

K-Promotion Effect of Ni-K Oxide Catalyst on the Co-removal of N₂O and NO with CO

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The catalytic simultaneous decomposition of N₂O and NO with the introduction of CO has been performed over Ni-K oxide catalyst. The catalysts were obtained by co-precipitation of nickel and potassium nitrates with the addition of the precipitants under controlled pH followed by calcinations. The conversion efficiencies of N₂O and NO appeared excellent showing almost complete conversion even at around 200°C in the presence of CO, which are compatible with those of Co-Pd-Al oxide catalyst having shown excellent activity when CO exists in excess of N₂O and NO. The reactions were carried out under atmospheric pressure in the temperature range of 150–500°C and space velocities were set between 15,000 and 100,000/h. The K-incorporation in the manufacturing process of hydrotalcite-type compound represents prominent performances in the N₂O destruction, leading to great economies in the catalyst manufacturing and operation costs.