Supplementary Information

for

Ce-Zr-La/Al_2O_3 Prepared in Continuous Stirred -tank Reactor: A Highly Thermostable Support for Efficient Rh-based Three-way catalyst

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This Supplementary Information includes:

Table S1. Proportions of the pore diameter within a certain range for fresh and aged samples.

Sample	$P_{<2}$ nm (%)	$P_{2\text{-}10}$ nm (%)	$P_{10\text{-}16}$ nm (%)	$P_{16\text{-}24}$ nm (%)	$P_{24\text{-}32}$ nm (%)
CZLA-C-800	0.50	44.37	26.23	21.52	7.38
CZLA-B-800	2.16	48.68	26.52	14.49	8.15
CZLA-C-1000	0.49	32.61	26.64	29.65	10.61
CZLA-B-1000	1.33	25.61	35.06	26.62	11.38

Table S2. Lattice parameter and crystallite size detected by XRD.

Sample	Lattice parameter		Crystallite size (Å)
	a (Å)	*c* (Å)	
Standard $(Zr_{0.85}Ce_{0.15})O_2$	3.632	5.229	–
CZLA-C-800	3.627	5.260	55
CZLA-B-800	3.626	5.257	57
CZLA-C-1000	3.636	5.234	72
CZLA-B-1000	3.638	5.231	82

Table S3. Light-off temperatures ($T_{50\%}$) of NO, CO and C_3H_8 over catalysts.

Catalyst	NO	CO	C_3H_8
	$T_{50\%}$ (°C)	$T_{50\%}$ (°C)	$T_{50\%}$ (°C)
Rh/CZLA-C-f	172	169	270
Rh/CZLA-B-f	178	173	280
Rh/CZLA-C-a	209	207	410
Rh/CZLA-B-a	231	230	–

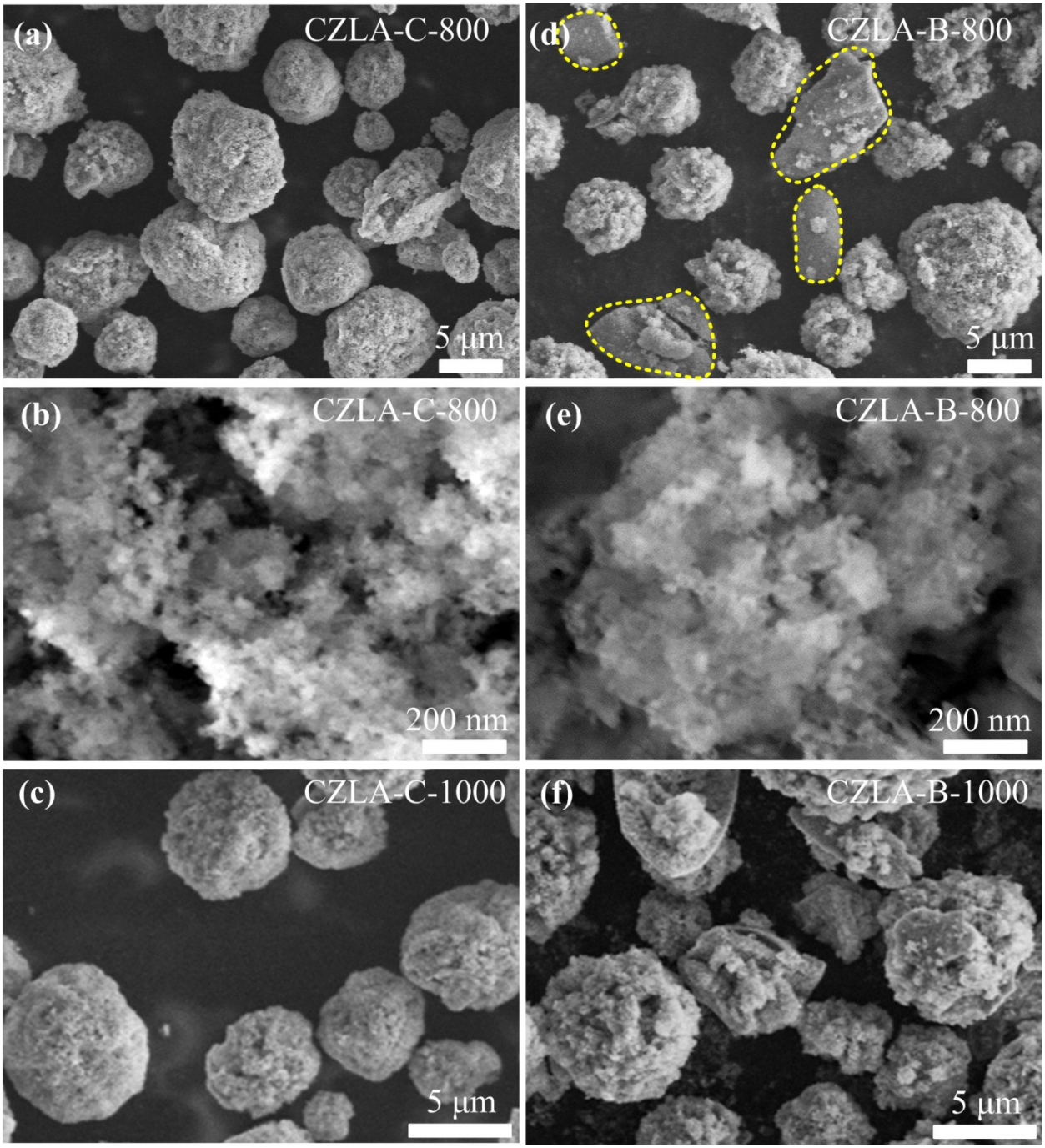

Figure S1. SEM images of the fresh samples (a) and (b) CZLA-C-800, (d) and (e) CZLA-B-800, and aged samples (c) CZLA-C-1000, (f) CZLA-B-1000.

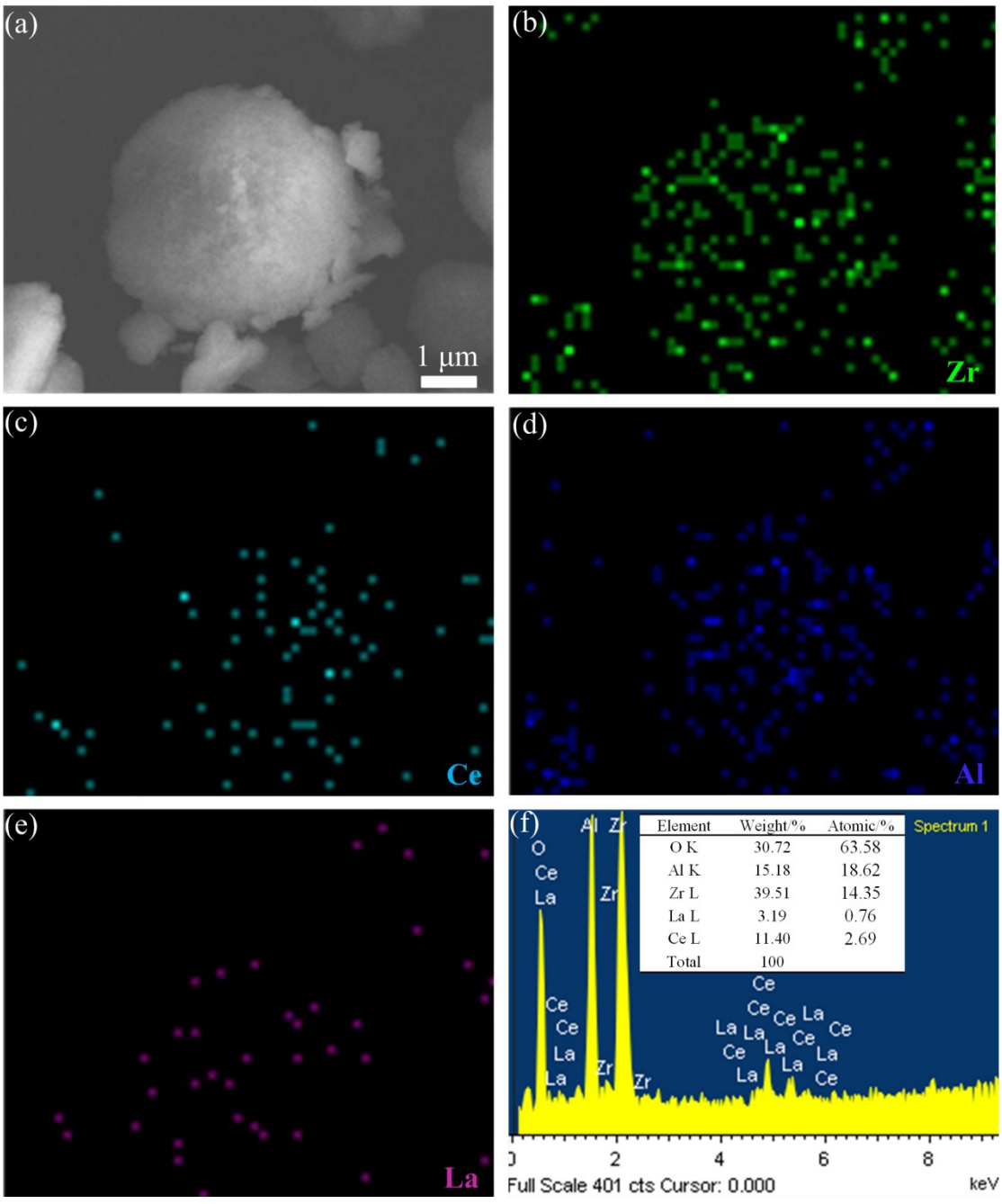

Figure S2. The elemental distributions and chemical composition of CZLA-C-800.

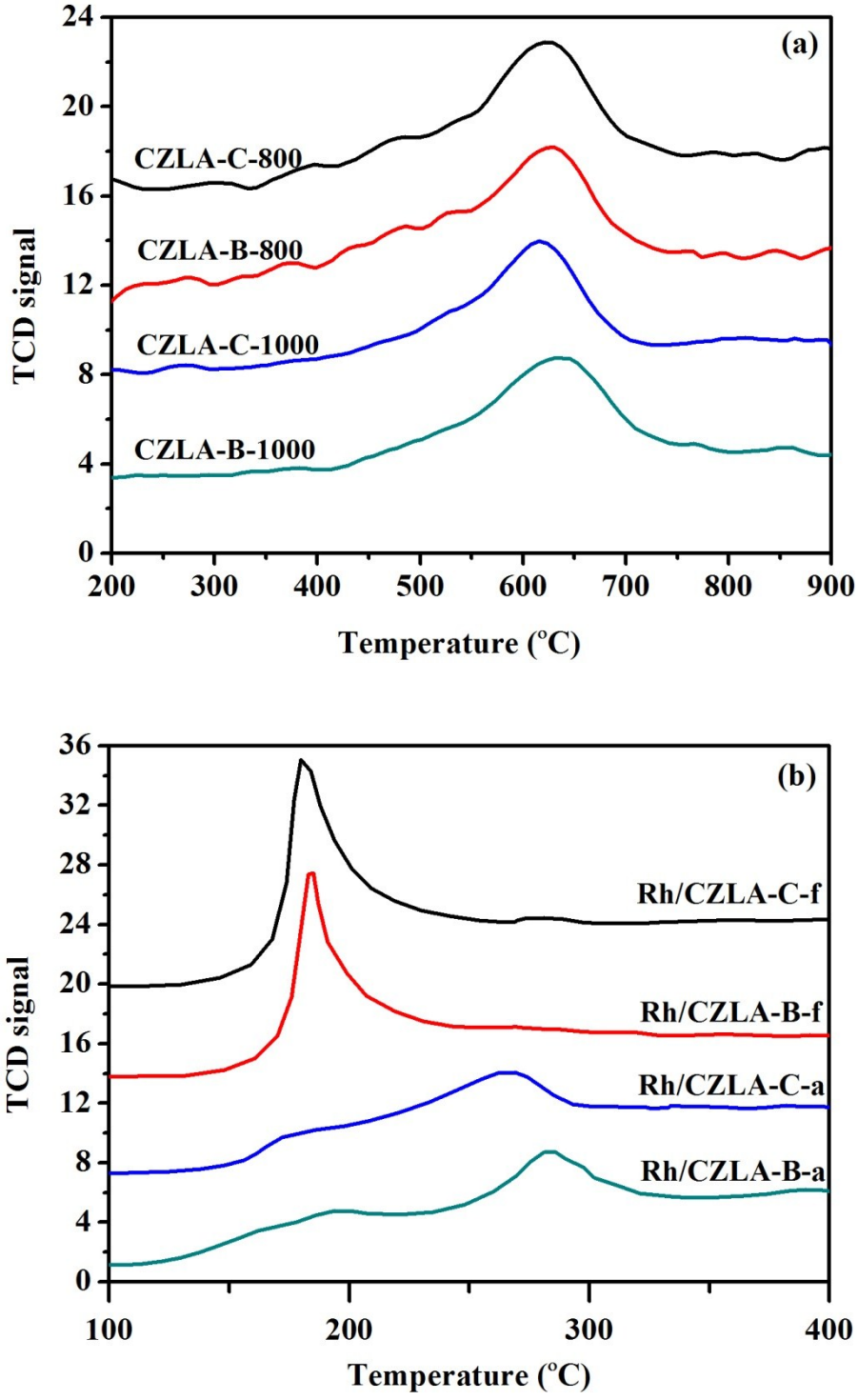

Figure S3. H_2-TPR profiles of the (a) fresh and aged support materials and (b) fresh and aged catalysts.

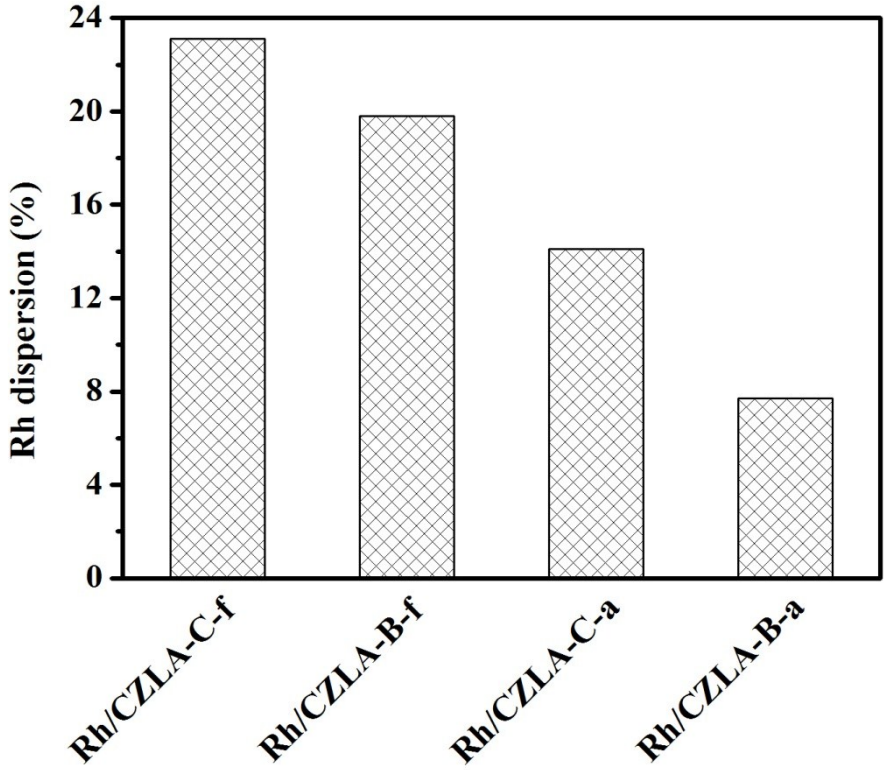

Figure S4. Rh dispersions of the fresh and aged catalysts.

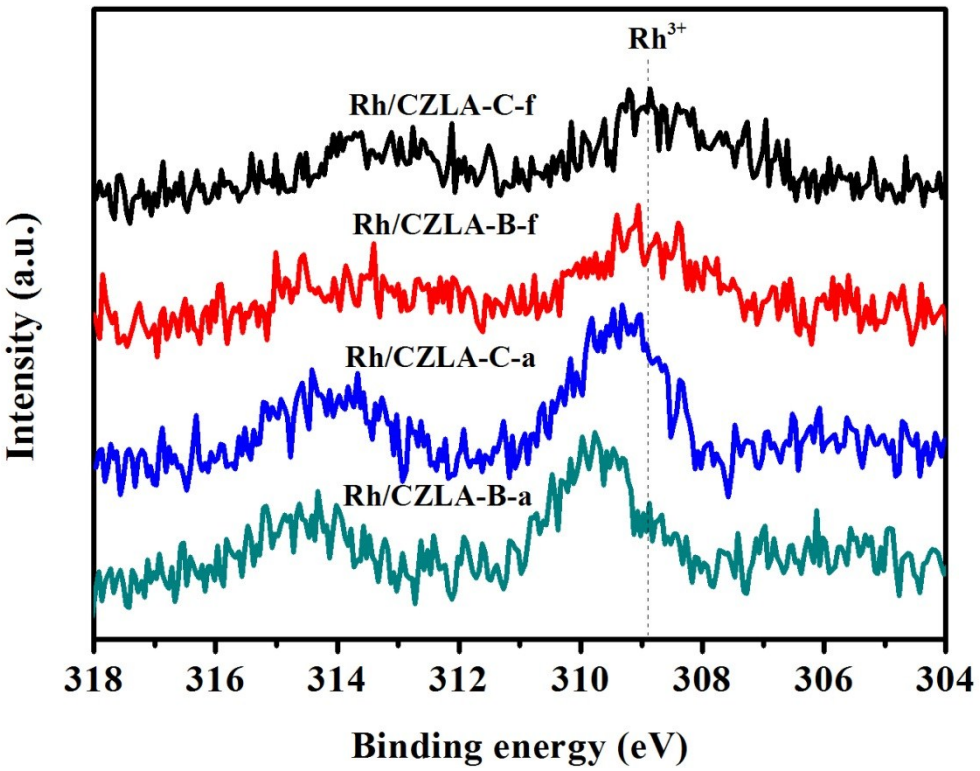

Figure S5. Rh 3d XPS spectra of the fresh and aged catalysts.