180 °C 180 min	66.7	4
[Ch][OAc]	ethylene glycol	180 °C 240 min	85.2	5
Cu/SiO_2	methanol	200 °C 90 min	91.43	this work

References:

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