Supporting information

# $CO_2$ methanation mechanism over $Ni/Y_2O_3$: An *in situ* diffuse reflectance infrared Fourier transform spectroscopic study

Masitah Hasan, Toshiki Asakoshi, Hiroki Muroyama*, Toshiaki Matsui, Koichi Eguchi

Department of Energy and Hydrocarbon Chemistry, Graduate School of Engineering, Kyoto University, Nishikyo-ku, Kyoto 615–8510, Japan.

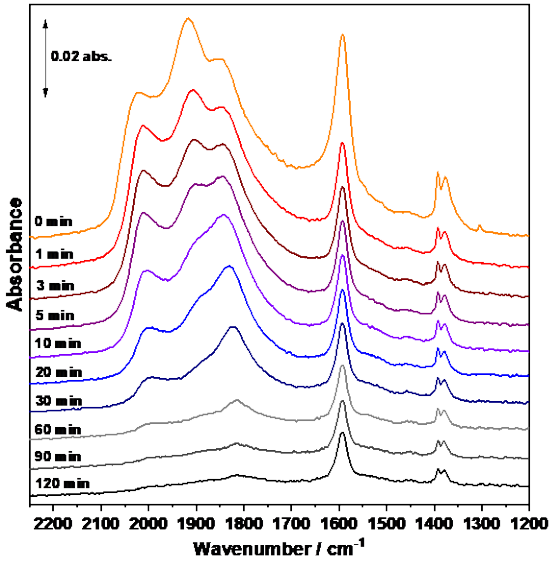


Fig. S1 Infrared spectra of species formed on 20 wt.% $Ni/Al_2O_3$ under the prolonged exposure to 5% $H_2$–95% $N_2$ at 300 ºC for 120 min after the measurement in 10% $CO_2$–40% $H_2$–50% $N_2$ (Fig. 3).

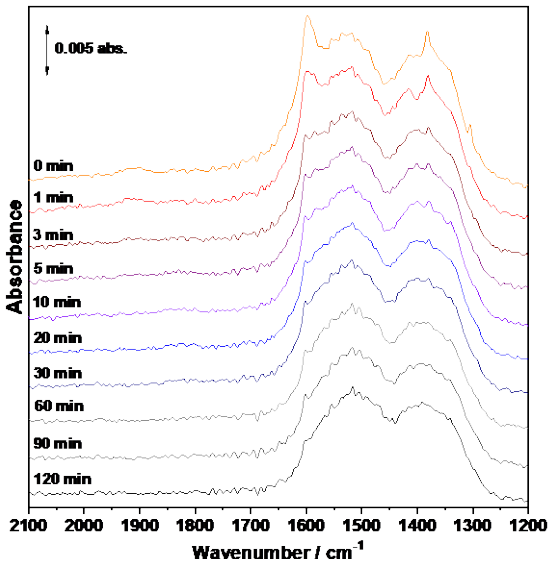


Fig. S2 Infrared spectra of species formed on 20 wt.% $Ni/Y_2O_3$ under the prolonged exposure to 5% $H_2$–95% $N_2$ at 250 ºC for 120 min after the measurement in 10% $CO_2$–40% $H_2$–50% $N_2$ (Fig. 6).