

PLASMA-ACTIVATED LEAN NO_x CATALYSIS FOR HEAVY-DUTY DIESEL EMISSIONS CONTROL

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NO_x reduction exceeding 90 percent has been demonstrated for a simulated exhaust stream in bench-scale experiments and in engine slip-stream tests using a plasma treatment step followed by catalytic lean-NO_x reduction. The effect of reducing agent on catalysis has been probed in some detail, and results show that a variety of hydrocarbons can be used to reduce NO_x. It is also demonstrated that optimal catalyst formulation, based on silver-doped γ -alumina, is highly dependent on the hydrocarbon species. Fuel-like hydrocarbons, such as iso-octane, can give high activity, but the level of silver in the catalyst must be increased above levels typically used for propene or other light hydrocarbons. Comparison between bench data and steady-state engine testing conducted in 2001 will also be provided.