

**Mn-Fe/ZSM5 as a low temperature SCR catalyst for removing NO<sub>x</sub> from diesel engine: a study on the stability of the Mn-Fe/ZSM5**

김영진, 권혁재<sup>1</sup>, 이형주, 남인식\*, 정진우<sup>2</sup>, 차문순<sup>3</sup>, 여권구<sup>3</sup>

포항공과대학교 화학공학과; <sup>1</sup>삼성종합기술원 Environment group; <sup>2</sup>현대-기아 자동차 Power Train R&D Center;

<sup>3</sup>오텍 기술연구소

(isnam@postech.ac.kr\*)

Mn-based catalysts have been regarded as an alternative SCR catalyst, due to their outstanding low temperature activity and less toxicity. However, the stability of those catalysts has been rarely investigated yet. In the present study, eco-friendly Mn-Fe/ZSM5 has been developed as a low temperature SCR catalyst. The deNO<sub>x</sub> activity as well as stabilities of the catalyst including thermal stability and SO<sub>2</sub> tolerance were systematically examined and directly compared to those of the representative SCR catalysts. The Mn-Fe/ZSM5 catalyst showed superior deNO<sub>x</sub> activity to the CuZSM5 and CuCHA catalysts. Although NO conversion over the Mn-Fe/ZSM5 catalyst apparently decreased after aging, the thermal stability of the catalyst has been significantly enhanced upon the addition of rare earth metal which may moderate the alteration of MnO<sub>x</sub> dispersion on the catalyst surface during sintering. In addition, the Mn-Fe/ZSM5 based catalyst, particularly rare earth metal promoted one, revealed stronger sulfur tolerance than the other catalysts examined.