Supplementary Information

Catalytic performance of bimetallic systems (Cu-Fe, Cu-Mn, Fe-Mn) based on spherical MCM-41 modified by template ion-exchange in NH_3-SCR process

1) Scanning electron microscope analysis (SEM)

The morphology of the samples was examined by scanning electron microscope analysis (SEM). SEM micrographs were collected by using Hitachi S-4700 scanning electron microscope (Hitachi Instruments Inc., San Jose, CA, USA) equipped with a Noran Vantage analyser.

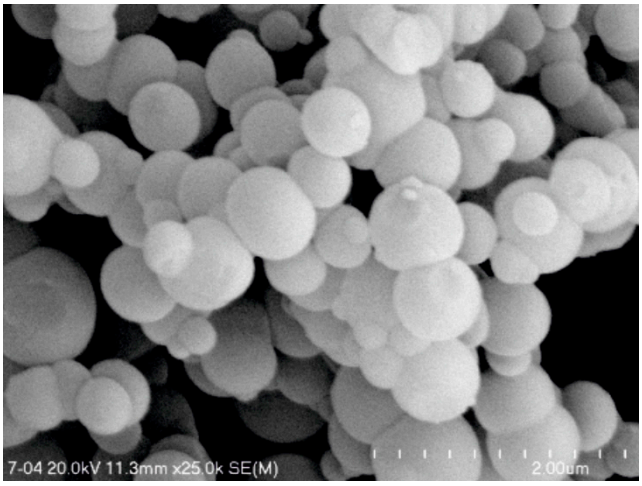

Figure S1. Scanning electron micrographs of spherical MCM-41 particles.

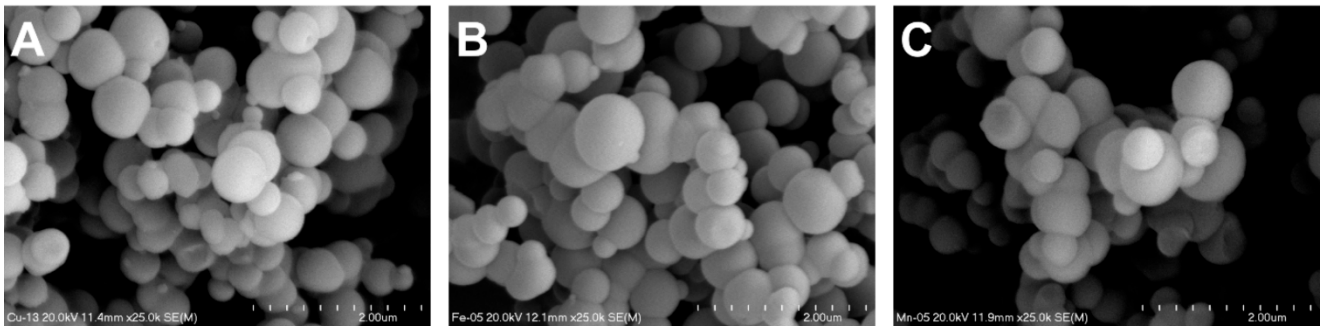

Figure S2. SEM images of the spherical MCM-41 samples modified by TIE method with Cu (**A**), Fe (**B**), Mn (**C**).

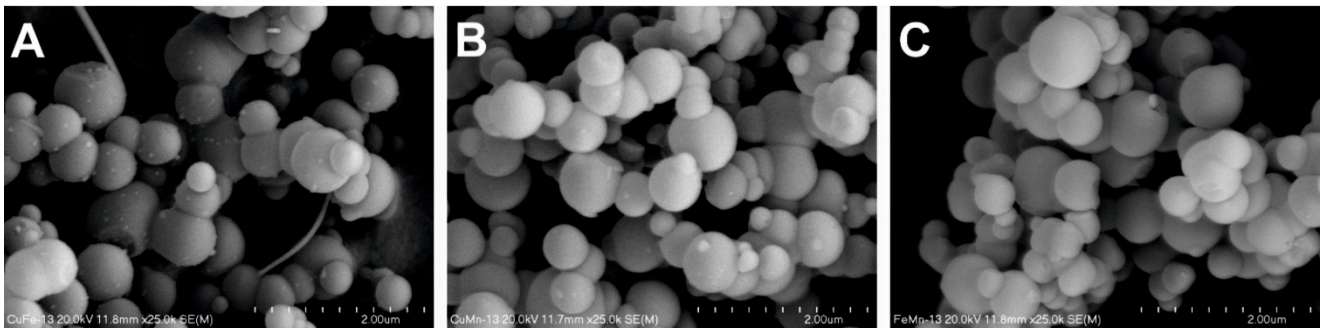

Figure S3. SEM images of the spherical MCM-41 samples modified by TIE method with CuFe (**A**), CuMn (**B**), FeMn (**C**).

2) Analysis of textural properties – low-temperature N_2 sorption

The porosity of the samples was determined by low-temperature N_2 sorption at −196 °C using a 3Flex (Micromeritics, Norcross, GA, USA) automated gas adsorption system. Before the analysis, the samples were degassed under vacuum at 350 °C for 24 h. The specific surface area (S_{BET}) of the samples was determined by application of the BET equation. The pore size distributions were determined from the adsorption branch of nitrogen isotherm by applying the BJH model method, while the pore volume was calculated using the total amount of nitrogen adsorbed at $p/p_0 = 0.98$.

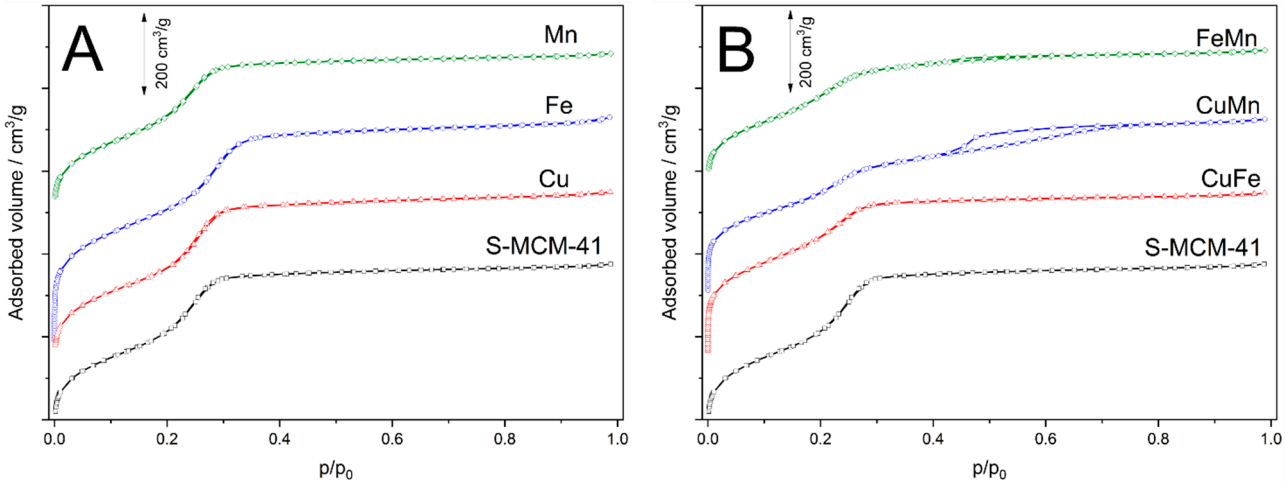

Figure S4. N_2 adsorption-desorption isotherms of the spherical MCM-41 samples modified by TIE method with Cu, Fe, Mn (**A**) and their bimetallic systems (**B**).