TiO_2-based metal oxide catalysts for selective catalytic reduction of NOx with NH_3 : Evaluation and characterization of catalysts prepared by Sol-Gel method

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The TiO_2-based metal oxide catalysts with the selective catalytic reduction (SCR) were prepared by method of Sol-Gel. The phase compositions, microstructures, acidity and specific surface area of the catalysts were analyzed by XRD, SEM, NH_3-TPD and BET, respectively. The effect of additive metal oxide loading and reaction temperature on the catalytic performances of the as-prepared catalysts was investigated by using the selective reduction of NOx with NH_3.

The results showed all the as-prepared TiO_2-based metal oxide catalysts were made up of nanometer grains. Compared to conventional TiO_2 catalysts, the as-prepared TiO_2-based metal oxide catalysts possessed better catalytic performance, higher adsorbability and larger area of contact with reactant, which is due to large quantity surface micropores.