Supplementary Information

Promotion of low-temperature oxidation of CO over Pd supported on titania-coated ceria

Atsushi Satsuma,[*,a,b] Masatoshi Yanagihara,[a] Kaoru Osaki,[a] Yurina Saeki,[a] Heng Liu,[a] Yuta Yamamoto,[c] Shigeo Arai,[c] and Junya Ohyama [a,b]

[a] *Graduate School of Engineering, Nagoya University, Nagoya 464-8603, Japan.*
[b] *Unit of Elements Strategy Initiative for Catalysts & Batteries, Kyoto University, Kyoto 615-8530, Japan.*
[c] *Ecotopia Science Institute, Nagoya University, Nagoya, 464-8603*
[*] *Corresponding author: FAX: +81-52-789-3193; Tel: +81-52-789-4608; E-mail: satsuma@apchem.nagoya-u.ac.jp*

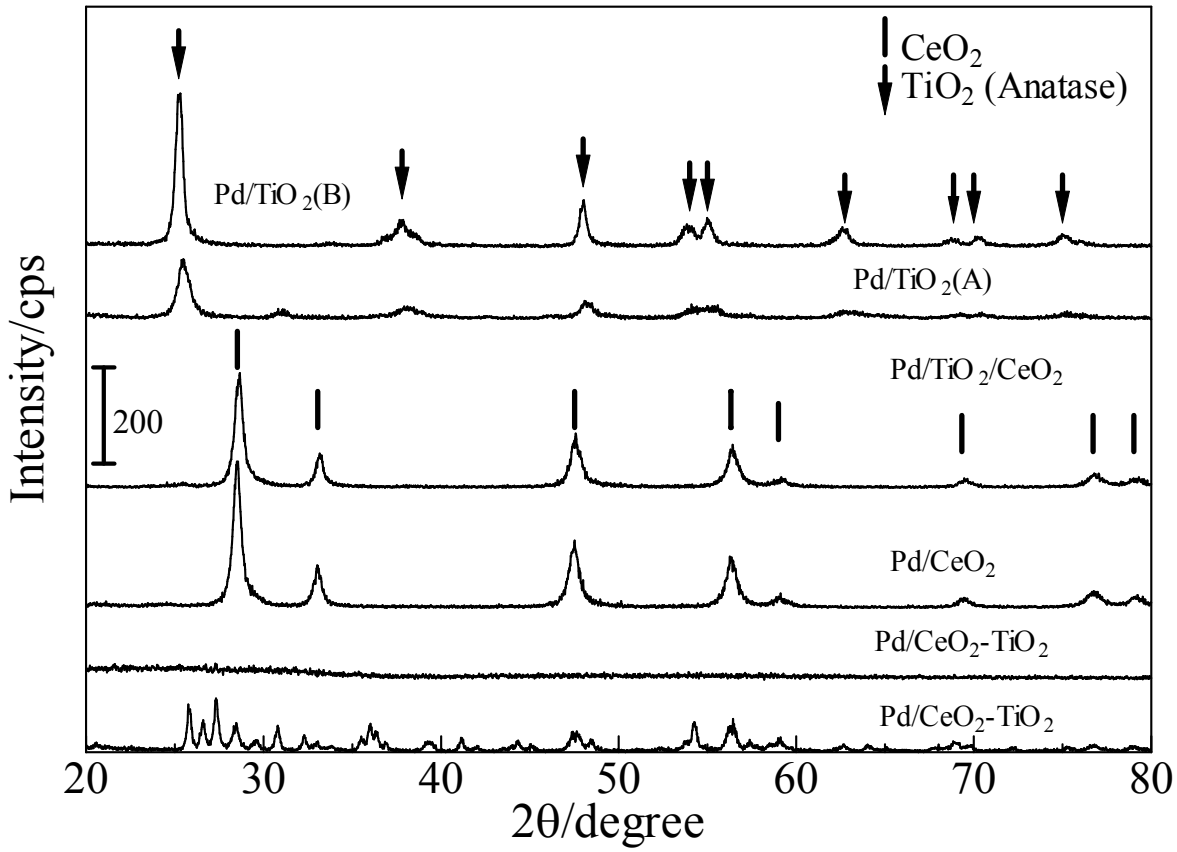

Fig. S1 XRD patterns of TiO_2- and CeO_2-based supported Pd catalysts. The patterns were recorded using XRD patterns were recorded on a Rigaku MiniFlex II/AP diffractometer with Cu Kα radiation.

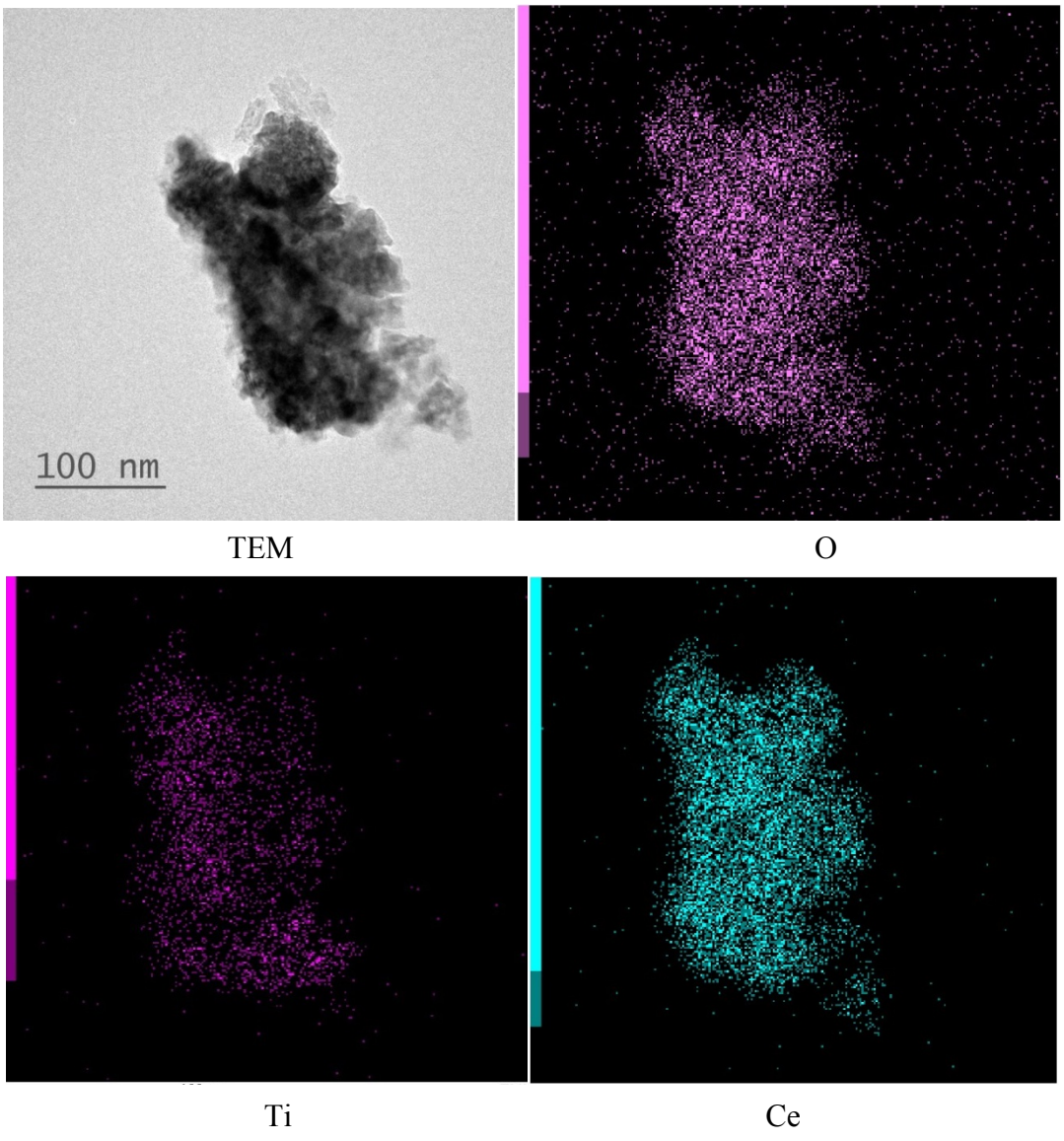

Fig. 2S TEM/EDS micrographs of TiO_2/CeO_2 support. TiO_2 (5.4 wt%) was impregnated at 4 ºC using $TiCl_4$ as a precursor. The micrographs were recorded using JEOL-200 kV Cs-corrected S/TEM.

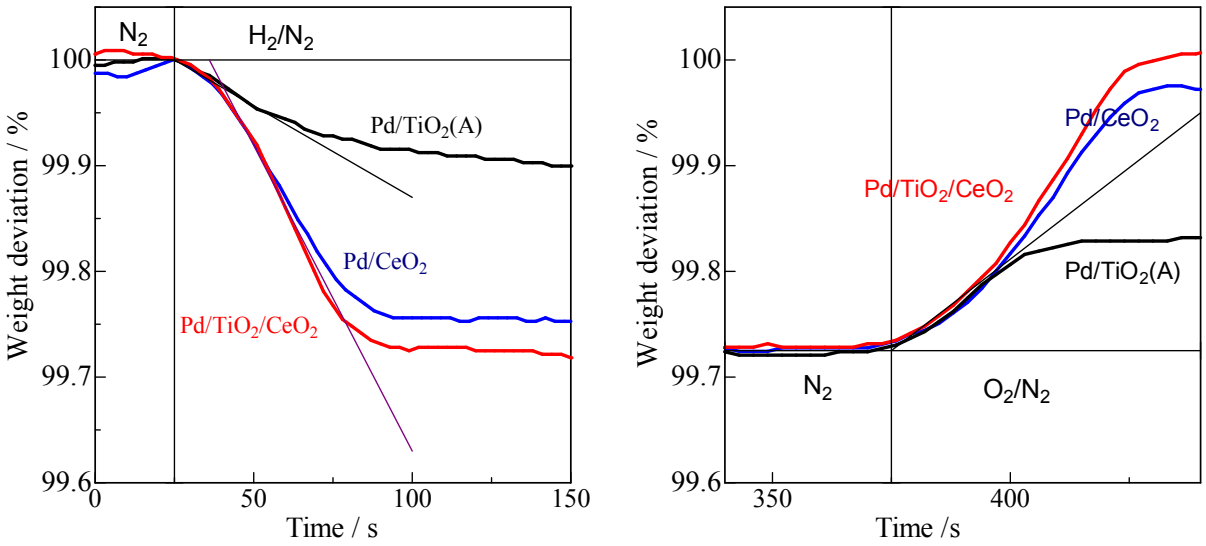

Fig. 3S Estimation of initial reduction and oxidation rates by weight deviation during O_2–H_2 periodic operation at 300 ºC. Estimated reduction rates are -0.54×10^{-6} mol-O_2 g^{-1} s^{-1} for Pd/TiO_2, and -1.8×10^{-6} mol-O_2 g^{-1} s^{-1} for Pd/CeO_2 and $Pd/TiO_2/CeO_2$. Estimated oxidation rates are 0.94×10^{-6} mol-O_2 g^{-1} s^{-1} for all three catalysts.