NO_X ADSORBER CATALYST DURABILITY: LIGHT- AND HEAVY-DUTY PERSPECTIVES

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ABSTRACT

NO_x adsorber catalysts can reduce NO_x from diesel engines by over 90 percent, but to be commercially viable, NO_x adsorbers must demonstrate compliance-range durability. Sulfur masking has traditionally limited NO_x adsorber durability, but sulfur management by a combination of catalyst desulfation and fuel-sulfur reduction is an effective method of controlling degradation from sulfur masking.

Since the control of sulfur masking has been demonstrated, thermal degradation is expected to be the primary degradation mechanism. Thermal degradation rates will great-ly depend on the operation temperatures of the catalyst, and the desulfa-tion process typically results in the highest and most severe temperature exposure. A NO_x adsorber catalyst aging experiment testing repetitive thermal exposure during the desulfation process will be presented. Results will be used to predict catalyst lifetime and compare to compliance mileage requirements. Issues relating to the different requirements for light- and heavy-duty applications will be discussed.