

Deactivation of Accelerated Engine-Aged and Field-Aged SCR Catalysts and the Role of the DOC

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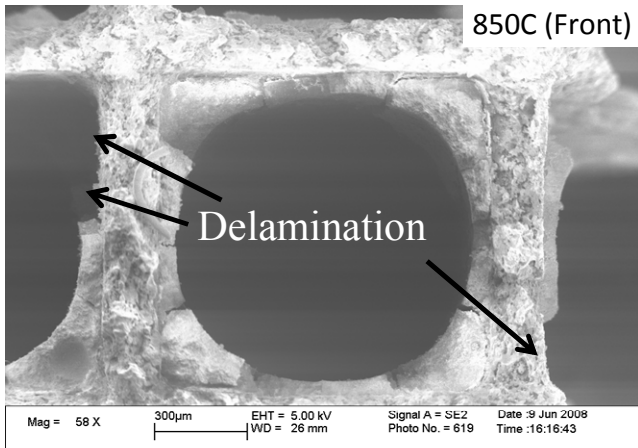
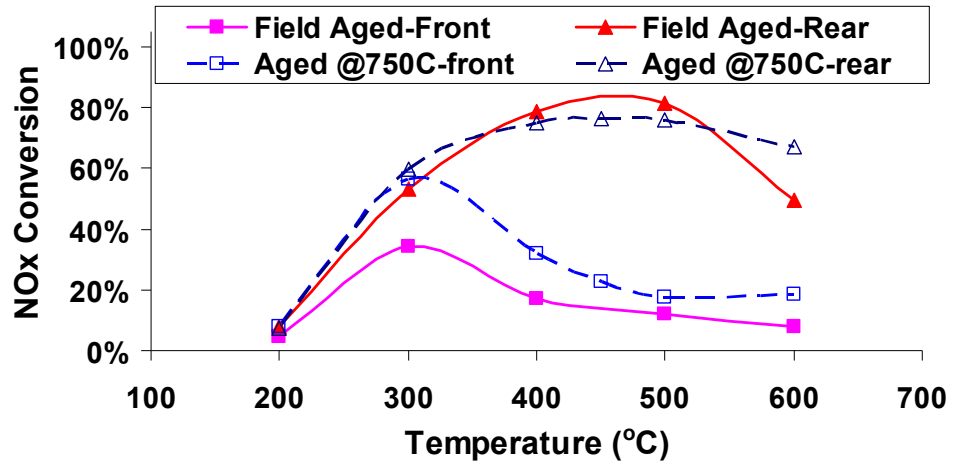
August 5, 2009

15th DEER
Dearborn, MI

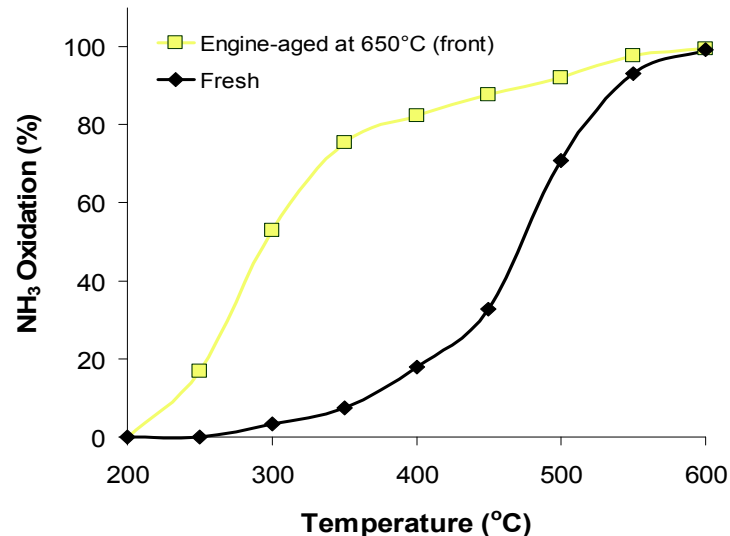


Technique for accelerated aging of SCR system (DOC→SCR→DPF) reveals two deactivation mechanisms and replicates field-aged effects

- Accelerated aging at ORNL/UT
 - Single cylinder engine
 - DOC→SCR→DPF
 - Aged at 650, 750, 850°C
- Field-aged devices obtained from Catalytic Solutions
 - End of life SCR from bus service



SEM micrographs of high temperature aged SCR catalyst washcoat surfaces



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Characterization and Evaluation of Engine-Aged Emissions Control Devices using Biodiesel Fuel

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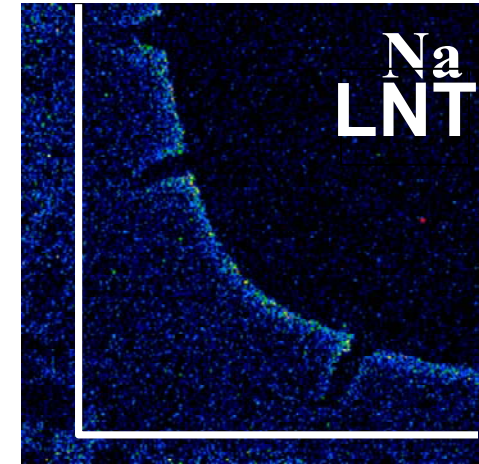
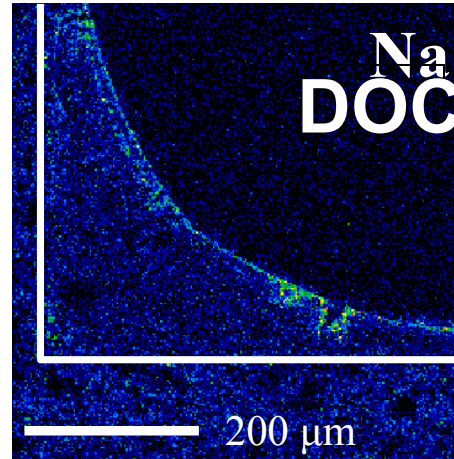
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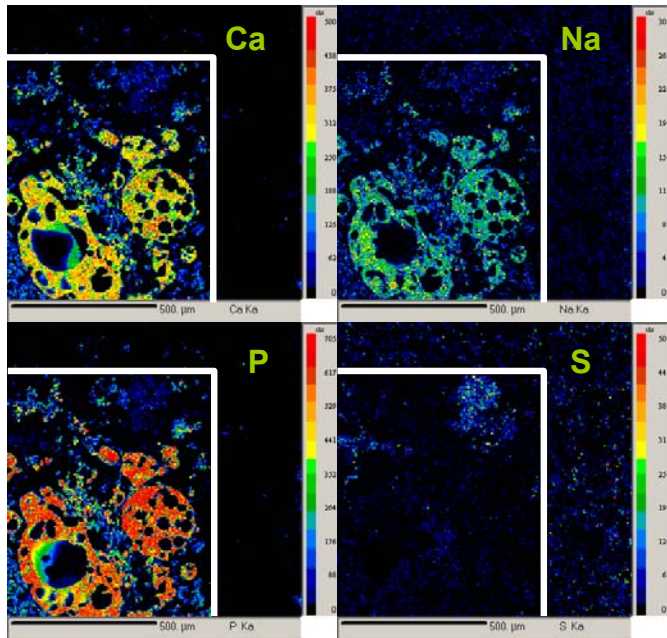
Determine impact that biodiesel-borne Na has on emissions control devices

- Engine- and Field-aged devices obtained from industrial partners and characterized
 - Goal: measure presence of Na in devices; determine if it is impacted performance

Na at washcoat surface of DOC & LNT



EPMA of ash plugs in DPF



- Path forward: develop and implement an accelerated-aging technique allowing the isolated measurement of Na effects...including SCR



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