Supporting Information

Potassium-incorporated mesoporous carbons: strong solid bases with enhanced catalytic activity and stability

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Table S1 The yield of DMC under the catalysis of different samples

Catalyst	Reaction conditions	DMC yield (%)	TOF (h^{-1})	Ref.
KC-2	0.50 mol methanol, 0.10 mol EC, 0.50 wt% catalyst, 65 °C, 4 h	33.1	430.3	This work
MgO	0.50 mol methanol, 0.10 mol EC, 0.50 wt% catalyst, 65 °C, 4 h	7.6	0.95	[1]
CsX	0.50 mol methanol, 0.10 mol EC, 0.50 wt% catalyst, 65 °C, 4 h	6.1	2.9	[1]
CaO/SBA-15	0.50 mol methanol, 0.10 mol EC, 0.5 wt% catalyst, 65 °C, 4 h	13.4	6.4	[1]
K_2O/ZrO_2/ SBA-15	0.50 mol methanol, 0.10 mol EC, 0.50 wt% catalyst, 65 °C, 4 h	28.4	34.9	[2]
Y/Mg-Al	0.50 mol methanol, 0.10 mol EC, 0.50 wt% catalyst, 65 °C, 4 h	29.5	3.3	[3]
Ce-Zn/YiO_2	0.50 mol methanol, 0.10 mol EC, 0.50 wt% catalyst, 65 °C, 4 h	23.0	12.8	[4]
CeO-meso-400	0.50 mol methanol, 0.10 mol EC, 0.50 wt% catalyst, 65 °C, 4 h	33.6	16.5	[5]
CN	0.50 mol methanol, 0.10 mol EC, 0.10 g catalyst, 160 °C, 6 h	27.4		[6]
$Mg(Al)O_x$	0.50 mol methanol, 0.13 mol EC, 0.50 wt% catalyst, 70 °C, 6 h	15.0		[7]
Y_2O_3	0.24 mol methanol, 0.030 mol EC, 0.07 g catalyst, 65 °C, 1 h	10.0		[8]
ZnO	0.24 mol methanol, 0.030 mol EC, 0.07 g catalyst, 65 °C, 1 h	17.0		[8]
C_3N_4	0.25 mol methanol, 0.025 mol EC, 0.10 g catalyst, 160 °C, 4 h	26.0	1.69	[9]
S-Ni-Na	0.20 mol methanol, 0.025 mol EC, 0.45 g catalyst, 150 °C, 4 h	20.8		[10]
NO_3/Ni_2Al	0.50 mol methanol, 0.13 mol EC, 0.090 g catalyst, 65 °C, 3 h	18.0		[11]
K-TS-1	0.12 mol methanol, 0.030 mol EC, 0.090 g catalyst, 65 °C, 3 h	28.0		[12]

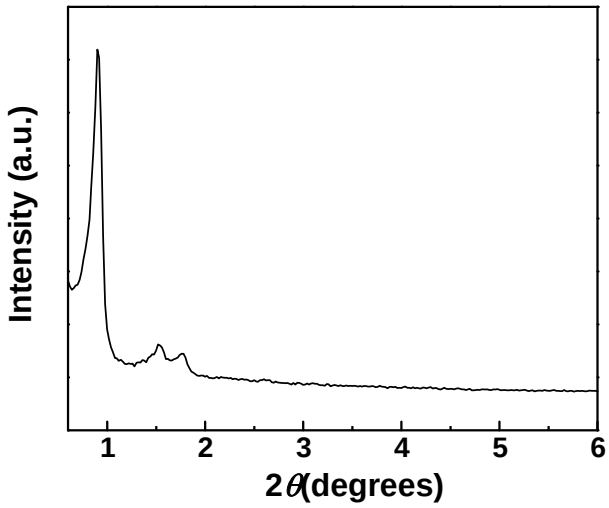

Fig. S1 Low-angle XRD pattern of SBA-15.

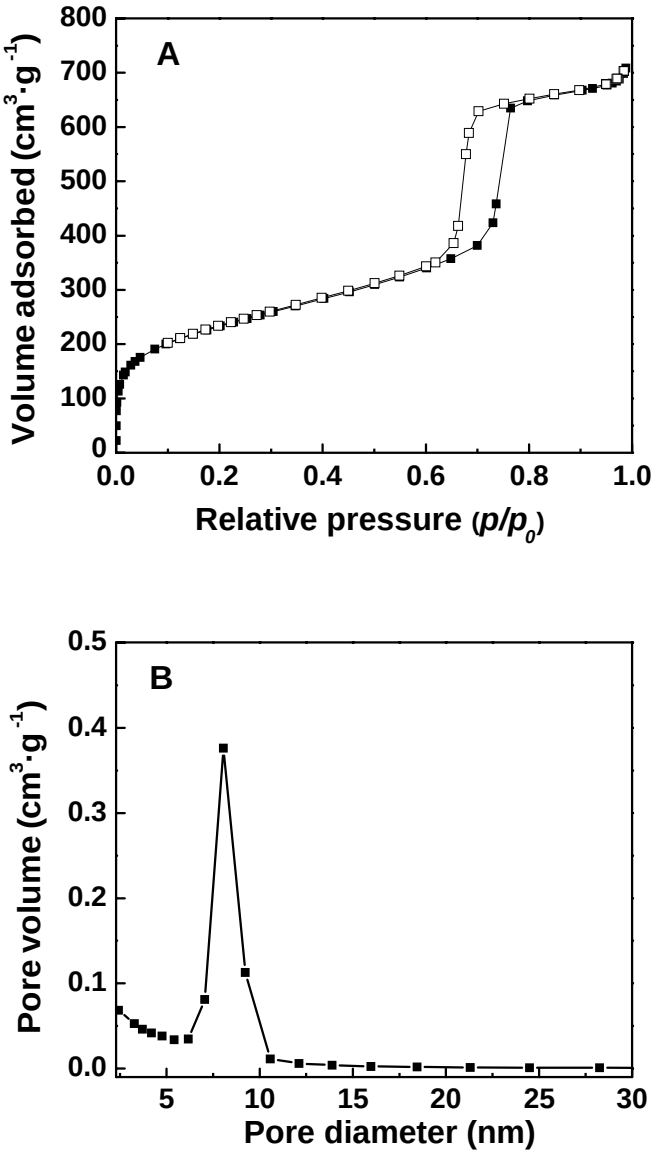

Fig. S2 (A) N_2 adsorption-desorption isotherm and (B) pore size distribution of SBA-15.

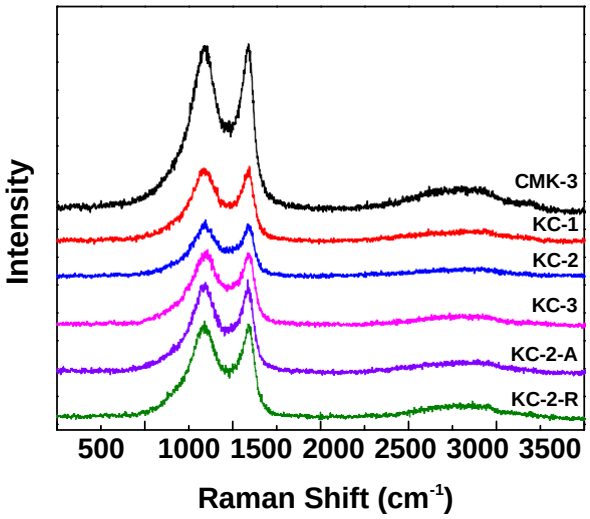

Fig. S3 Raman spectra of CMK-3, KC-1, KC-2, KC-3, KC-2-A, and KC-2-R samples.

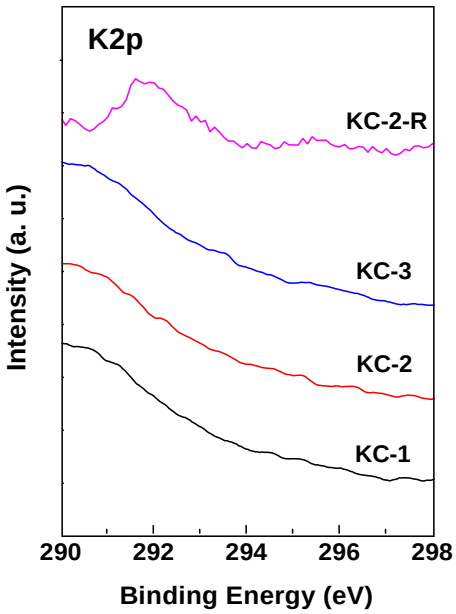

Fig. S4 XPS spectra of KC-1, KC-2, KC-3, and KC-2-R samples.

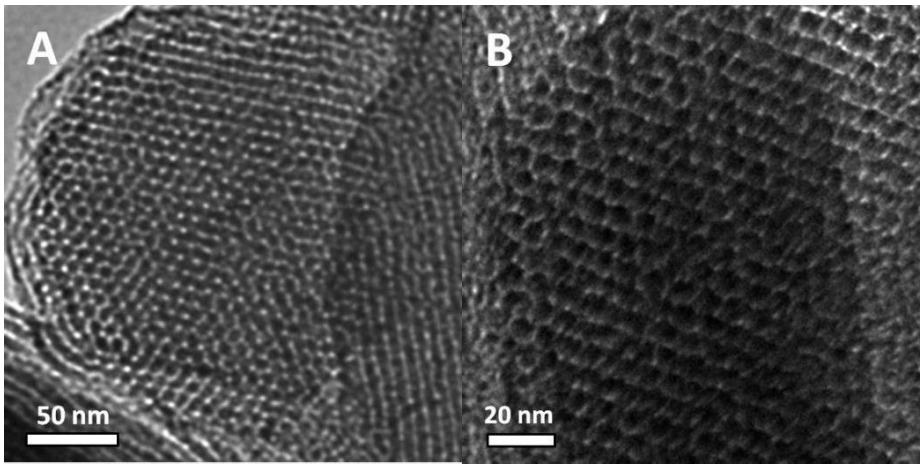

Fig. S5 TEM images of (A) CMK-3 and (B) KC-2 samples.

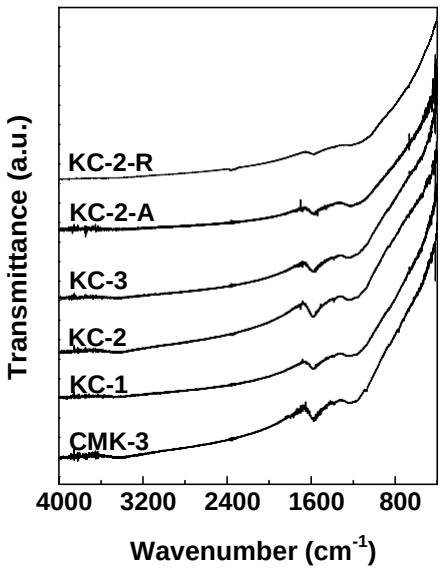

Fig. S6 IR spectra of CMK-3, KC-1, KC-2, KC-3, KC-2-A, and KC-2-R samples.

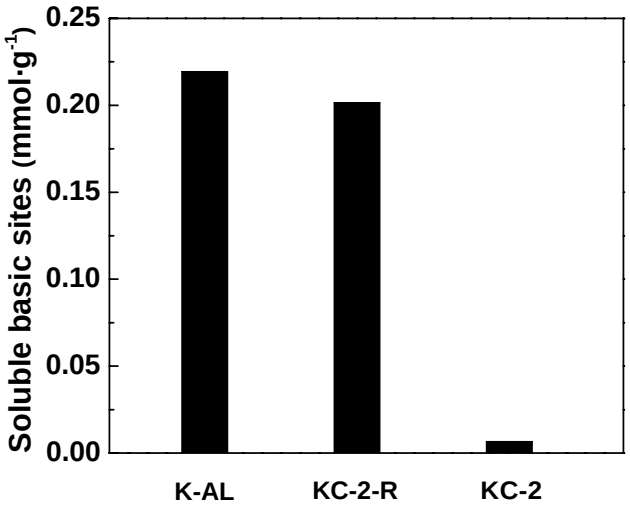

Fig. S7 Soluble basic sites of K-AL, KC-2-R, and KC-2 samples.

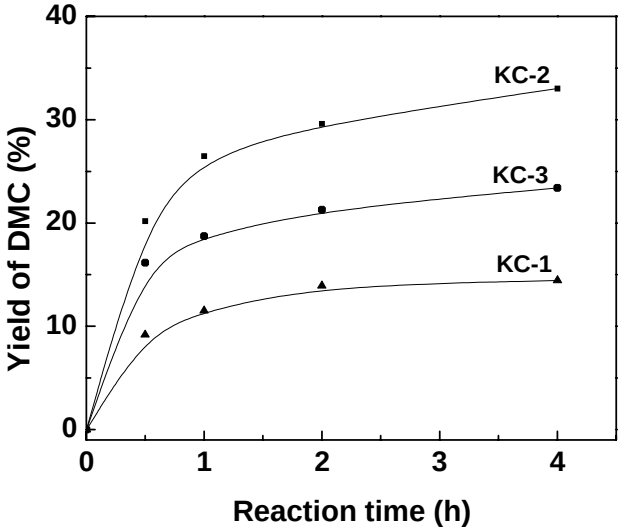

Fig. S8 The yield of DMC under the catalysis of KC-1、KC-2 and KC-3 samples.

References

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