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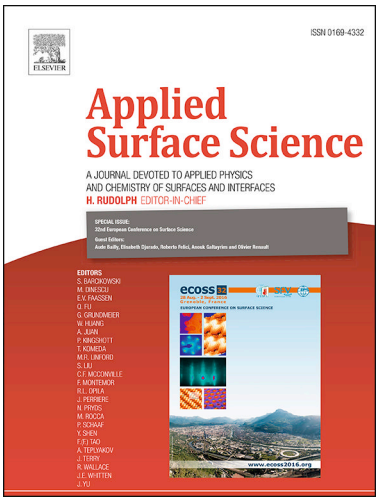

Full Length Article

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Adsorption and Surface reaction pathway of NH_3 selective catalytic oxidation over different Cu-Ce-Zr catalysts

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Abstract

The adsorption species and reaction mechanism for NH_3 selective catalytic oxidation (NH_3-SCO) over series of Cu-Ce-Zr catalysts prepared by citric acid sol-gel (SOL), homogeneous precipitation (HP) and incipient wetness impregnation (IW) methods were systematically investigated by *in situ* Diffuse Reflectance Infrared Fourier Transform Spectroscopy (DRIFT) and Mass Spectroscopy (MS). The redox characteristics of catalysts were determined by the synergistic effect among each catalyst components. The reaction pathway on all of three catalysts applied on the NH_3-SCO were investigated and compared through the formation of intermediate species and final products. The Cu-Ce-Zr-SOL catalyst with the best catalytic activity presented the excellent adsorption ability of NH_x and NO_x species. A large amount of intermediate species over Cu-Ce-Zr-SOL surface facilitated the reaction. On the other hand, the most of NH_3 was located in Brønsted acid sites in the form of NH_4^+ over Cu-Ce-Zr-HP which was stable during the reaction. The larger CuO particle and a vast of B acid sites on Cu-Ce-Zr-IW showed the remarkably negative effect for the NH_3

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