Electronic Supplementary Information for

A General Synthesis of Abundant Metal Nanoparticles Functionalized Mesoporous Graphitized Carbon

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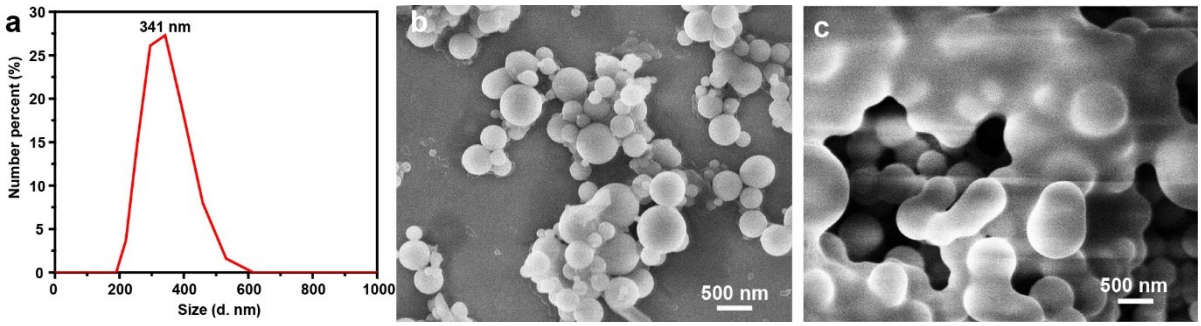

Fig. S1 a) Hydrodynamic diameters of Fe-GA nanospheres in mother liquor measured by DLS. b) SEM image of fresh Fe-GA nanospheres. c) SEM image of Fe-GA after one day exposed to the air.

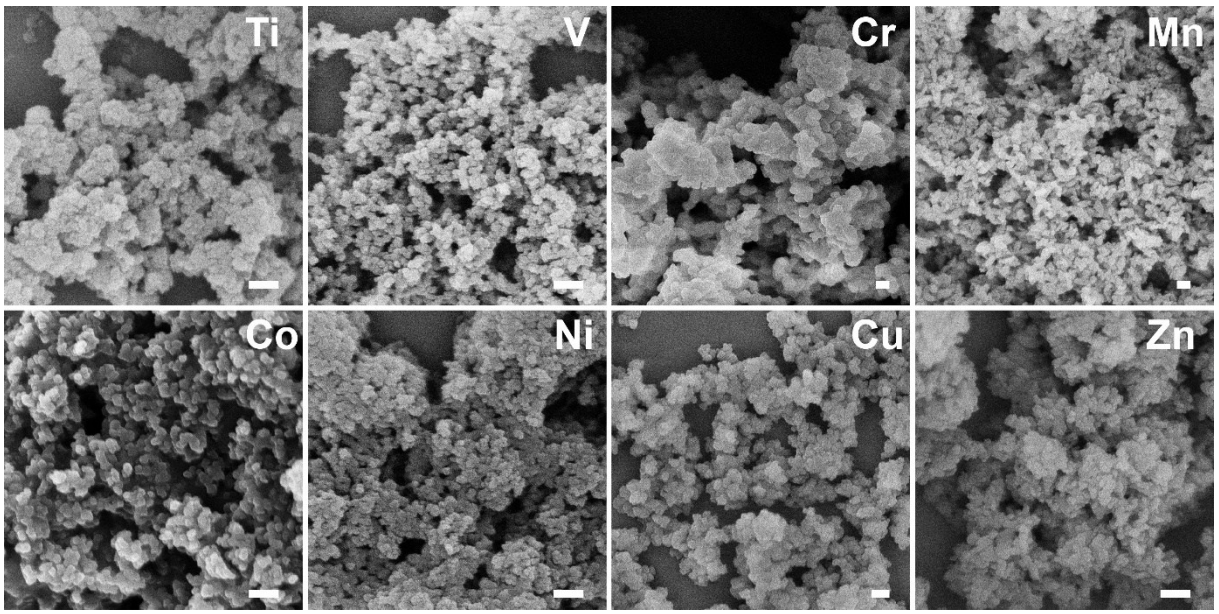

Fig. S2 SEM images of X-GR. The scale bars are 200 nm.

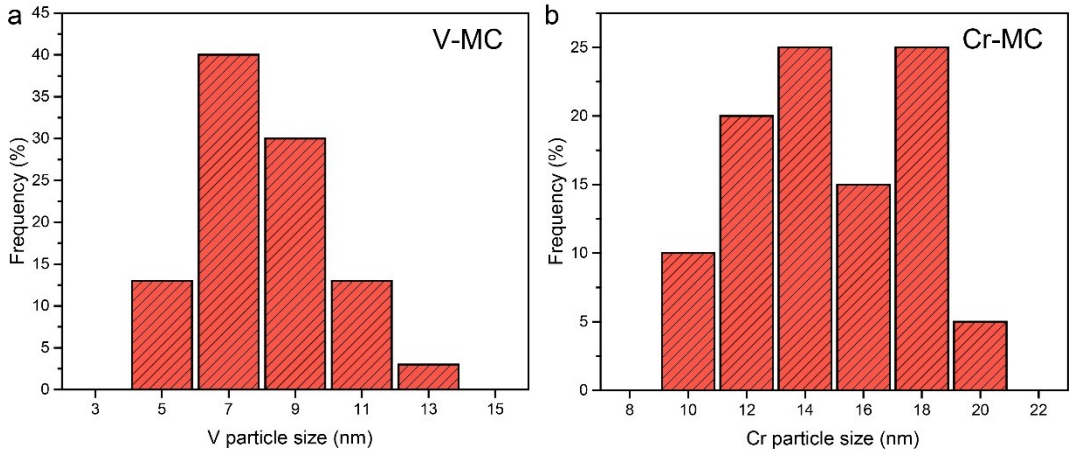

Fig. S3 a) V particle size distribution in V-MC. b) Cr particle size distribution in Cr-MC.

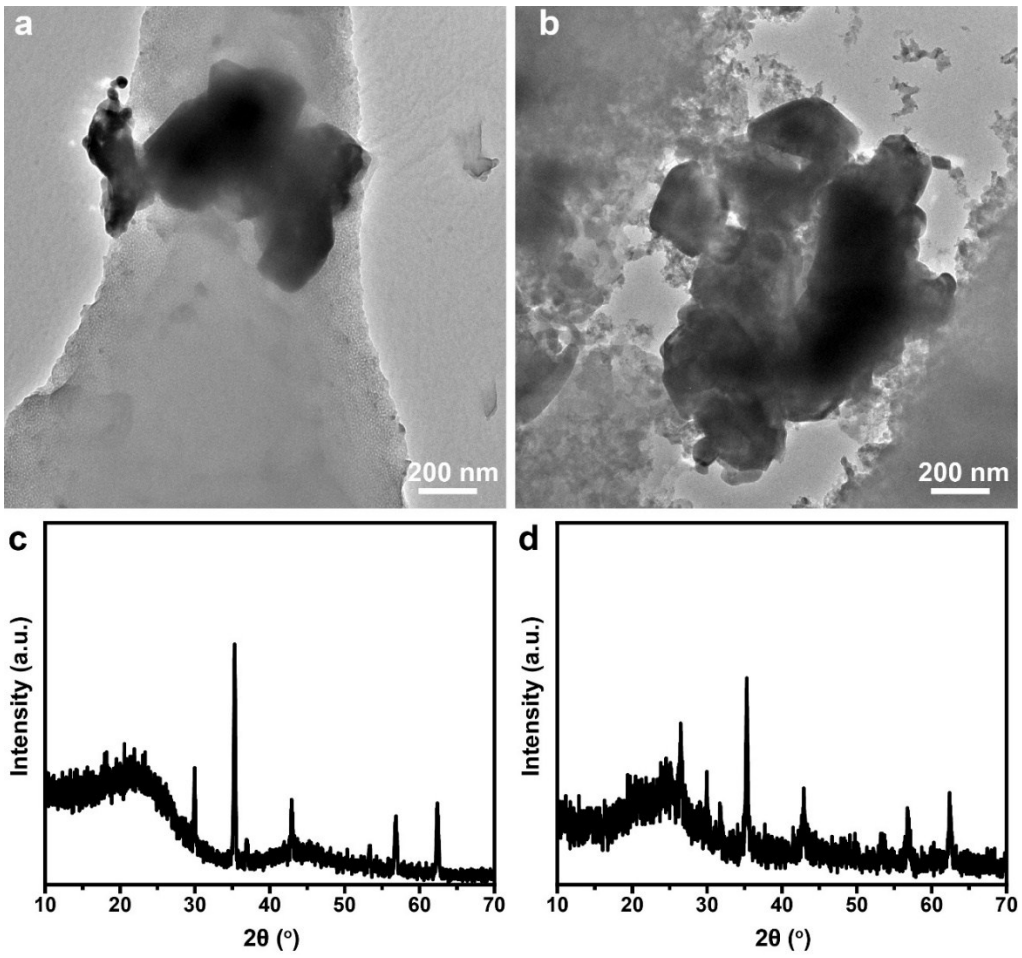

Fig. S4 TEM images of typical mesoporous carbon (a) and commercial actived carbon (b) with Fe content about 10 wt%. XRD patterns of typical mesoporous carbon (c) and commercial actived carbon (d) with Fe content about 10 wt%.

The typical mesoprous carbon with S_{BET} about 600 m^2 g^{-1} was synthesized according to our previous work.[S1] The commercial actived carbon with S_{BET} about 800 m^2 g^{-1} was purchased from Beijing Chemical Works.

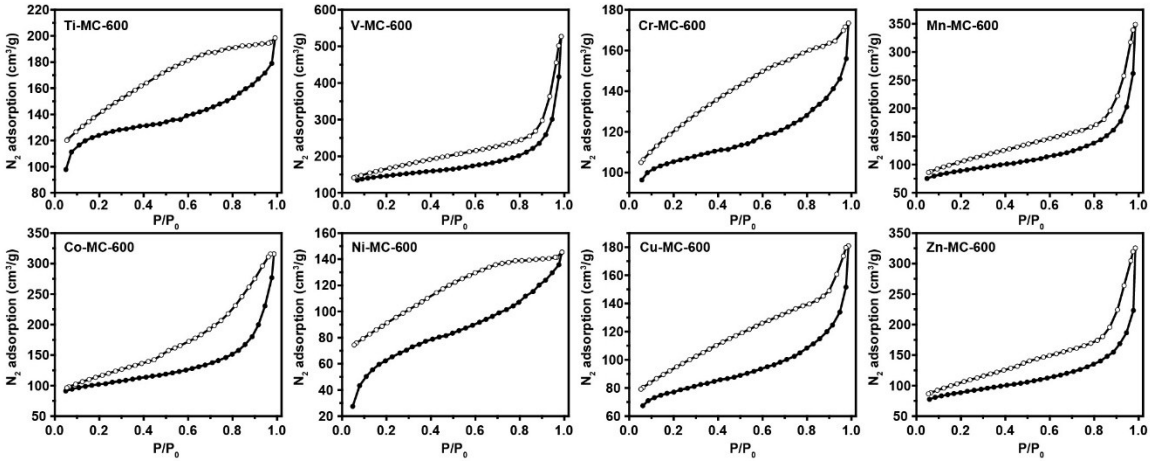

Fig. S5 N_2 adsorption-desorption isotherms of X-MC-600 at 77 K.

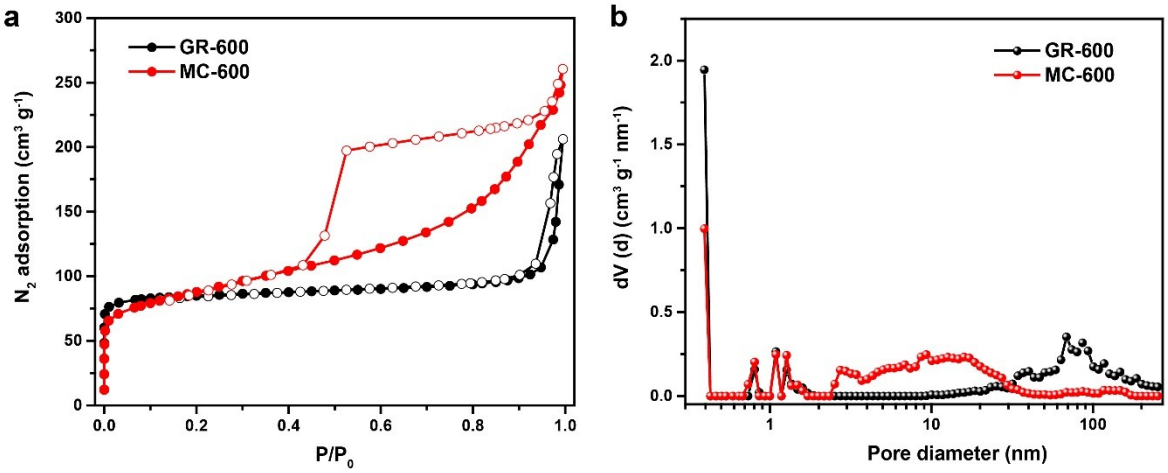

Fig. S6 a) N_2 adsorption-desorption isotherms of Fe-MC-x at 77 K; b) Pore size distribution analysis for GR-600 and MC-600 according to NLDFT model.

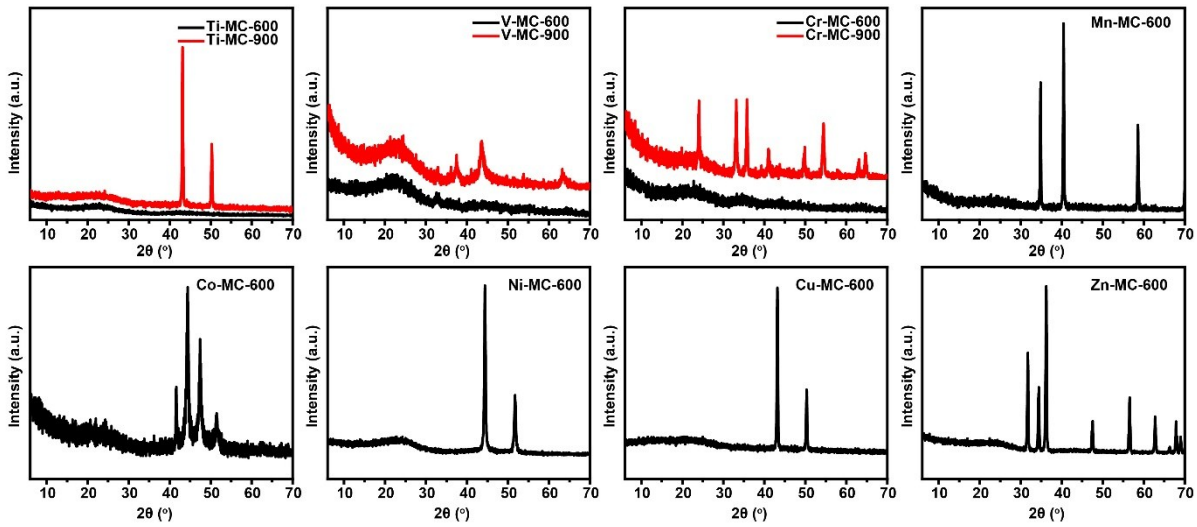

Fig. S7 PXRD patterns of X-MC-x.

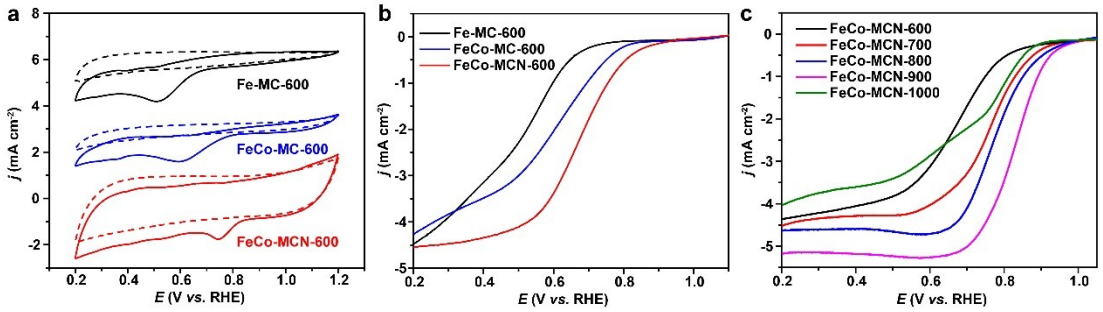

Fig. S8 a) CV curves of Fe-MC-600, FeCo-MC-600 and FeCo-MCN-600 in N_2-saturated and O_2-saturated 0.1 M KOH solution with a sweep rate of 50 mV s^{-1}. b) LSV curves of Fe-MC-600, FeCo-MC-600 and FeCo-MCN-600 in O_2-saturated 0.1 M KOH solution with a sweep rate of 10 mV s^{-1}. c) LSV curves of FeCo-MCN-x in O_2-saturated 0.1 M KOH solution with a sweep rate of 10 mV s^{-1}.

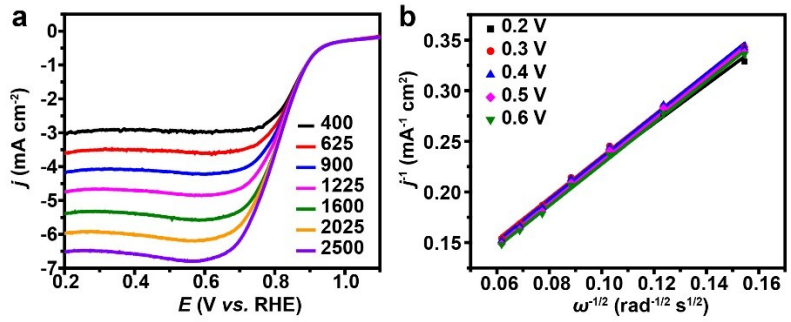

Fig. S9 a) LSV curves of FeCo-MCN-900 in O_2-saturated 0.1 M KOH solution at different rotation speeds ranging from 400 to 2500 rpm. b) Corresponding Koutecky-Levich plots (j^{-1} versus $\omega^{-1/2}$) at different potentials from the LSV shown in panel a.

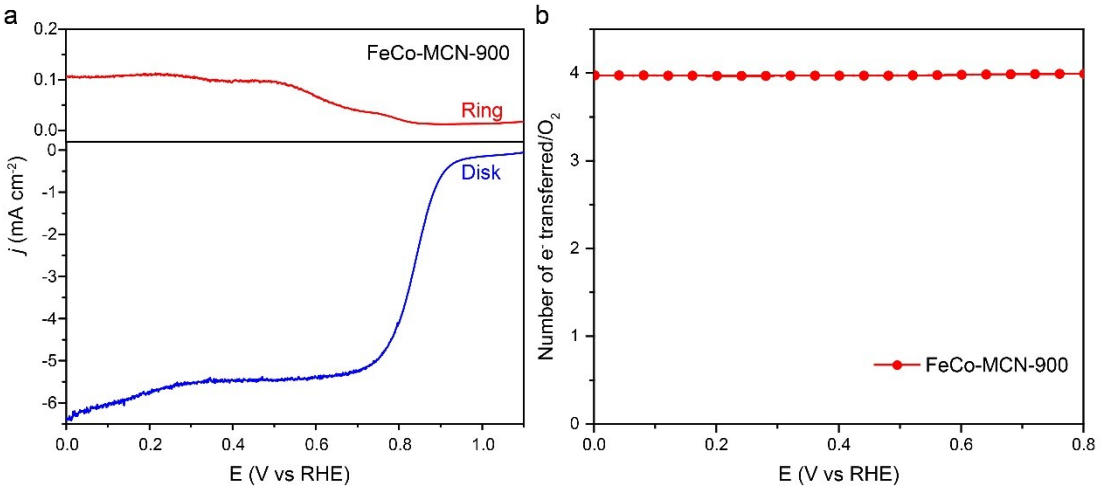

Fig. S10 a) RRDE measurement of FeCo-MCN-900. b) The number of electrons transferred per O2 as a function of potential for FeCo-MCN-900.

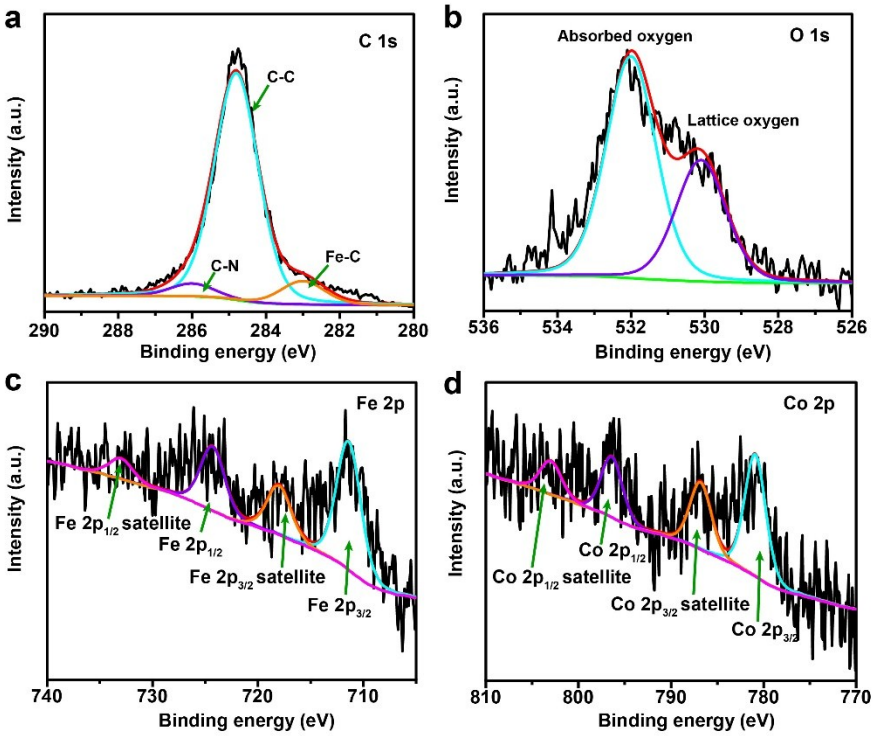

Fig. S11 (a) C 1s, (b) O 1s, (c) Fe 2p and (d) Co 2p XPS spectra of FeCo-MCN-900.

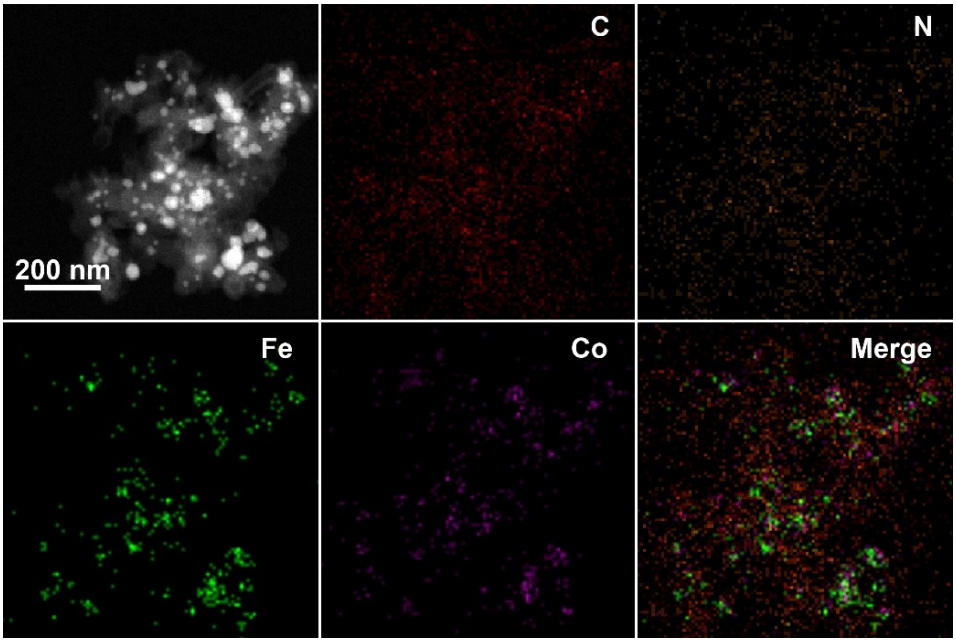

Fig. S12 Elemental mappings of FeCo-MCN-900.

Table S1 Porosity parameters of X-MC-x.

Sample	S_{BET} (m^2 g^{-1}) [a]	V_{total} (cm^3 g^{-1}) [b]	V_{meso} (cm^3 g^{-1})[c]	S_{meso} (m^2 g^{-1})[d]
Fe-MC-600	272	0.270	0.208	149
Fe-MC-700	255	0.331	0.289	170
Fe-MC-800	235	0.316	0.277	158
MC-600	342	0.423	0.369	238
GR-600	334	0.315	0.181	78
Ti-MC-600	399	0.307	0.141	65
V-MC-600	462	0.815	0.645	133
Cr-MC-600	328	0.268	0.129	57
Mn-MC-600	292	0.540	0.457	127
Co-MC-600	329	0.488	0.384	124
Ni-MC-600	247	0.225	0.188	146
Cu-MC-600	248	0.280	0.196	83
Zn-MC-600	289	0.503	0.418	123

[a] S_{BET} is the BET specific surface area obtained from the adsorption data in the P/P_0 range from 0.05 to 0.3;

[b] V_{total} is the single point pore volume calculated from adsorption isotherm at $P/P_0 = 0.985$;

[c] V_{meso} is the cumulative pore volume calculated in the range of pore widths above 2 nm;

[d] S_{meso} is the cumulative surface area calculated in the range of pore widths above 2 nm.

Supply Reference

[S1] C. Liang, S. Dai, *J. Am. Chem. Soc.* **2006**, *128*, 5316.