Improving the Conversion Rate of Nitrogen Oxides in Flue Gas by using Iron-Manganese Modified Medium-Pore Silicon Molecular Sieve Catalyst

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Abstract

At present, the air pollution fee has become stricter, and the removal rate of nitrogen oxides is required to reach 95%. The purpose of this research is to use the low-temperature catalyst synthesized by composite metal to oxidize and reduce the exhaust gas generated by the flue and decompose harmful substances. The main disadvantage of pure silica mesoporous materials is that the catalytic active sites cannot be uniformly deposited on the surface of pure silica mesoporous materials, and metals cannot be doped on the surface of the catalyst, which makes the industrial applicability poor.Commercially available industrial-grade MCM-41 is expensive, with a price of 262 yuan per gram. The purpose of this experiment is to self-synthesize MCM-41 to reduce its costand improve its own shortcomings to enhance industrial applicability. Using hexadecyl trimethyl ammonium bromide as a structure-directing agent and tetraethoxysilane as a silicon source for secondary ion exchange, however, the main disadvantage of pure silica mesoporous materials Because the catalytic active sites cannot be uniformly deposited on the surface of pure silica mesoporous materials, it is difficult for metal ions to be mixed on the surface of the catalyst. Adding ammonium nitrate and a small amount of aluminum in the process of making the catalyst can increase the active sites on the surface . Add a certain amount of diethylamine (Diethylamine) as a dispersant to distribute the catalyst particles evenly in the ceramic fiber filter cake.After the NH3-SCR test of the diesel generator, it is known that when the temperature of the low-temperature catalyst filter cake is set at 180°C, the conversion efficiency is 97.3%, and the temperature is set at 250°C, which has the highest removal efficiency, and the highest removal efficiency is 97.8%.

Early Career Scientist

NO, I am not an early career scientist.

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