

Supporting Information for

**Alkaline-assisted Ni nanocatalysts with largely enhanced low-
temperature activity toward CO₂ methanation**

Jie Liu,^a Weihan Bing,^a Xiaoge Xue,^a Fei Wang,^a Bin Wang,^b Shan He,^{*a} Yingkui Zhang,^a
Min Wei^{*a}

^a State Key Laboratory of Chemical Resource Engineering, Beijing University of Chemical
Technology, Beijing 100029, P. R. China

^b Beijing Research Institute of Chemical Industry, Sinopec Group, Beijing 100013, P. R. China

* Corresponding authors. Tel: +86-10-64412131; Fax: +86-10-64425385.

E-mail addresses: vh30@163.com (S. He); weimin@mail.buct.edu.cn (M. Wei).

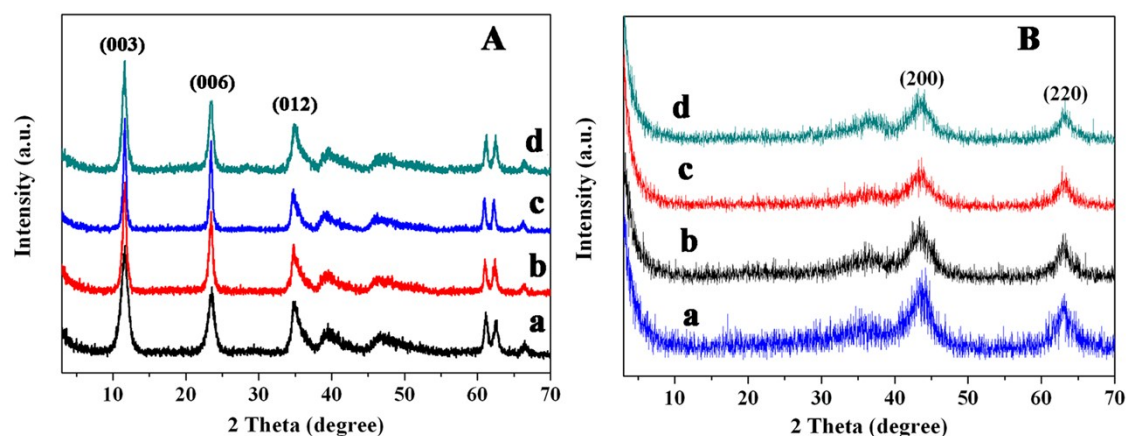


Figure S1. (A) XRD patterns of the Ni_xMg_{2-x}Al-LDH precursors: (a) Ni_{0.4}Mg_{1.6}Al-LDH, (b) Ni_{0.8}Mg_{1.2}Al-LDH, (c) NiMgAl-LDH and (d) Ni_{1.6}Mg_{0.4}Al-LDH. (B) XRD patterns of the Ni_x/Mg_{2-x}Al-MMO samples: (a) Ni_{0.4}/Mg_{1.6}Al-MMO, (b) Ni_{0.8}/Mg_{1.2}Al-MMO, (c) Ni/MgAl-MMO and (d) Ni_{1.6}/Mg_{0.4}Al-MMO.

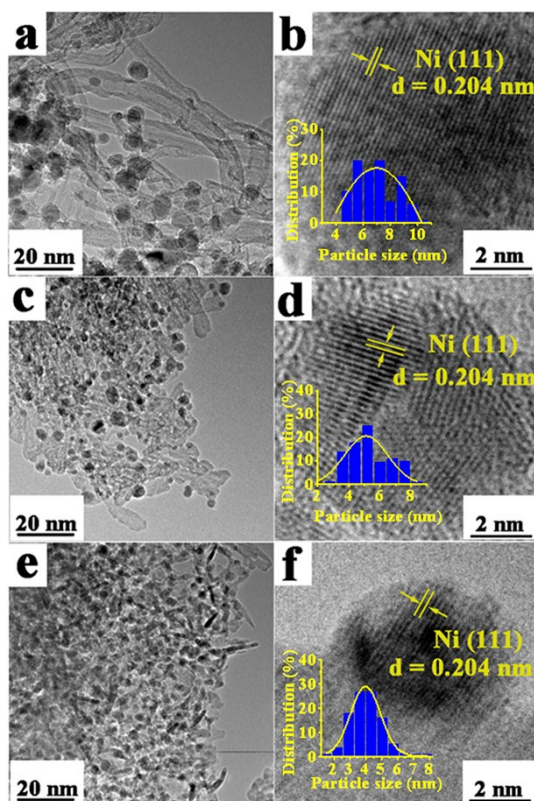


Figure S2. HRTEM images of various Ni-based catalysts prepared by the impregnation method: (a, b) Ni/CNT, (c, d) Ni/Al₂O₃, (e, f) Ni/MgO.

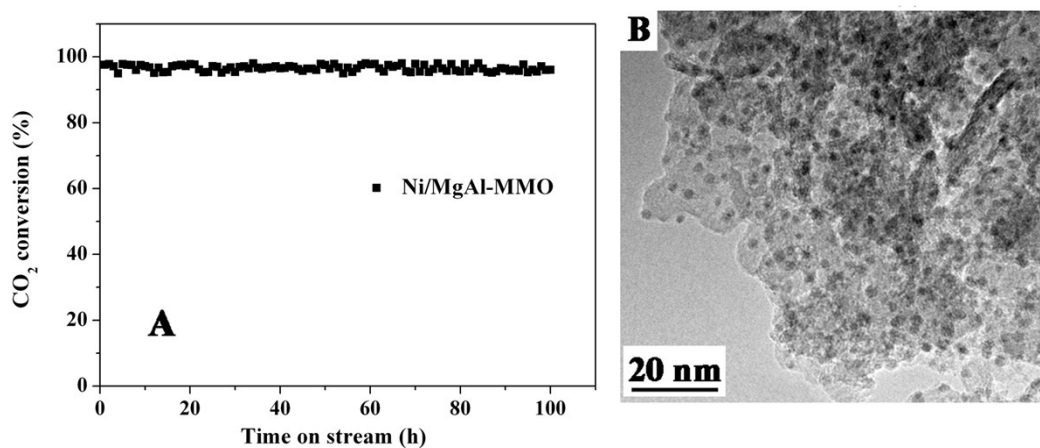


Figure S3. (A) CO₂ conversion vs. reaction time over the Ni/MgAl-MMO catalyst at 250 °C. (B) TEM image of the Ni/MgAl-MMO catalyst after reaction for 100 h on stream.