

Supplemental Information

The catalytic performances and reaction mechanism of nanoparticle Cd/Ce-Ti oxide catalysts for NH₃-SCR reaction

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Fourier transform infrared (FT-IR) absorbance spectra were recorded in the wave numbers ranging from 4000 to 400 cm^{-1} via a FTS-3000 spectrophotometer. The measured wafer was prepared with the weight ratio of sample to KBr, 1/100. The resolution was set at 2 cm^{-1} during measurements.

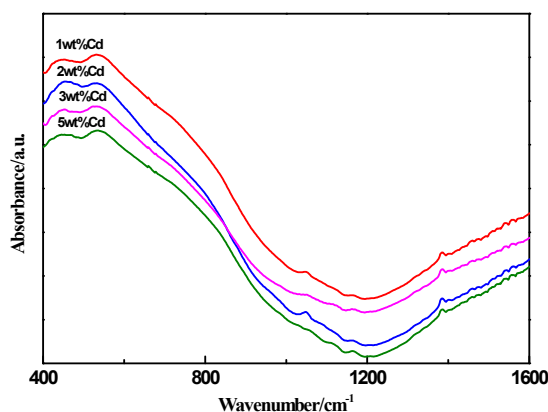


Fig.1 FT-IR spectra of Cd_M/Ce_{0.3}TiO_x catalysts

FT-IR spectra of Cd_M/Ce_{0.3}TiO_x samples are shown in Fig. 1. The spectra of all samples exhibit similar structure characteristics. There is obvious bands attributing to anatase TiO₂ (500-540 cm^{-1}). It may be assumed that the loading of the Cd rarely affect on the anatase TiO₂ structure of the supporter. The band at 450 cm^{-1} expresses the vibration of TO₄ units, and that at 540 cm^{-1} is attributed to the vibration of Ti-O bands while the band at 1386 cm^{-1} attributes to the vibration of Ce-O bands. There are no obvious bands attributing to the vibration of Cd. It may be due to the low metal loadings and the band of the vibration of those loading metals overlapping with that of anatase TiO₂.

Ce_yTiO_x (y=0.02, 0.1, 0.2, 0.3, 0.5) have being prepared in pervious study and the Ce_{0.3}TiO_x catalyst shows the best catalytic performance

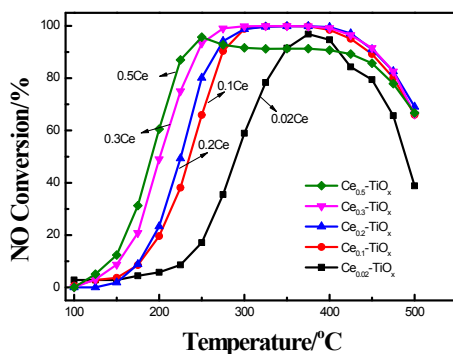


Fig. 2 NO conversion as a function of reaction temperature over Ce_yTiO_x catalysts