Fig. 1  Results of BJH desorption cumulative surface of area of pores over V-W/Ti/CC catalyst.

Fig. 2  EDS line scanning test of catalyst surface over sample V-W/Ti/CC

Fig. 3  EDS line scanning test of catalyst cross section over sample V-W/Ti/CC
Fig. 4  SEM result of catalyst cross section over sample V-W/Ti/CC

Fig. 5  H₂-TPR analysis of different samples. Testing conditions: H₂-temperature programmed reduction (H₂-TPR) experiments are performed in a quartz reactor connected to a thermal conductivity detector (TCD) with N₂-H₂ mixture (10% of H₂ by volume, 40 ml min⁻¹) as a reductant. Prior to the reduction, the sample (50 mg) is pretreated in a high purified N₂ stream at 400 °C for 1 h and then cooled to room temperature. After that, the TPR starts from room temperature to target temperature at a rate of 10 °C min⁻¹.

Fig. 6  Results of (NO, O₂, NH₃)-TPD over V-W/Ti/CC catalyst in He atmosphere. Testing conditions: 1 g V-W/Ti/CC powder were loaded in the
reactor and pretreated in an high-purity He stream (30 ml/min) at 400°C for 1 h, then cooled to 100°C in the same stream. The pretreated catalysts were then exposed to adsorbed gas respectively, containing NH₃ 10 ml/min +He 30 ml/min or NO 10 ml/min +He 30 ml/min or O₂ 10 ml/min +He 30ml/min or He 30ml/min, at a total flow rate of 40 ml/min. After steady state was reached, the catalysts were purged with high-purity He of 30 ml/min for 1 h, then heated at a rate of 10 °C/min from 100°C up to 700 °C. The effluent were continuously monitored during the whole adsorption/desorption process by thermal conductivity detector.