Supporting Information for

Highly stable mesoporous NiO-Y_2O_3-Al_2O_3 catalysts for CO_2 reforming of methane: Effect of Ni embedding and Y_2O_3 promotion

Xin Huang,[a,b] Guangxin Xue,[a,b] Changzhen Wang,[e] Ning Zhao,[a,e]* Nannan Sun,[c]* Wei Wei[c] and Yuhan Sun[c]

[a]State Key Laboratory of Coal Conversion, Institute of Coal Chemistry, Chinese Academy of Sciences, Taiyuan 030001, Peoples' Republic of China
[b]University of Chinese Academy of Sciences, Beijing 100039, Peoples' Republic of China
[c]CAS Key Laboratory of Low-Carbon Conversion Science and Engineering, Shanghai Advanced Research Institute, Chinese Academy of Sciences, Shanghai 201210, Peoples' Republic of China
[d]Engineering Research Center of Ministry of Education for Fine Chemicals, Shanxi University, Taiyuan 030006, Peoples' Republic of China
[e]National Engineering Research Center for Coal-based Synthesis, Institute of Coal Chemistry, Chinese Academy of Sciences, Taiyuan 030001, Peoples' Republic of China

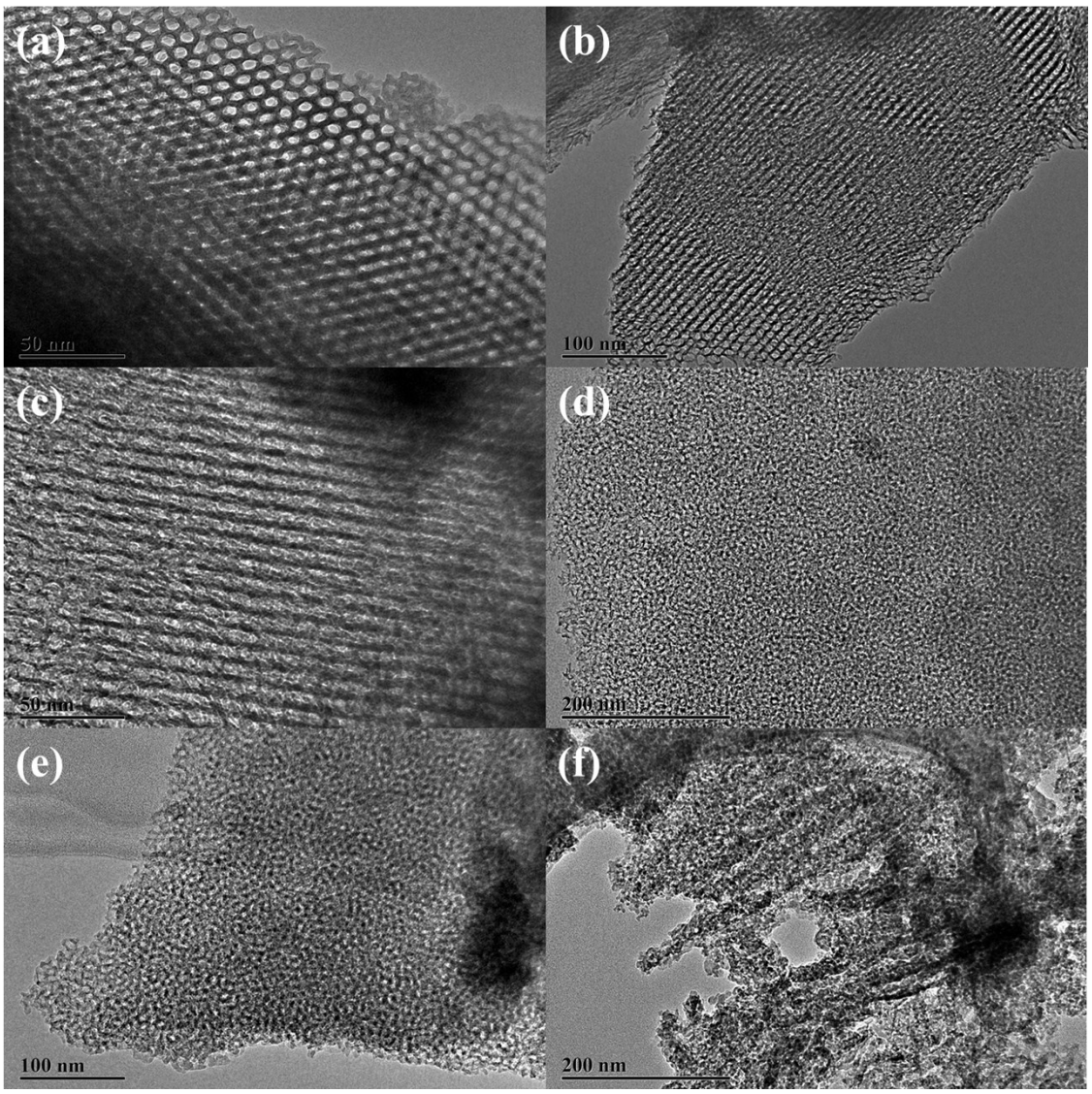

Figure S1 TEM images of the calcined (a) NYA0, (b) NYA1, (c) NYA2, (d) NYA3, (e) NYA4 and (f) NYA5 catalysts.

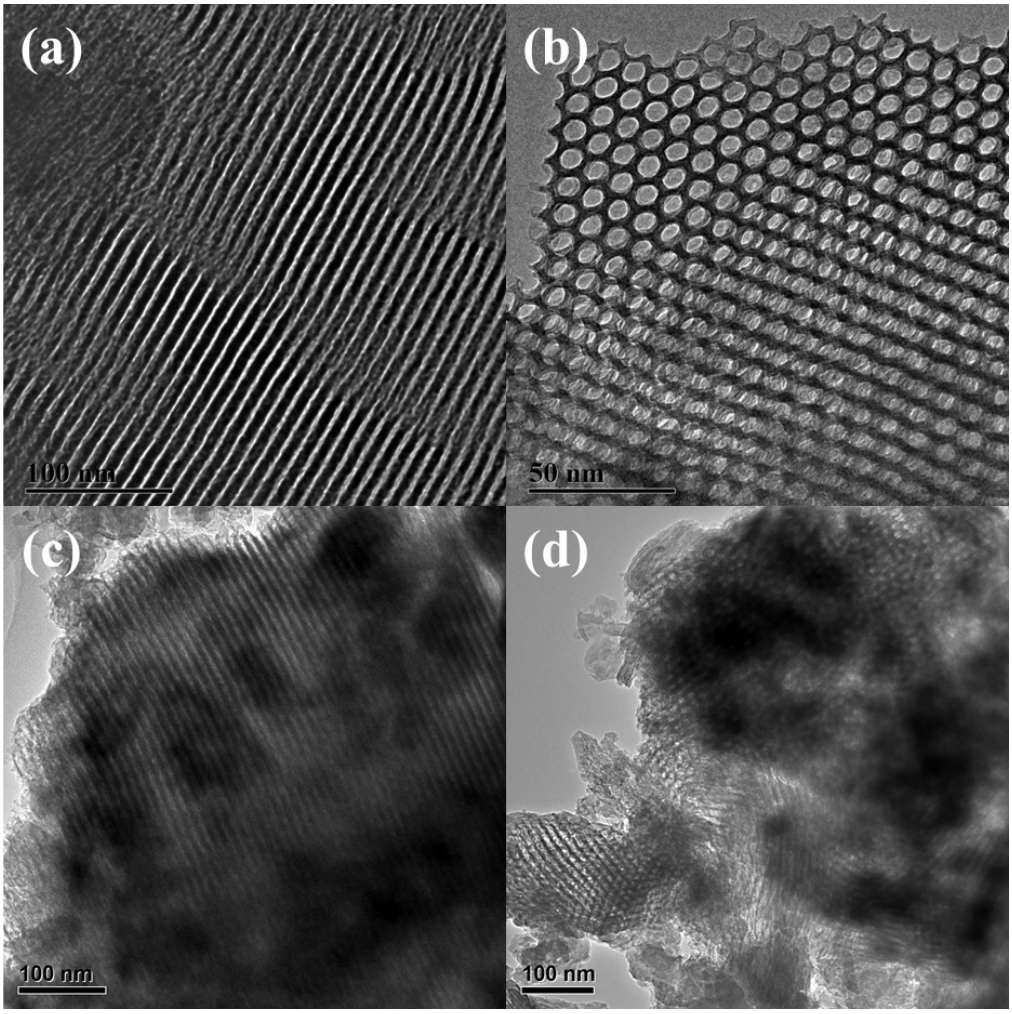

Figure S2 TEM images of the (a) and (b) pure ordered mesoporous Al_2O_3, (c) and (d) Y_2O_3-Al_2O_3.

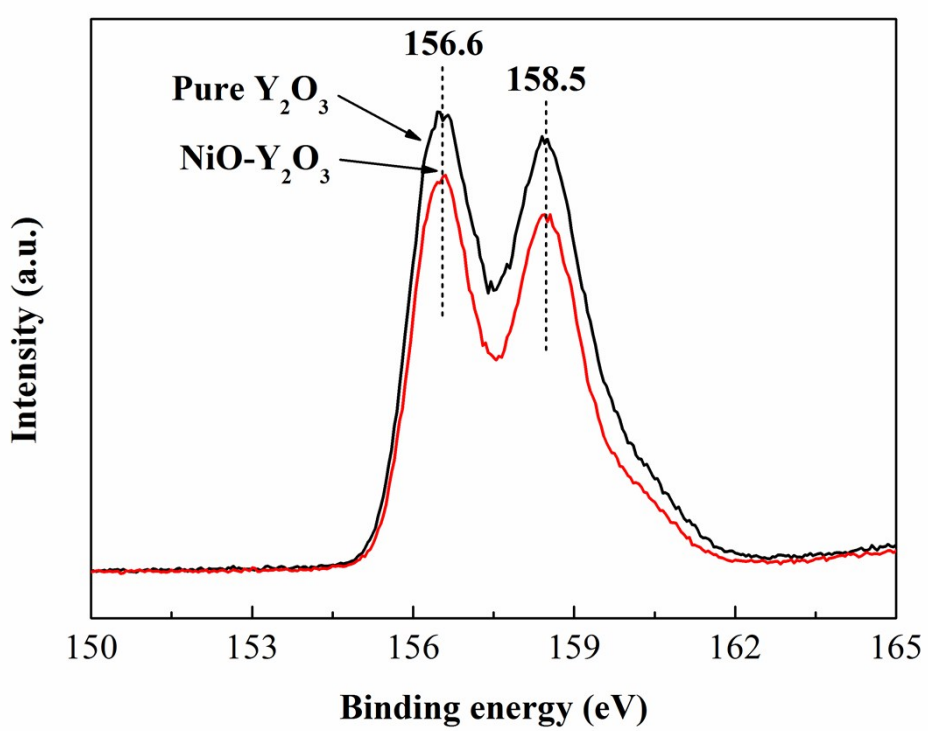

Figure S3 Y $3d_{5/2}$ XPS spectras of the pure Y_2O_3 and NiO-Y_2O_3 samples by calcine $Y(NO_3)_3$ and a $Ni(NO_3)_2$-$Y(NO_3)_3$ mixture at 750 ^oC.

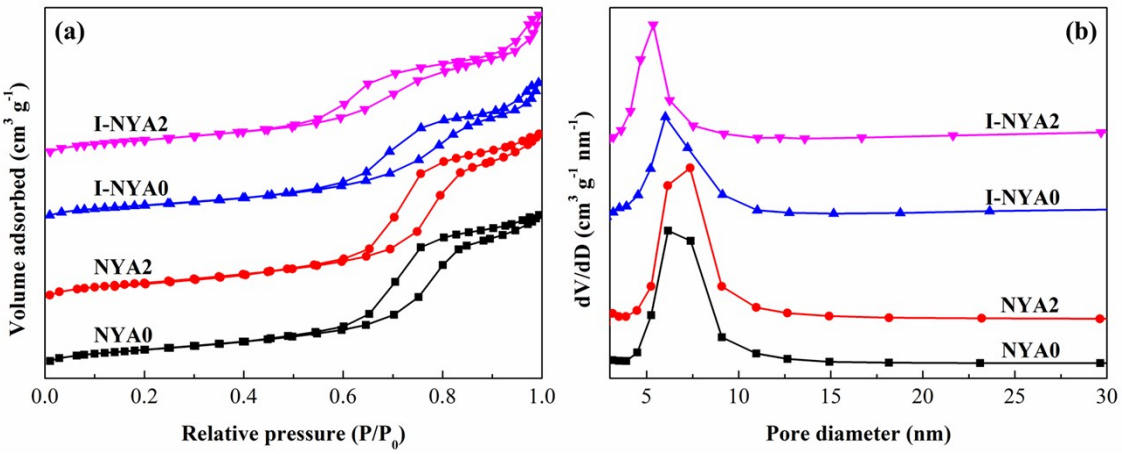

Figure S4 (a) Nitrogen adsorption-desorption isotherms and (b) corresponding pore size distributions for the long-term I-NYA0, I-NYA2, NYA0 and NYA2 catalysts.

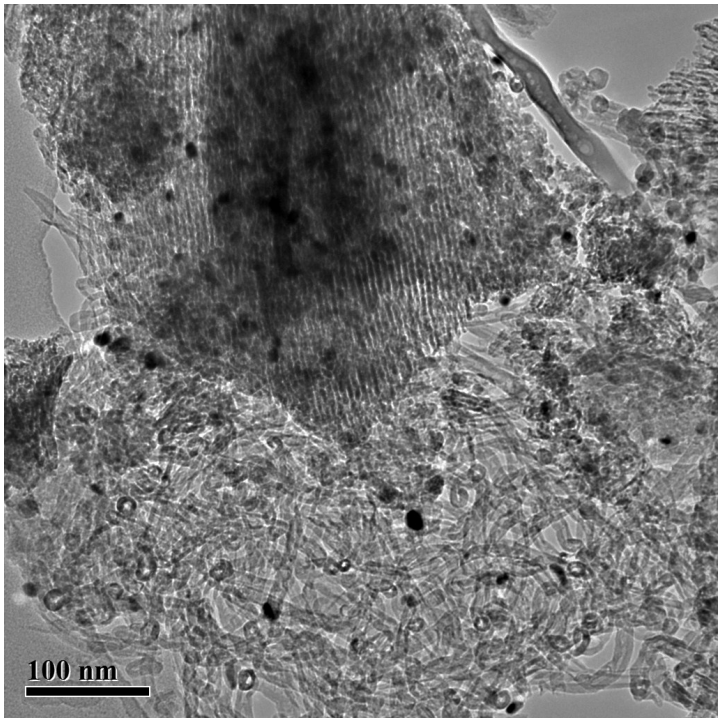

Figure S5 TEM images of whisker carbon over the long-term I-NYA0 catalyst.