

Physical Mixture of Pt-BaO/CeO<sub>2</sub> and Cu/CeO<sub>2</sub> as an Active Catalyst Component for Low-Temperature Lean NO<sub>x</sub> Trap

김범식, 김평순<sup>1</sup>, 배준민, 정호진, 김창환<sup>1</sup>, 이현주<sup>†</sup>  
한국과학기술원; <sup>1</sup>현대자동차  
(azhyun@kaist.ac.kr<sup>†</sup>)

Pt-BaO/CeO<sub>2</sub> (PBC) is widely used as a lean NO<sub>x</sub> trap (LNT) catalyst to remove NO<sub>x</sub> exhaust from lean-burn engines. However, it is difficult to meet current emission regulations by using this Pt-BaO/CeO<sub>2</sub> catalyst because of its poor low-temperature activity. To enhance the NO<sub>x</sub> removal efficiency at low temperatures, Cu/CeO<sub>2</sub> (CC) catalyst was physically mixed with PBC catalyst. Physical mixture of PBC and CC (PBC+CC) showed a considerable synergy for NO<sub>x</sub> storage and reduction under lean-rich cycle operation. The origin of this synergy was carefully studied by the series of NO<sub>x</sub> storage, NO<sub>x</sub>-TPD, transient water-gas shift (WGS), NO<sub>x</sub>-TPR experiments. Under the lean cycle, CC exhibited a better NO oxidation activity, rendering much faster NO<sub>x</sub> storage on PBC. Under the rich cycle, CC achieved much better WGS activity for H<sub>2</sub> production over CC, accelerating the reduction of NO<sub>x</sub> which had been stored on PBC.