

Structural and mechanistic investigation of sulfated Sb-V-CeO₂/TiO₂ catalysts for NH₃-SCR
by XANES and DRIFTS

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A study of structural and mechanistic investigation of the sulfated Sb-V-CeO₂/TiO₂ catalysts at different temperatures was carried out by X-ray absorption near edge spectroscopy (XANES) and Diffused reflectance infrared Fourier transform spectroscopy (DRIFTS). The catalysts sulfated at 500°C temperatures (S500) exhibited superior NO_x conversion at low temperatures (150–200°C) than the catalysts sulfated at 300 (S300) and 400°C (S400). Ce M_{4,5} edge XANES spectra of S500 catalyst indicated peak at 881.9 eV attributed to Ce³⁺ oxidation state. The in-situ DRIFTS results revealed that the number of Bronsted and Lewis acid sites of S500 catalysts was increased significantly than S300 and S400, which resulted in high activity at low temperatures.