

## Experts contribute to special edition of *Catalysis Today*

Articles discuss science and reducing emissions from diesel engines

In *Catalysis Today*, July 2008, users of the Department of Energy's EMSL provided several invited papers on improving catalyst technologies to reduce greenhouse gas emissions from diesel engines. These engines could improve the fuel economy of vehicles by 25 to 35% compared to gasoline engines. However, current catalytic converters are not effective at reducing engine emissions of nitrogen oxides or NO<sub>x</sub>, which can cause health and environmental problems.

The authors, from Pacific Northwest National Laboratory's Institute for Interfacial Catalysis and the Bilkent University in Turkey, wrote on

- Investigating the interaction of dimethyl ether as a reducing agent for the selective catalytic reduction of NO<sub>x</sub> with hydrocarbons using EMSL in-situ Fourier transform infrared spectroscopy (FTIR), residual gas analysis, and temperature programmed desorption (TPD) techniques.
- Examining NO<sub>x</sub> storage properties of several alkaline earth oxides supported on  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> using TPD, and EMSL's FTIR and magic angle spin nuclear magnetic resonance spectrometer.
- Promoting the stability of lean-NO<sub>x</sub> trap catalysts by limiting platinum sintering during sulfur removal using EMSL's transmission electron microscope and x-ray photoelectron spectroscopy.

In addition, two of the guest editors are EMSL users: William Epling, assistant professor at the University of Waterloo in Canada, and Chuck Peden, interim director of the Institute for Interfacial Catalysis at PNNL.

For more information, contact EMSL Communications Manager Mary Ann Showalter (509-371-6017).

**References:** Epling WS, I Nova, and CHF Peden. 2008. "Preface." *Catalysis Today* 136(1-2):1-2.

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Ozensoy E, DR Herling, and J Szanyi. 2008. "NO<sub>x</sub> reduction on a transition metal-free  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> catalyst using dimethylether (DME)." *Catalysis Today* 136(1-2):46-54.

Verrier CLM, JH Kwak, DH Kim, CHF Peden, and J Szanyi. 2008. "NO<sub>x</sub> uptake on alkaline earth oxides (BaO, MgO, CaO and SrO) supported on  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>." *Catalysis Today* 136(1-2):121-127.

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Experts at EMSL are working to reduce harmful emissions of nitrogen oxides from diesel engines.