

Desulfation of NO_x Adsorbers: Studies with the SpaciMS Technique

Jim Parks and Aaron Watson
Goal Line Environmental Technologies

Bill Partridge, Sam Lewis, and John Storey
Oak Ridge National Laboratory

Neal Currier and Jason Chen
Cummins, Inc.

NO_x adsorber catalysts are an excellent candidate for diesel NO_x control and have demonstrated NO_x conversion efficiencies greater than 90 percent with a diesel reductant over a broad range of exhaust temperatures. However, sulfur masking of NO_x sorption sites causes a decrease in NO_x conversion performance. In order to meet durability requirements for the U.S. 2007 diesel NO_x emission regulations, control of the negative effects of sulfur will be required. One method for controlling sulfur masking is desulfation – the process of removing the sulfur from the catalyst sites and reactivating the sites for NO_x sorption. The process of sulfur masking and desulfation has been studied with the SpaciMS technique. The SpaciMS technique utilizes a mass spectrometer with capillary probes inserted into the catalyst cells to monitor exhaust gases at different spatial locations along the catalyst cell. Data from SpaciMS analysis of a NO_x adsorber catalyst before sulfur masking, after sulfur masking, and after desulfation will be shown. The role of desulfation in meeting the durability requirements will be discussed.