

Article

Sulfur-Resistant CeO₂-Supported Pt Catalyst for Waste-to-Hydrogen: Effect of Catalyst Synthesis Method

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Supplementary Materials:

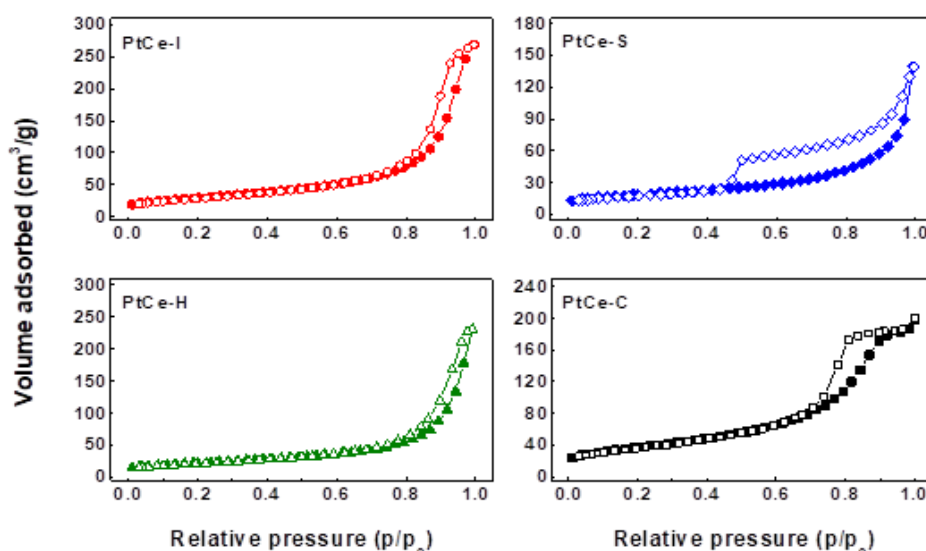


Figure S1. Adsorption-desorption isotherms of CeO₂-supported Pt catalysts prepared by various synthesis methods.

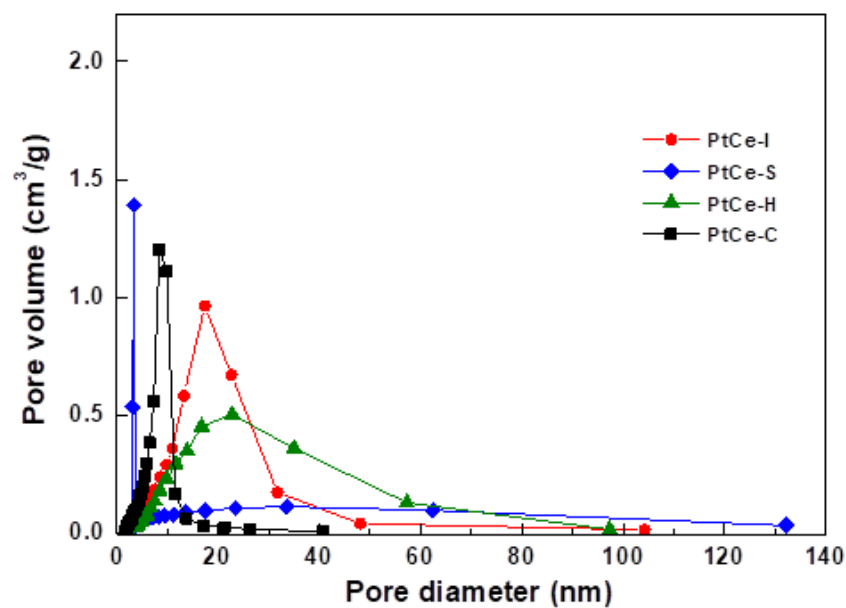


Figure S2. Pore distribution of CeO₂-supported Pt catalysts prepared by various synthesis methods.

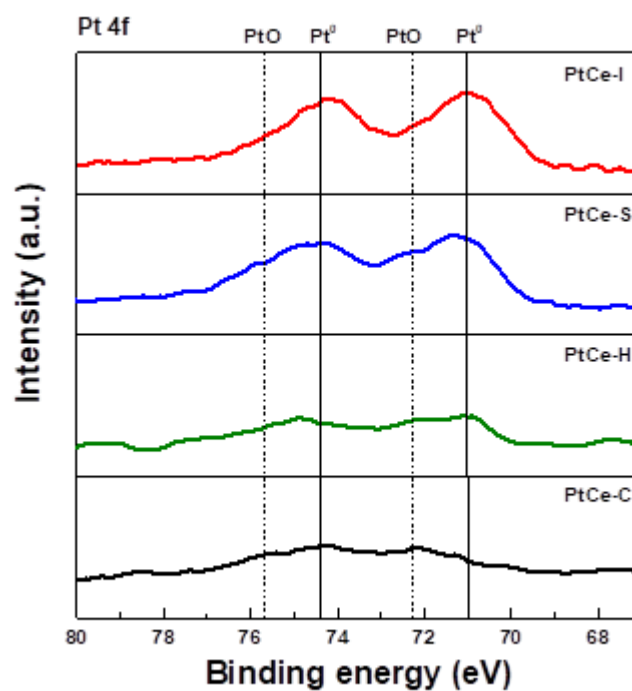


Figure S3. XPS Pt 4f spectra of poisoned CeO₂-supported Pt catalysts prepared by various synthesis methods.

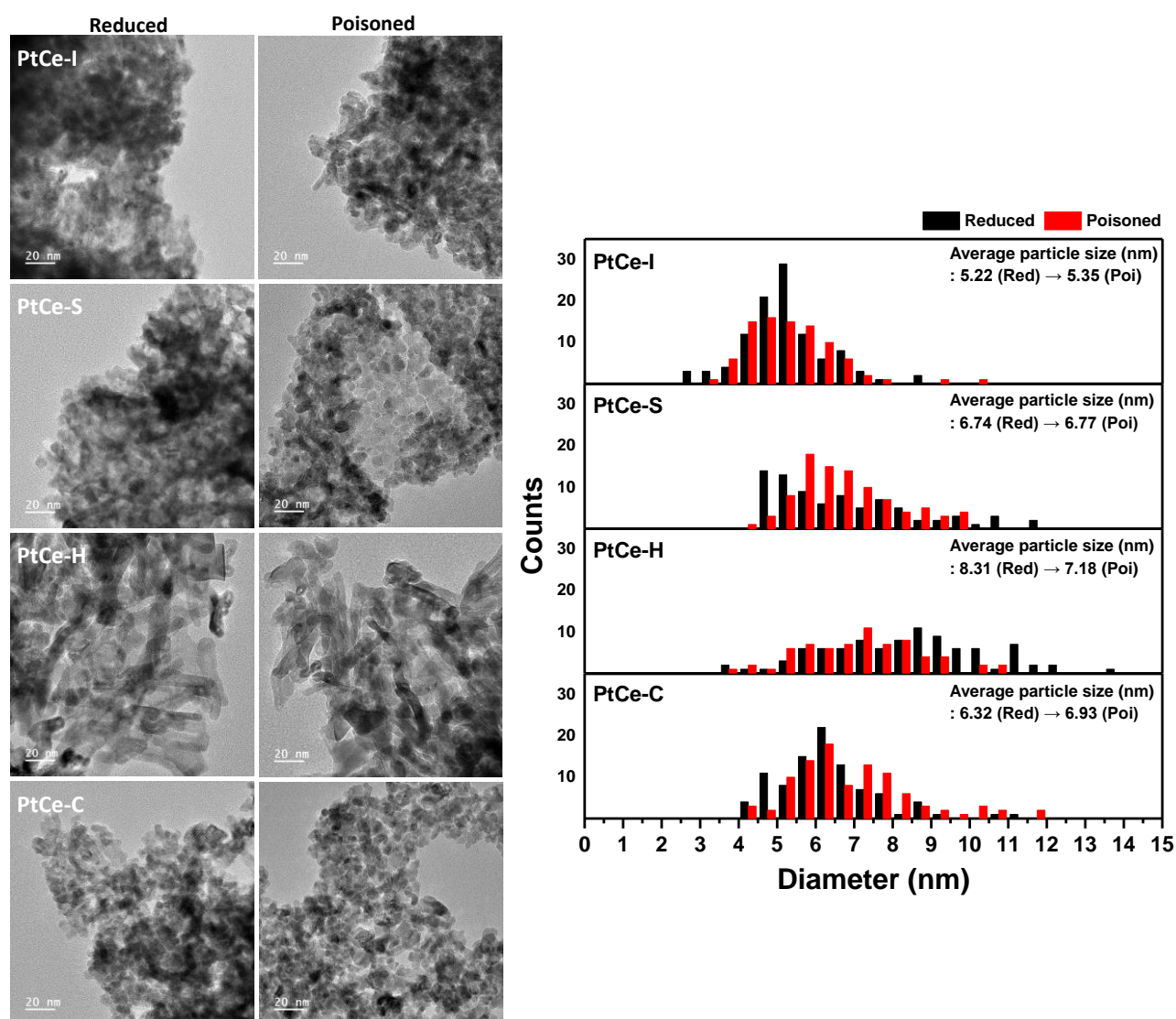


Figure S4. TEM images and particle size distribution results of CeO₂-supported Pt catalysts prepared by various synthesis methods.

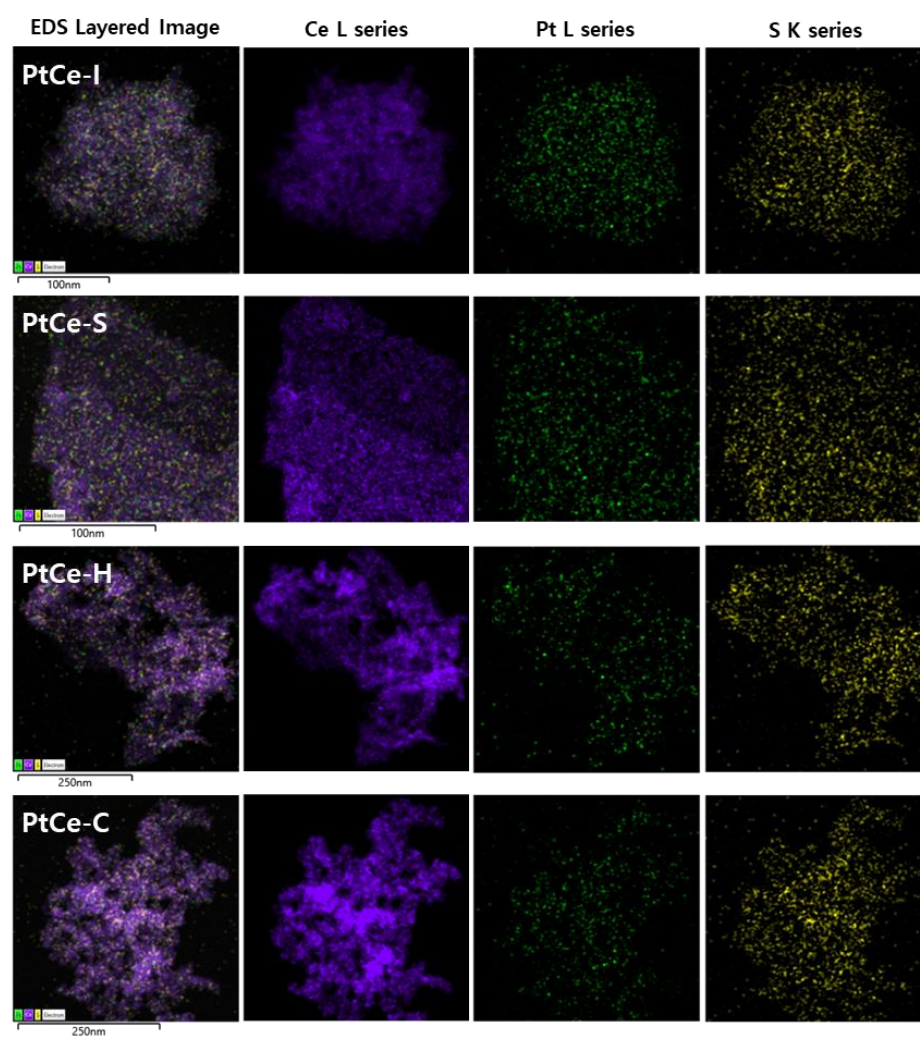


Figure S5. TEM images and EDS mapping results of poisoned CeO₂-supported Pt catalysts prepared by various synthesis methods.

Table S1. Numerical values of catalytic performance at initial (0 h) and poisoned (15 h) points of CeO₂-supported Pt catalysts prepared by various synthesis methods.

Catalyst	Time on stream (h)	CO conversion (%)	CO ₂ selectivity (%)	CH ₄ selectivity (%)	H ₂ yield (%)
PtCe-I	0	93.7	100	0	84.4
	15	85.1	100	0	77.7
PtCe-S	0	84.6	100	0	66.8
	15	63.8	100	0	58.7
PtCe-H	0	57.0	100	0	46.1
	15	28.1	100	0	26.7
PtCe-C	0	18.5	17.1	82.9	0.7
	15	4.1	4.4	95.6	1.0

Table S2. The actual Pt contents of as-synthesized catalysts determined by ICP-OES.

Catalyst	Pt content (wt%)
PtCe-I	1.96
PtCe-S	1.93
PtCe-H	1.88
PtCe-C	1.90