

### Characterization and De-NO<sub>x</sub> properties of V<sub>2</sub>O<sub>5</sub>-WO<sub>3</sub>/TiO<sub>2</sub> SCR catalysts synthesized by different methods of loading vanadium.

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V<sub>2</sub>O<sub>5</sub>-WO<sub>3</sub>/TiO<sub>2</sub> catalysts with high De-NO<sub>x</sub> efficiency were prepared for SCR, which serves to convert NO<sub>x</sub> into N<sub>2</sub> and H<sub>2</sub>O, where the loading of vanadium was specifically carried out by two different synthetic methods. In advance, anatase TiO<sub>2</sub> support was prepared by the sol-gel method, then AMV and AMT precursors were impregnated into the catalyst support. Finally, the residues were calcined at 500°C to prepare catalysts loaded with active materials WO<sub>3</sub> and V<sub>2</sub>O<sub>5</sub>. As a result of observing the size and microstructure of the catalyst with FE-SEM, the crystallite size was estimated to be about 30nm. XRD analysis confirmed that the V<sub>2</sub>O<sub>5</sub> and WO<sub>3</sub> catalysts had little effect on the anatase phase of the TiO<sub>2</sub> support. And the specific surface area was measured through N<sub>2</sub> adsorption. It is interesting that the temperature range of presenting the maximum De-NO<sub>x</sub> efficiency is different between the catalysts synthesized by the different methods, where the highest De-NO<sub>x</sub> efficiency was observed above 300°C for one method and below 300°C for the other.