Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information

In-situ XAFS Characterization of the Electro-Oxidation Reaction of Ethanol on Pt Nanoparticles Supported on CeO_2 Nanoparticles and Nanorods in a Fuel Cell

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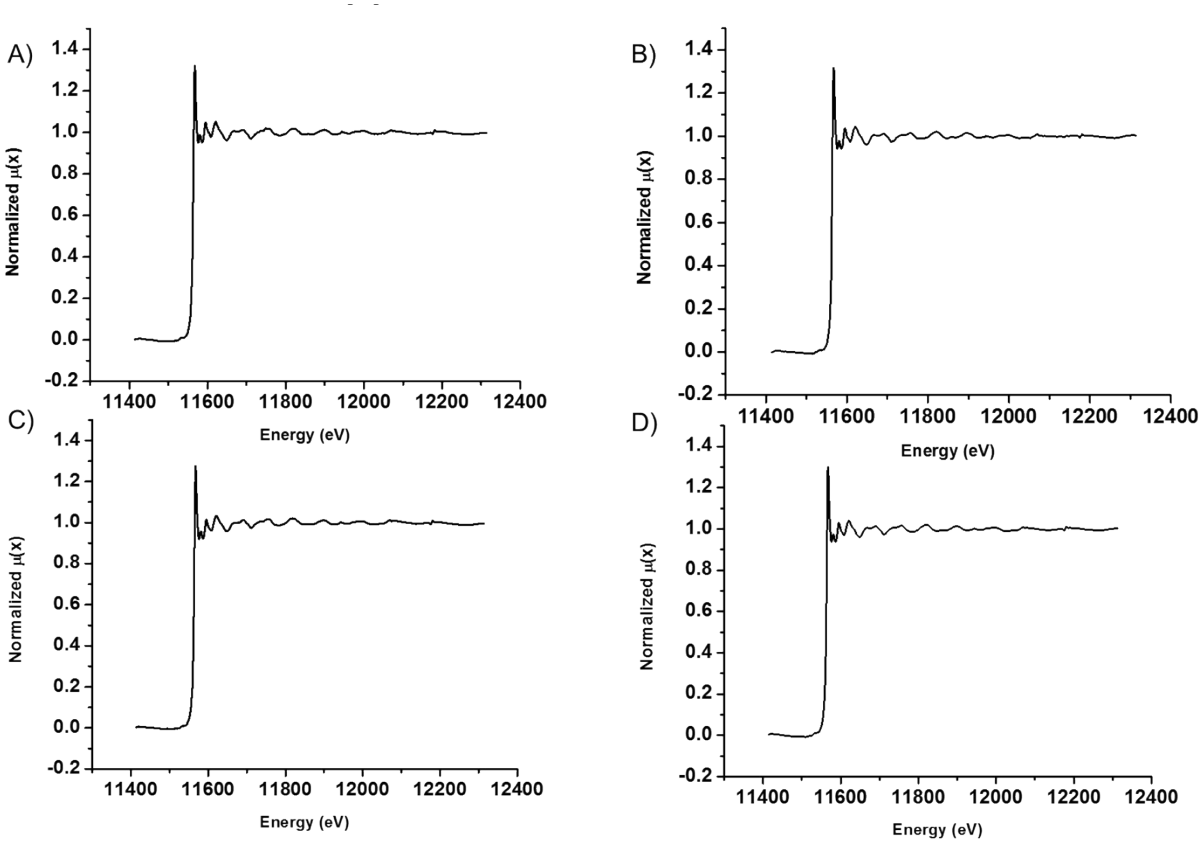

Figure S1. *In-situ* EXAFS of Pt/ceria NP in 0.1 M KOH at (A) -0.68 V (B) -0.35 V, (C) 0.00 V and (D) 0.30 V vs Ag/AgCl

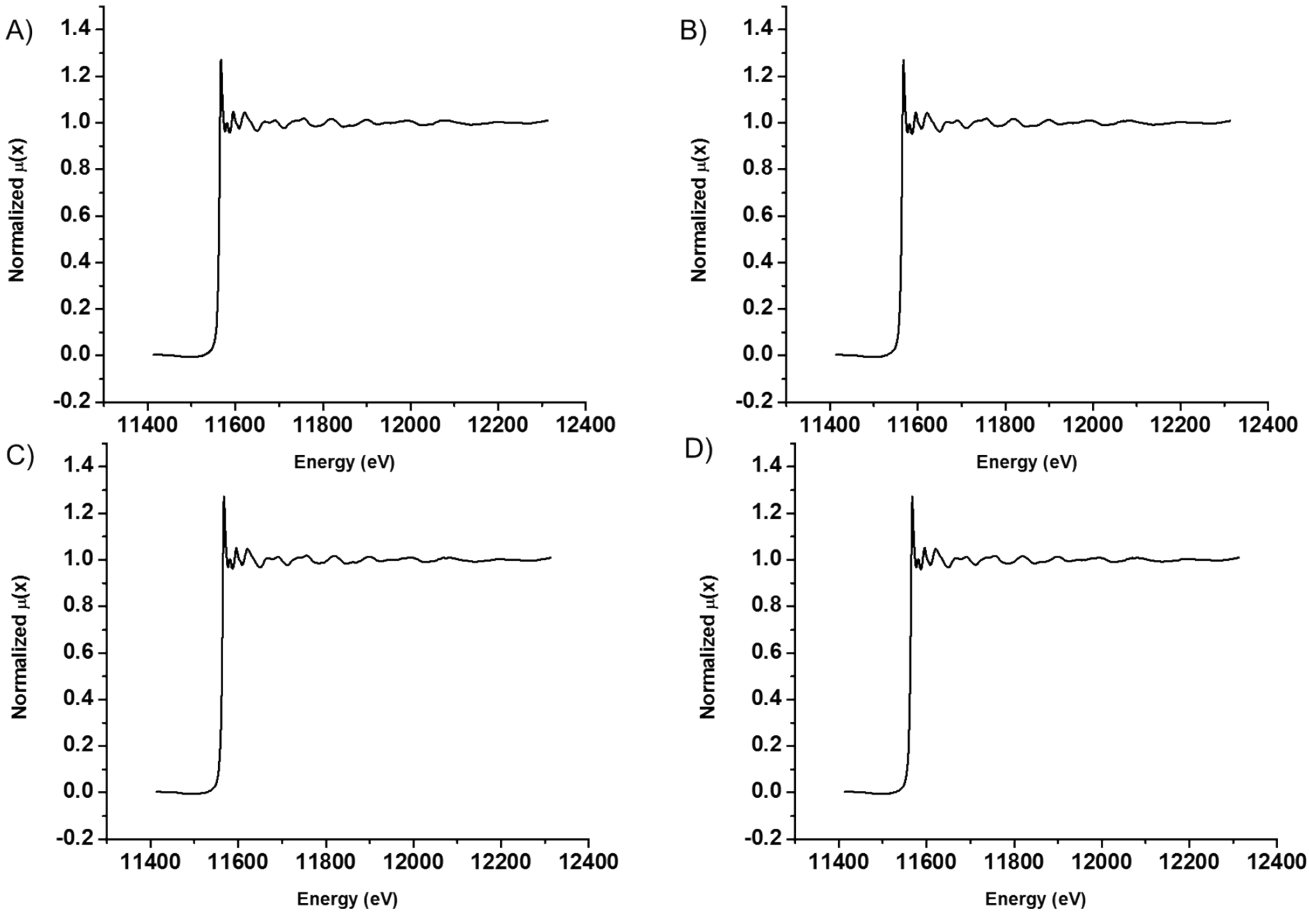

Figure S2. *In-situ* EXAFS of Pt/ceria NP in 0.5 M EtOH in 0.1 M KOH at (A) -0.68 V (B) -0.35 V, (C) 0.00 V and (D) 0.30 V vs Ag/AgCl.

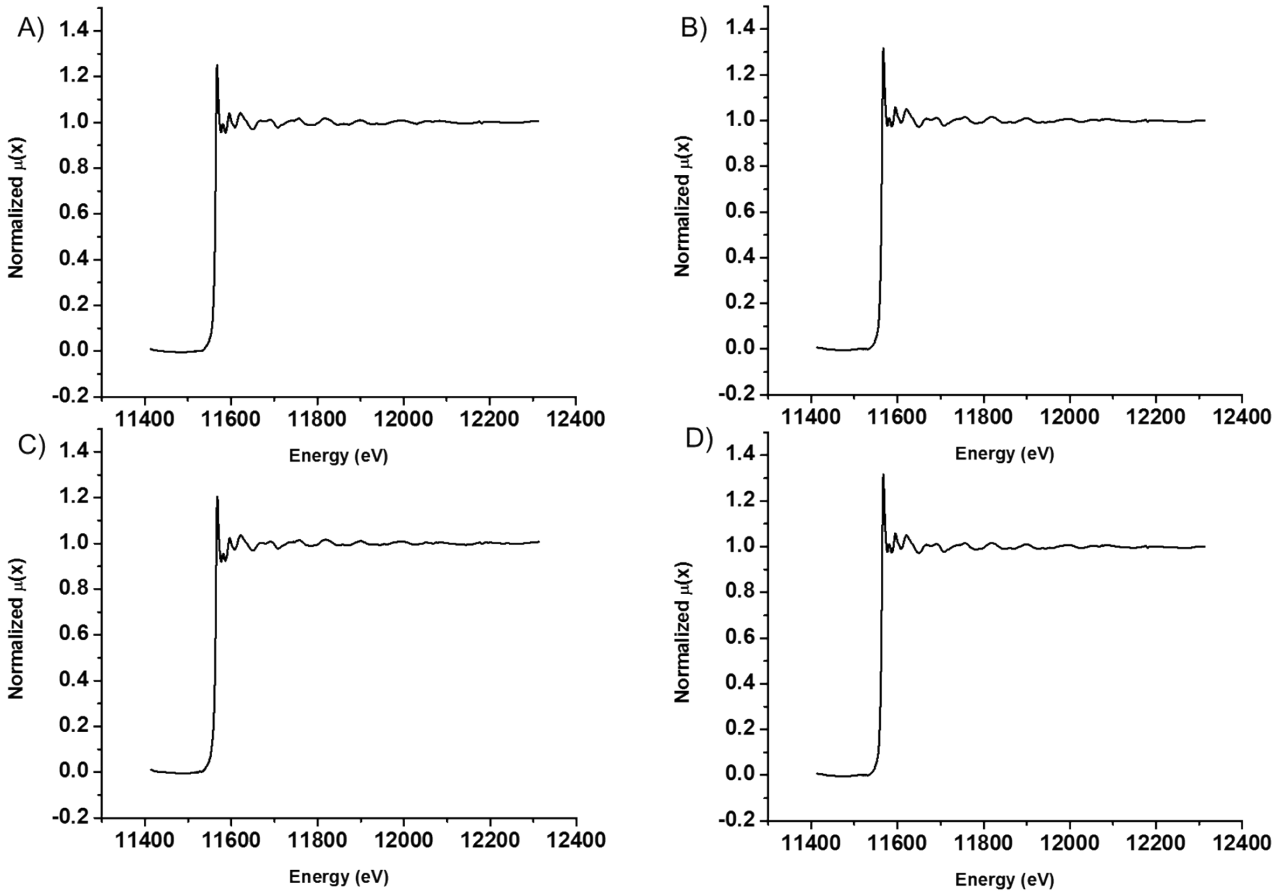

Figure S3. *In-situ* EXAFS on Pt/ceria NR in 0.1 M KOH (A) -0.68 V (B) -0.35 V, (C) 0.00 V and (D) 0.30 V vs Ag/AgCl.

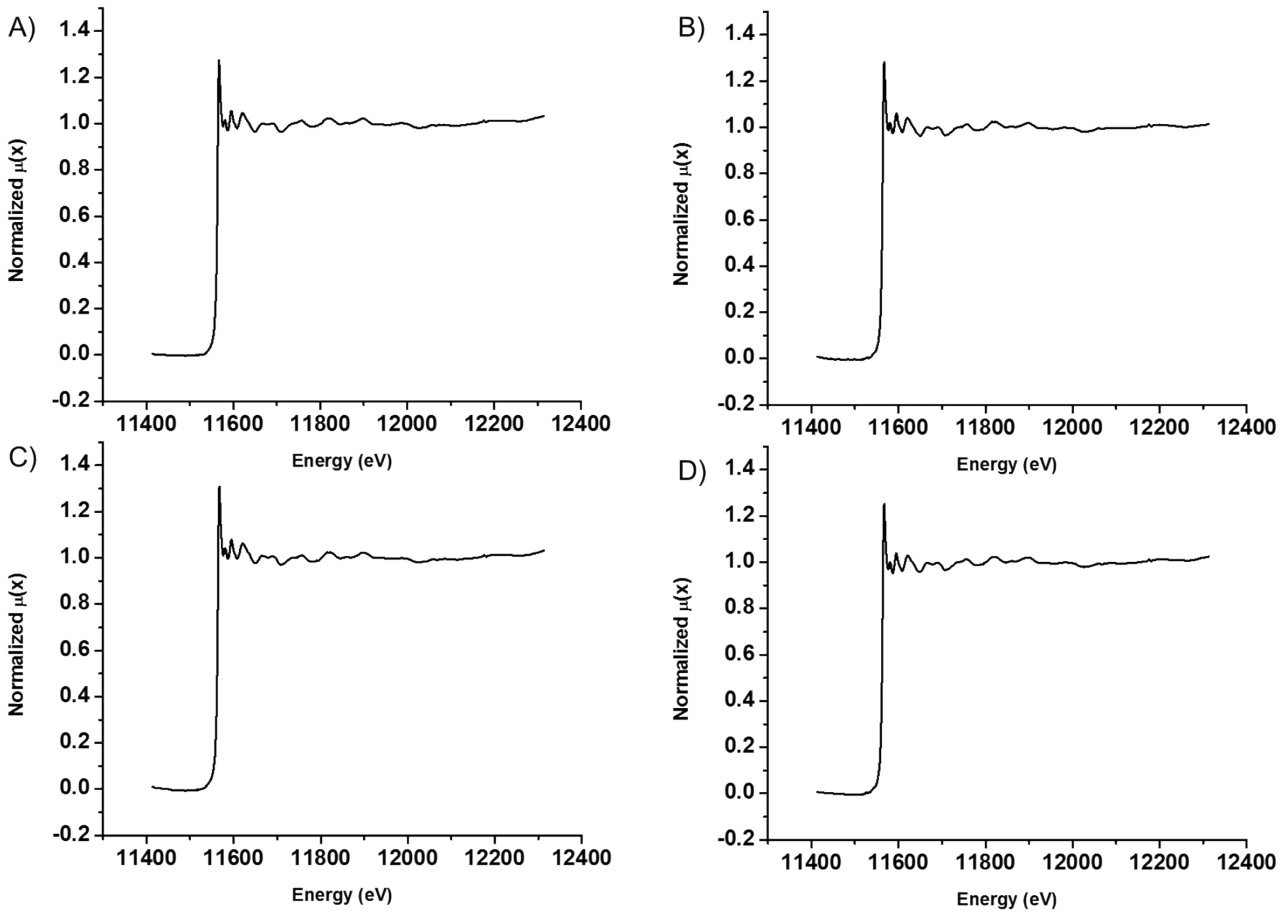

Figure S4. *In-situ* EXAFS of Pt/ceria NR in 0.5 M EtOH in 0.1 M KOH at (A) -0.68 V (B) -0.35 V, (C) 0.00 V and (D) 0.30 V vs Ag/AgCl.

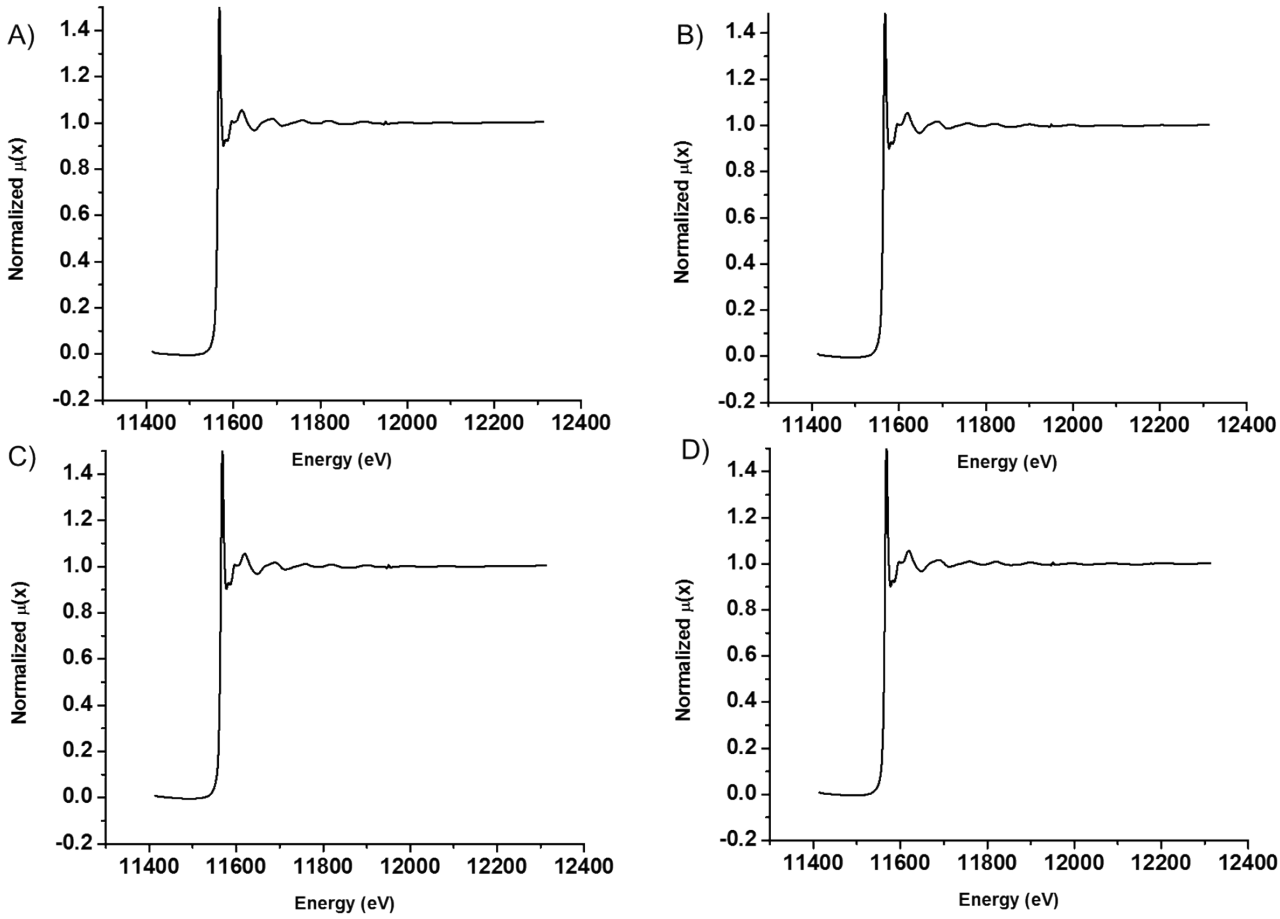

Figure S5. *In-situ* EXAFS on Pt/Vulcan in 0.1 M KOH (A) -0.68 V (B) -0.35 V, (C) 0.00 V and (D) 0.30 V vs Ag/AgCl.

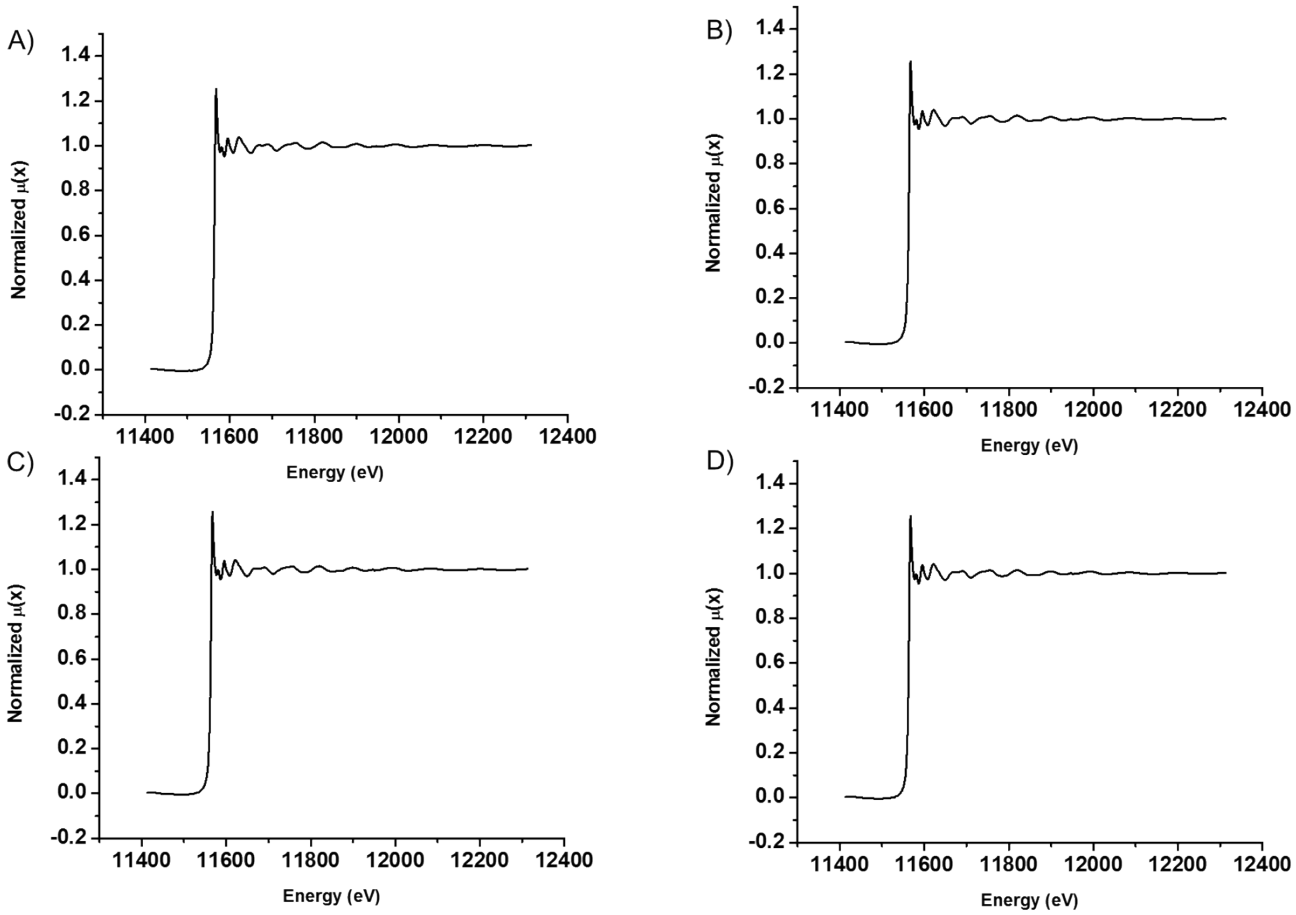

Figure S6. *In-situ* EXAFS of Pt/ceria NR in 0.5 M EtOH in 0.1 M KOH at (A) -0.68 V (B) -0.35 V, (C) 0.00 V and (D) 0.30 V vs Ag/AgCl.

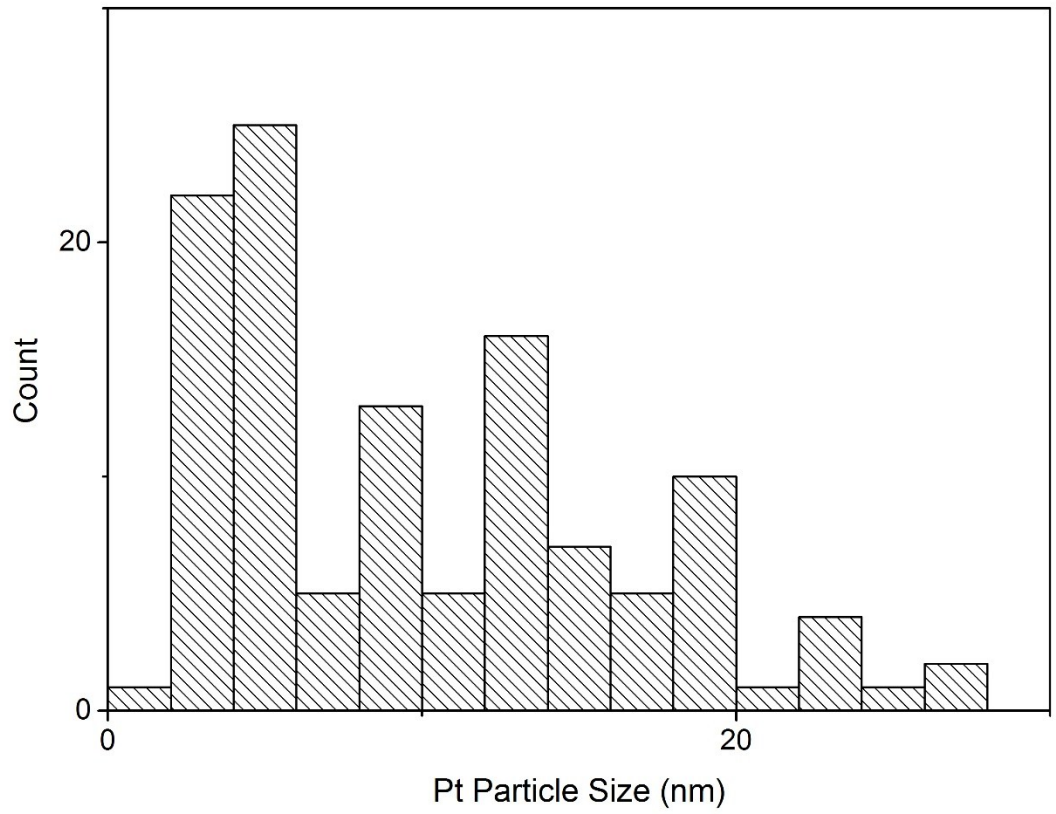

Figure S7. Histogram of Pt particle size distribution in the Pt/CeO_2 nanorods

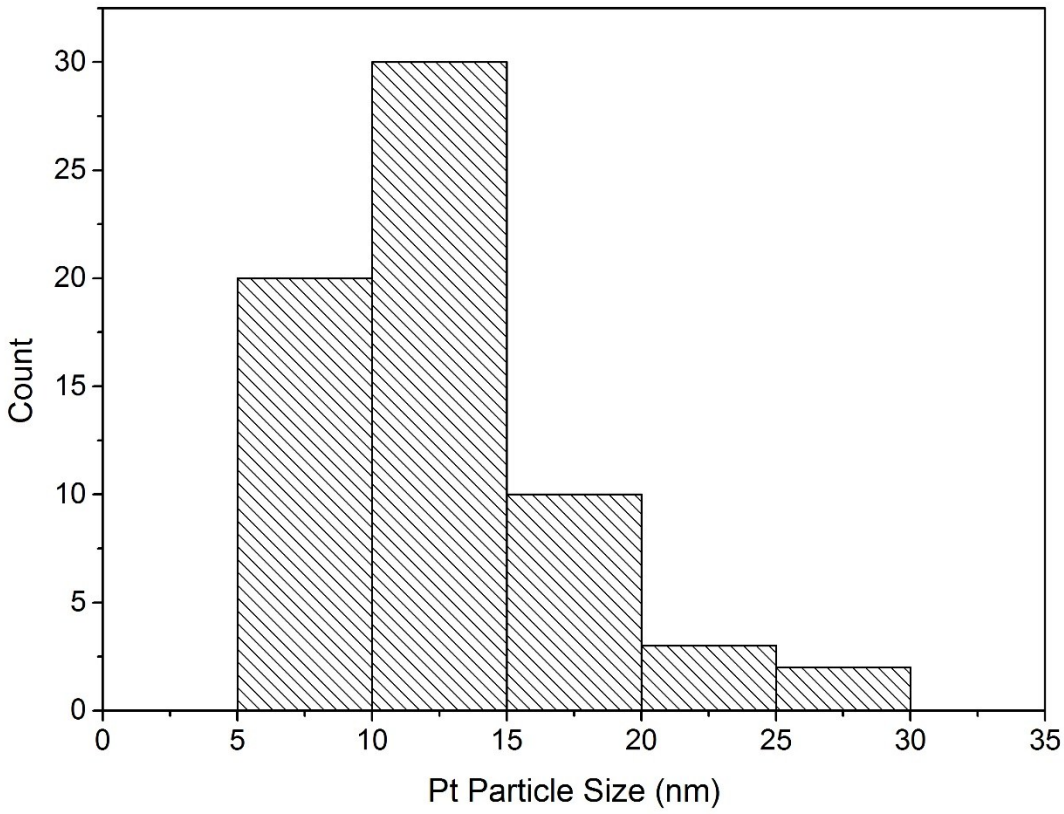

Figure S8. Histogram of Pt particle size distribution in the Pt/CeO_2 nanoparticles

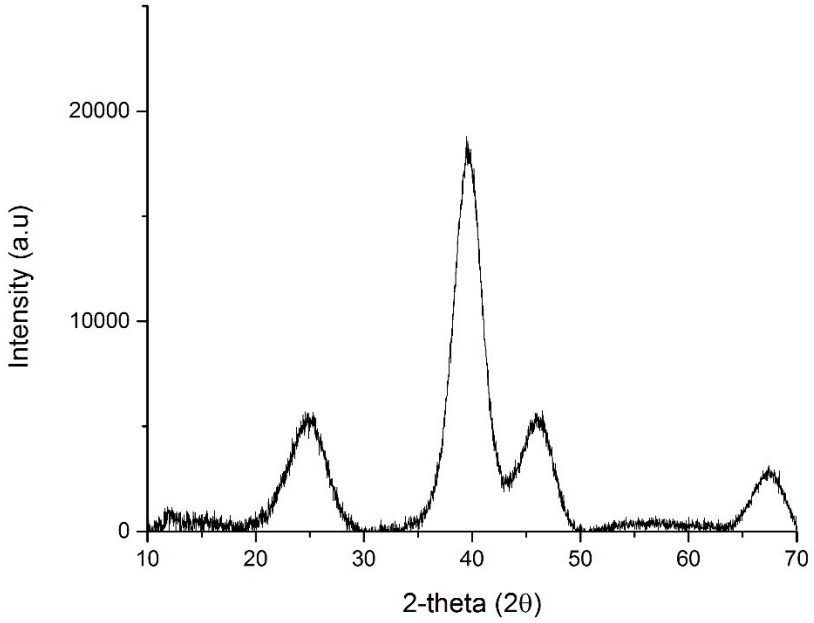

Figure S9. Ex-situ XRD spectra of the Pt Vulcan control. The particle size was determined to be (2.3 ± 0.5) nm by the Halder-Wagner method.

Catalyst	Pt-Pt bond distance (Å)	Pt first shell coordination number
Pt/CeO_2 nP	2.772 ± 0.007	10 ± 1
Pt/CeO_2 nR	2.763 ± 0.001	10 ± 1
Theoretical Pt bulk	2.775	12

Table S1: Calculated Pt-Pt bond distances and coordination number from EXAFS fitting.