

Characterization of TWC catalysts according to NiO contents

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Sulfur contained in automobile fuel is oxidized to SO₂ in the combustion process. It is stored in the ceria and alumina in a sulphate form under Lean condition. Sulfate reacts with H₂ under rich conditions and is exhausted as H₂S gas. The exhausted H₂S gas caused a customer's dissatisfaction due to the unpleasant odor and toxicity. In the North America automotive market, NiO is used as a scavenger for suppressing H₂S generation in the TWC technology. However, the addition of NiO has been known to negative effect for catalyst activity after thermal and engine aging.

In this study, TWC catalysts with different NiO contents were prepared and the effect of NiO content on catalyst activity was investigated through SGB test.