

## DeNO<sub>x</sub> Performance of the Ceramic Fiber Substrate on Selective Catalytic Reduction by NH<sub>3</sub>

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Cordierite substrate has been commonly used in the catalytic converter mainly due to its strong thermal and physical durability. However, the development of a lighter monolith reactor compared to the present ceramic substrate is required to improve the fuel efficiency of automotive engines. In the present study, the deNO<sub>x</sub> performance of new ceramic fiber substrate washcoated with CuZSM5 or V<sub>2</sub>O<sub>5</sub>/TiO<sub>2</sub> catalyst has been examined. The NO<sub>x</sub> removal activity of the ceramic fiber reactor is similar to that of cordierite one. However, the ceramic fiber reactor showed a poor hydrothermal stability when the reactor was treated in air with 10 % water at 700 °C for 24 h. However, the hydrothermal stability of the ceramic fiber reactor could be improved by pretreatment before washcoating the catalyst onto the channels of the reactor. Based upon the catalyst characterization study with XRD and SEM, the formation of crystalline AlPO<sub>4</sub> included in the fiber substrate plays an important role for preventing the catalyst aging.