Supporting Information

Influence of Crystal Facets of $SrTiO_3$ Nanosheet Supports on Pd Catalysts for Automotive Exhaust Purification

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CO pulse experiments: CO pulse experiments were carried out using a flow-type reactor (MicrotracBEL BELCATII). The sample (5 mg) was pretreated at 773 K in a flow of 5% H_2/Ar. Next, the reactor was purged with He gas, and CO (0.997 cm^3, 1 vol% in He = 0.434 μmol-CO $pulse^{-1}$) was injected into the reactor heated to 323 K. Pulse injections were separated by He purges. The outlet gas was analyzed using a thermal conductivity detector (TCD) gas chromatograph equipped with an MS-5A column.

Table S1. CO adsorption and Pd dispersion for Pd/$SrTiO_3$(111) and Pd/$SrTiO_3$(100).

Sapmle	CO adsorption (cm^3/g-cat)	Pd dispersion (%)
Pd/STO(111)	0.1753	8.3
Pd/STO(100)	0.0055	0.3

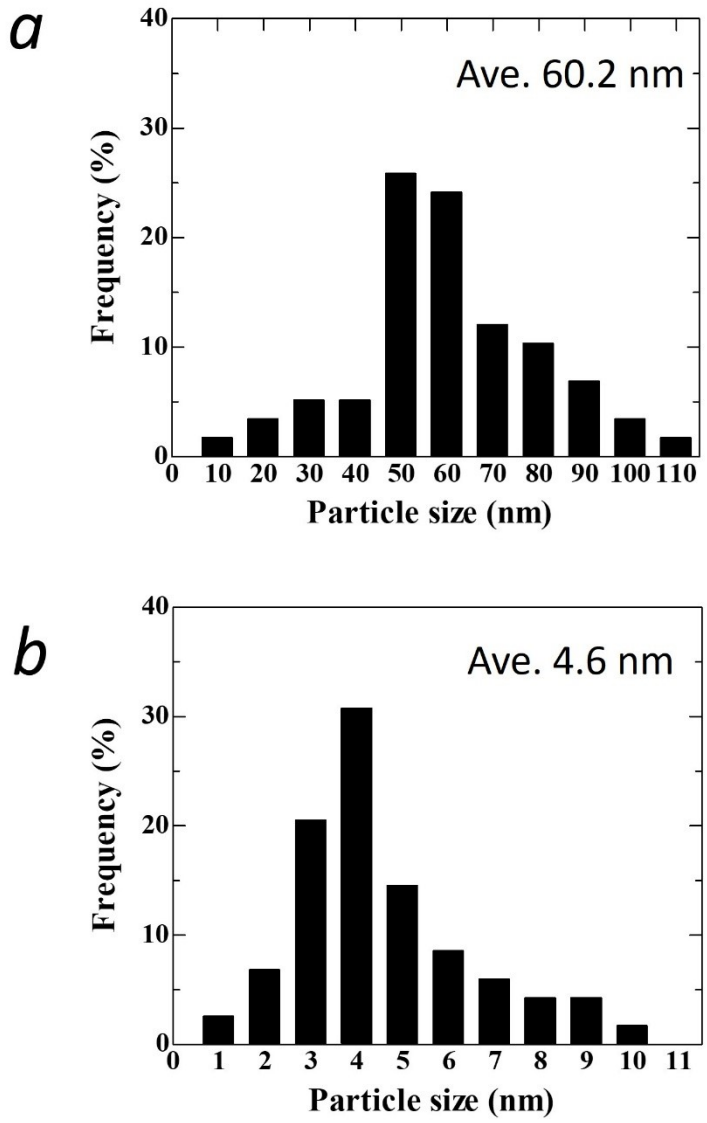

Figure S1. Histograms of the Pd particle size observed on Pd-loaded $SrTiO_3$(100)-facet after the catalytic reaction (a) and on Pd-loaded $SrTiO_3$(111)-facet after the catalytic reaction (b). The average Pd particle size for each sample is also indicated.

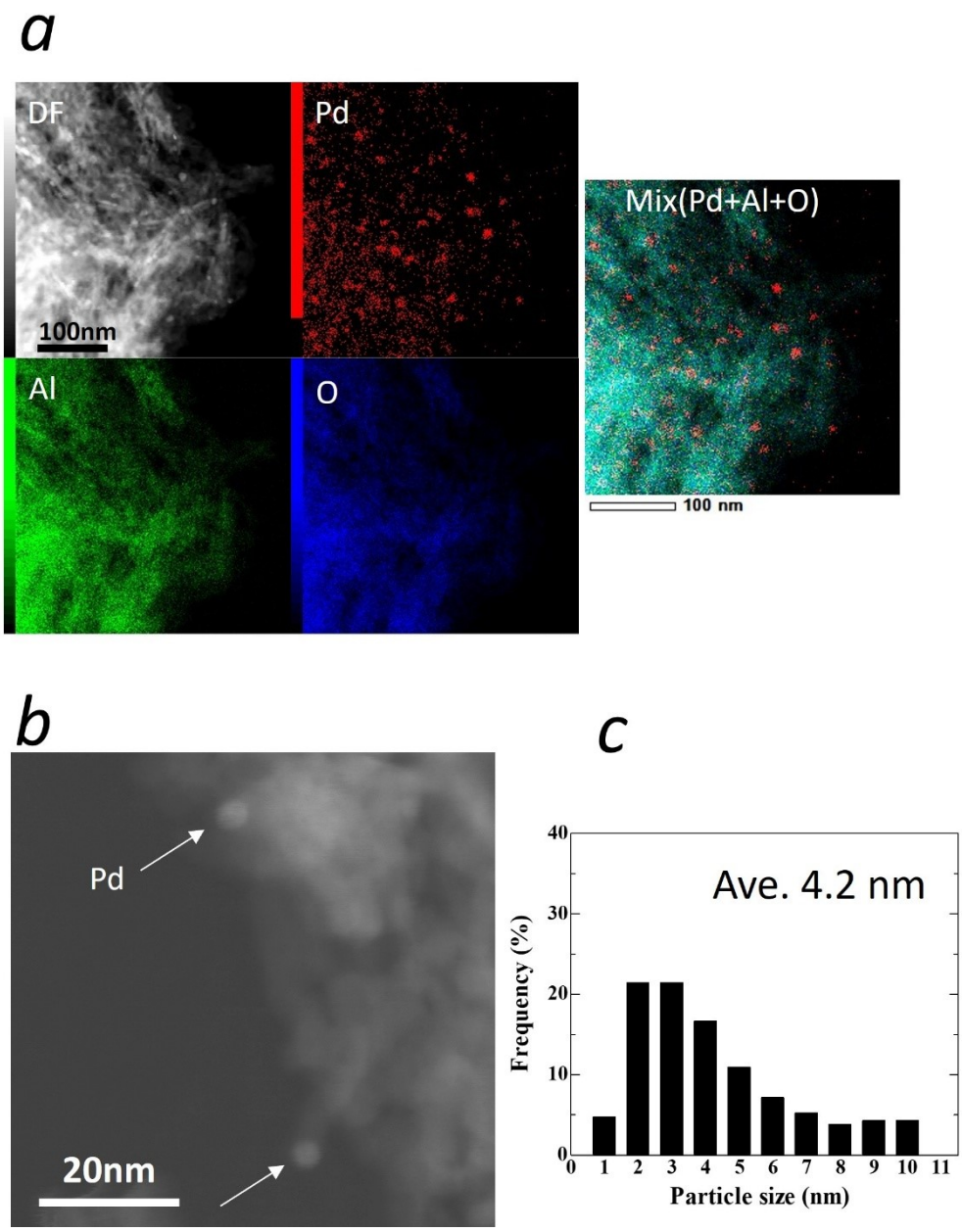

Figure S2. STEM-EDS elemental mapping of Pd/Al_2O_3 (a): DF image (gray), Pd (red), Al (green) and O (blue). HAADF-STEM image highlighting the morphology and dispersion state of Pd nanoparticles on the Al_2O_3 surface (b). Histograms of the Pd particle size observed on Pd/Al_2O_3 (c). The average Pd particle size is also indicated.

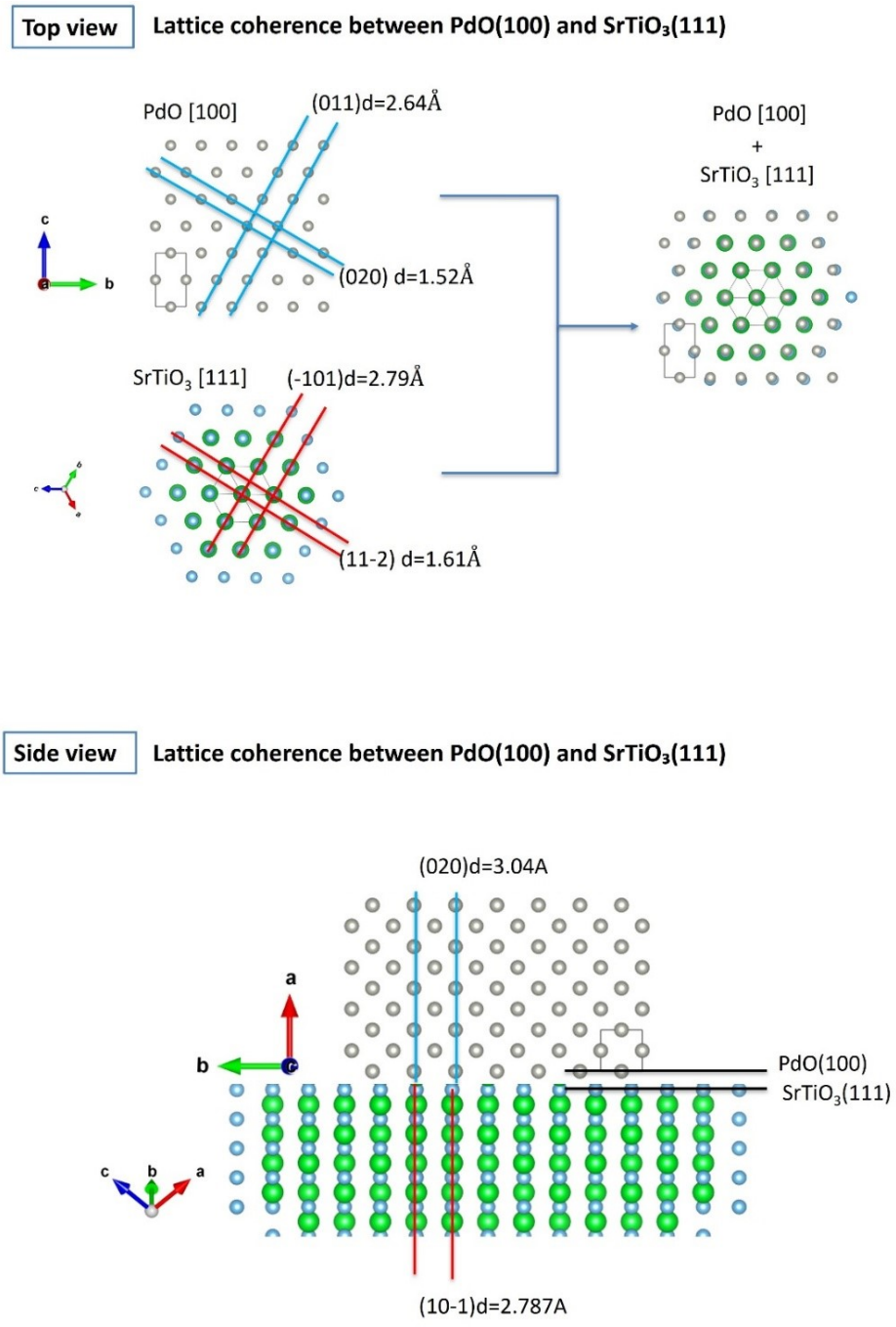

Figure S3. Possible atomic arrangement of PdO(100)-$SrTiO_3$(111) interface: Pd (gray), Sr (green), blue (Ti).