

SO<sub>2</sub> tolerance of Pd/(Ce-Zr)O<sub>2</sub> catalysts for CO oxidation유영석, 김도희\*, 이효경<sup>1</sup>, 정진우<sup>1</sup>, 유승범<sup>1</sup>서울대학교; <sup>1</sup>현대자동차

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The continuing demand for the reduction of harmful exhaust emissions from the vehicle has led to develop more effective emission control system. The diesel oxidation catalyst (DOC) plays an important role in removing CO and hydrocarbons (HCs) of diesel exhaust gas. However, since DOC is located right after the engine, it is liable to deactivation under high-temperature environment, resulting in the PGM sintering and the collapse of surface area. CeO<sub>2</sub> is a crucial support and component in DOC because of oxygen-storage capacity (OSC) property. The alteration of its oxidation state between the Ce<sup>4+</sup> and Ce<sup>3+</sup> facilitates oxidation of CO, HCs, and soluble organics emitted from the engine. However, it is readily damaged by heat and sulfur. Sulfur poisoning to ceria easily form cerium sulfate, which disturb the redox cycle in the OSC. To improve the physicochemical properties of pure ceria, ZrO<sub>2</sub> is added to form mixed oxide solid solution. This research aims at understanding the role of ZrO<sub>2</sub> in sulfur tolerance, especially focusing on the effect of SO<sub>2</sub> adsorption/desorption treatment on the CO oxidation activity over Pd/CeO<sub>2</sub> and Pd/(Ce-Zr)O<sub>2</sub> catalysts.