Promoting effect of CO on low-temperature NOx adsorption over Pd/CeO_2

황성하, 김용우, 이재하, 이은원, 김도희†
서울대학교
(dohkim@snu.ac.kr†)

Passive NOx adsorbers (PNA) adsorb NOx at low temperatures and release NOx at high temperatures, where downstream catalytic converters can operate effectively. Pd/CeO_2 is one of the promising catalysts for PNA applications with excellent NOx adsorption as well as CO oxidation ability. Understanding the correlation between CO and NOx adsorption is an essential process in the development of PNA materials. Therefore, in this study, the promoting effect of CO on the NOx adsorption ability of Pd/CeO_2 at low temperatures was investigated. The NOx adsorption ability significantly increased when CO gas was included in the feed stream. A mechanism for this promoting effect was suggested with experimental data such as CO oxidation ability during the NOx adsorption. The model suggests that NOx was adsorbed at the oxygen vacancies of CeO_2 near the Pd particle, which were generated during CO oxidation.