

Ag-based perovskite as a DOC for diesel engine exhaust

윤달영, 임은호, 김문규, 조병권, 남인식*, 정진우¹, 유승범¹
포항공과대학교; ¹현대자동차
(isnam@postech.ac.kr*)

For a diesel oxidation catalyst (DOC) oxidizing CO and hydrocarbon, the oxidation of NO into NO₂ is also an important role for DOC to improve the deNO_x activity of NH₃/SCR and LNT systems in the downstream of DOC installed into diesel after-treatment system. It has been commonly recognized that Pt-based catalyst is effective for the oxidation of NO. However, the use of Pt becomes limited, due to its high cost and poor thermal stability. In the present study, La_{1-x}A'_xBO₃ perovskite (A'=Ag, Sr, B=Mn, Co) were prepared and examined for developing a new catalyst formulation revealing high DOC activity. Among the catalysts prepared, the Ag-containing perovskite revealed not only the superior CO and C₃H₆ oxidation activity, but also the considerable NO oxidation activity compared to the Sr-based perovskite. In particular, the oxidation activity of NO and CO over Ag-based perovskite was higher than that over the commercial DOC, although this trend reversed in the C₃H₆ oxidation activity. The high DOC activity of the Ag-containing perovskite might be due to the abundant oxygen vacancies and the metallic Ag species formed on the surface of perovskite by partial substitution of Ag into the A site of perovskite.