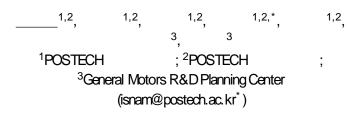
Effect of CZO loading on catalytic performance of Rh -based TWCs



Recently, cerium-zirconium oxide (CZO) has been employed as an alternative support of the Rh-based TWC to Al2O3 for stabilizing Rh by preventing the formation of inactive Rh-aluminate. In the present study, the effect of the CZO content on the catalytic performance of both commercial and lab-prepared model Rh/CZO TWCs has been systematically investigated under the sweep test condition (0.7-1% O2, 1.0 Hz). For the 4k-mile stabilized catalysts, the TWC performance of both the commercial and lab-prepared model Rh/CZO was insensitive to the catalyst CZO loading varied from CZO20 (Ce:0.62 wt.% & Zr: 1.35 wt.%) to CZO140 (Ce:4.42 wt.% & Zr:8.86 wt.%). However, the TWC performance of the 100k-mile aged Rh/CZO catalyst with respect to the CZO loading was in the following decreasing order: CZO140 \approx CZO100 > CZO60 > CZO20. As confirmed by CO -chemisorption and OSC analysis, the optimum CZO content in the Rh/CZO TWC is CZO100 (Ce: 3.48 wt.% and Zr: 6.87 wt.%), which plays the critical role in maintaining the durability of the TWC performance upon the thermal aging.