Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Electro-oxidation Competency of Palladium Nanocatalysts over Ceria-Carbon Composite Support during Alkaline Ethylene Glycol Oxidation

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Table S1. *Thermal decomposition data obtained from TGA and the corresponding Pd metal content calculated using ICP*

	Final metal content from TGA (wt%)	Pd content (from ICP) (wt %)	CeO_2 content (wt%)
Pd/ C- CeO_2 (1:0)	**36**	**36**	**0**
Pd/ C-CeO_2 (1:0.5)	**42**	**24**	**18**
Pd/ C-CeO_2(1:1)	**50**	**27**	**23**
Pd/ C-CeO_2 (1:2)	**58**	**20**	**38**

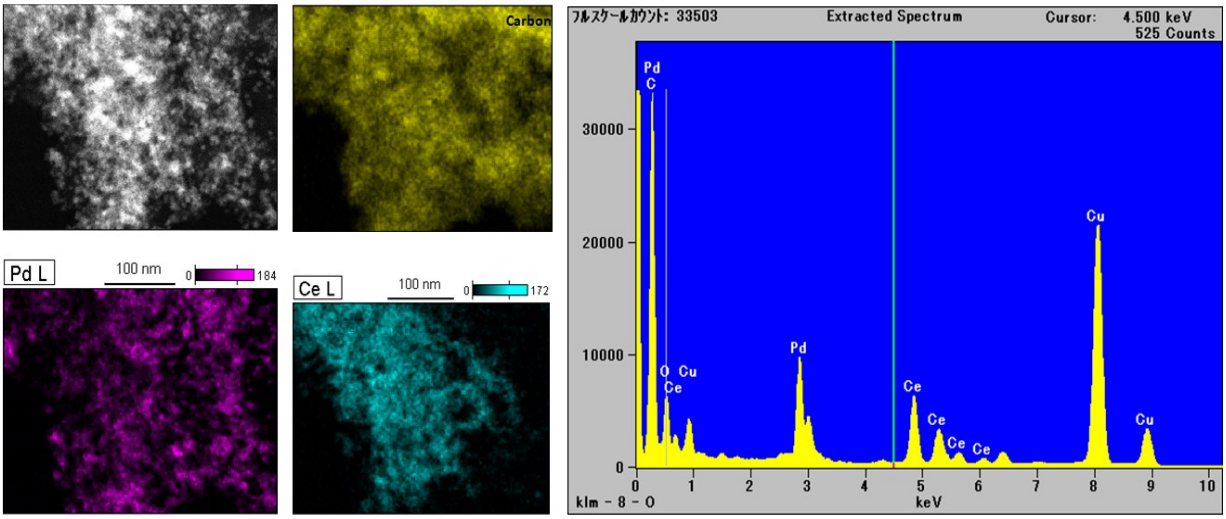

Figure S1 *HR-TEM EDS mapping of Pd/C-CeO_2 (1:1) catalyst and the corresponding EDS spectra recorded*

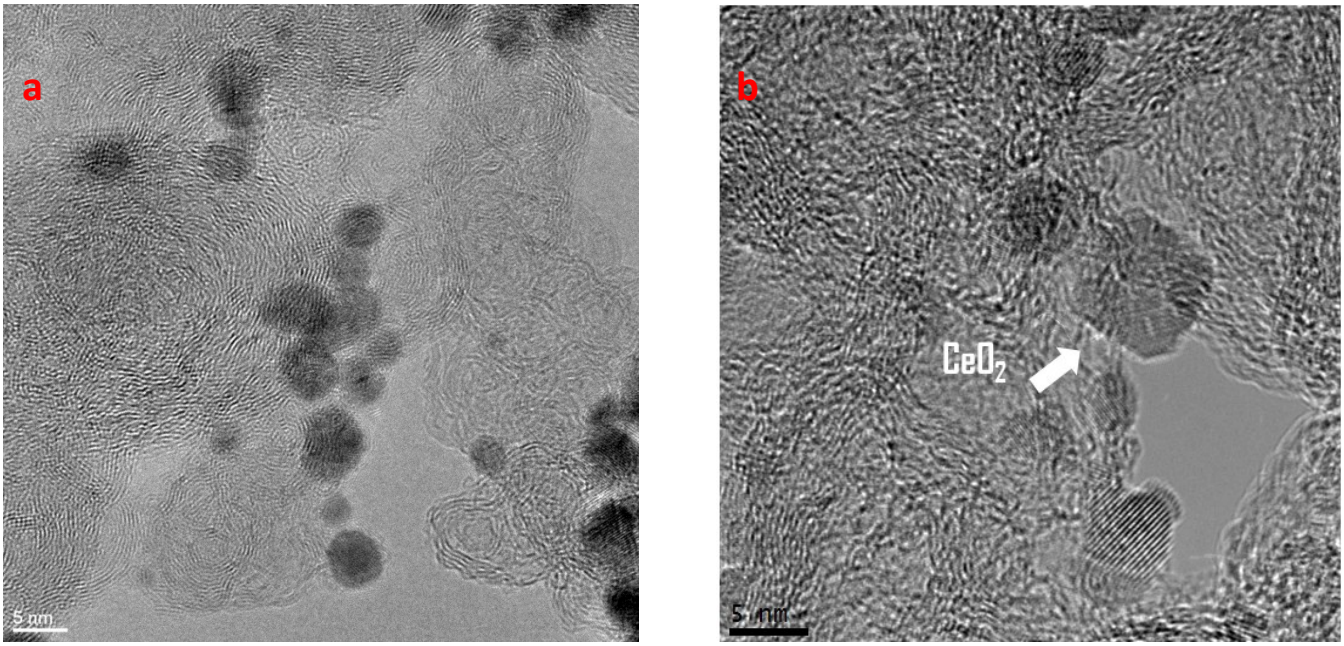

Figure S2 *HR-TEM image of a) Pd/C showing the morphology and size b) C-CeO2 (1:1) composite support*

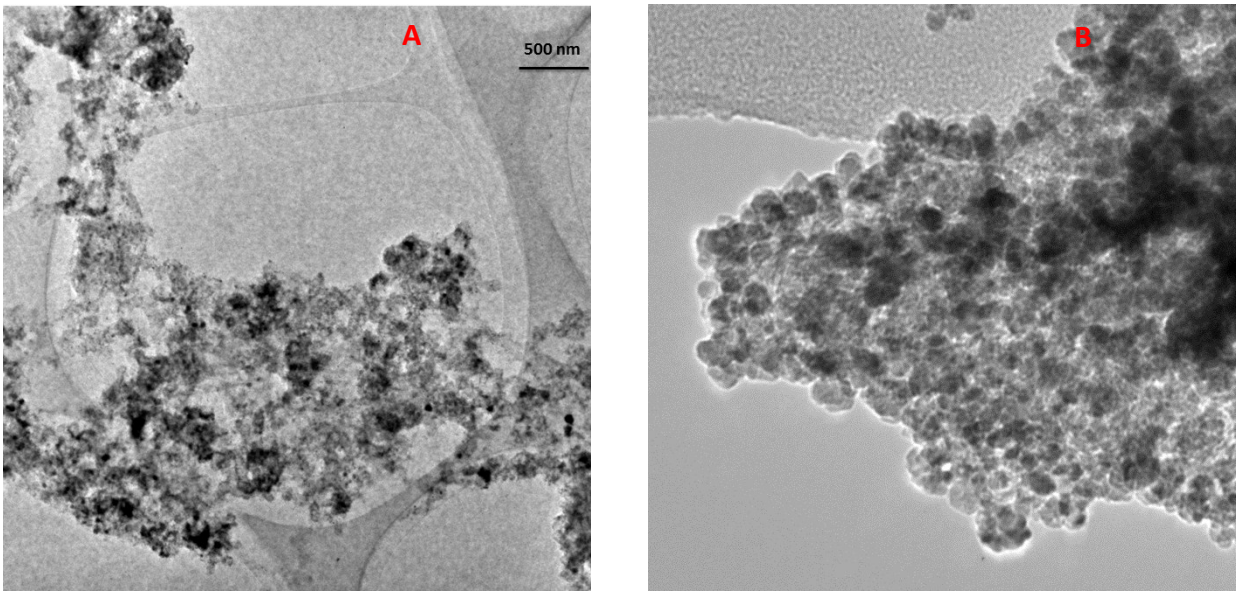

Figure S3 *HR-Transmission electron micrograph of A) Pd/C-CeO_2 (1:1.5) and B) Pd/C-CeO_2 (1:2)*

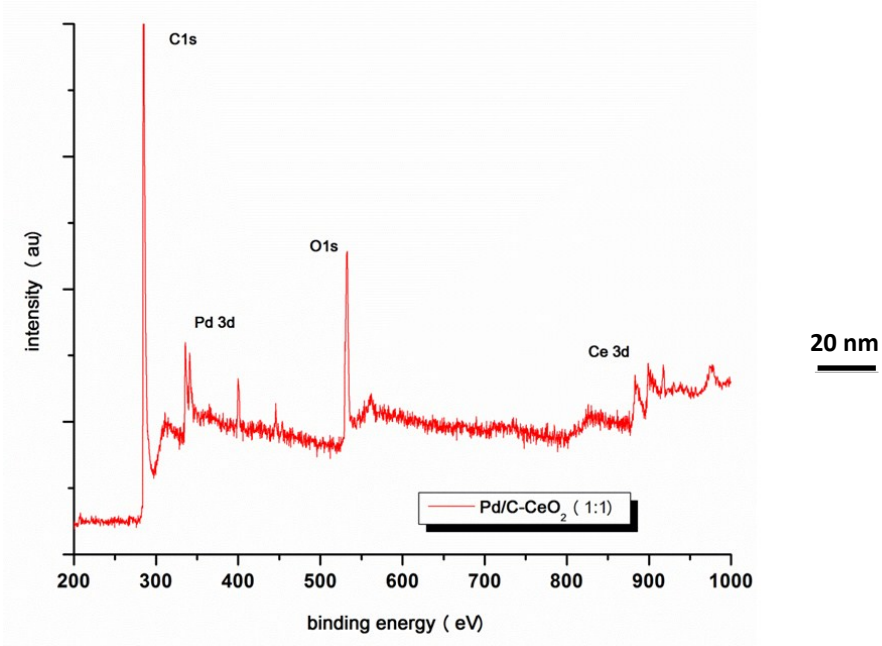

Figure S4 *XPS spectra of Pd/C-CeO_2 (1:1) catalyst showing the binding energies corresponding to Pd and Ce.*

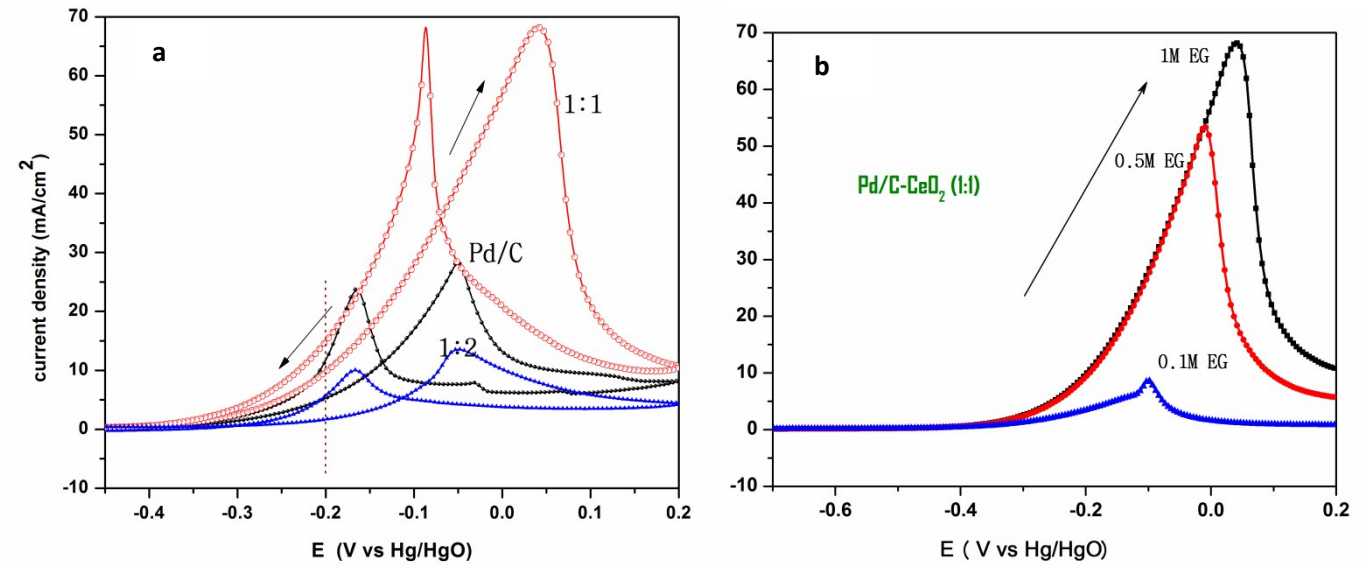

Figure S5 a) *CV forward and backward profiles during Alkaline EGOR for prepared catalysts and* **b)** *EGOR with varying concentration for Pd/C-CeO2 (1:1) catalysts*

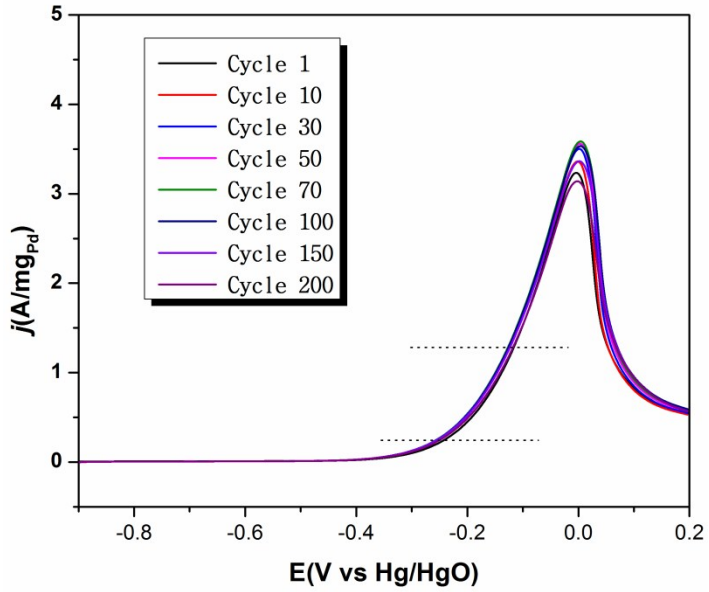

Figure S6) *CV profiles during various cycles of cyclic stability test for Pd/C-CeO2 (1:1) catalyst*

Further, the electrochemical behavior of the catalysts in 0.1M KOH solution the and corresponding EGOR activity was carried out. Pd/C-CeO_2 shows improved EGOR performance compared to Pd/C with negative onset potential and higher current density.

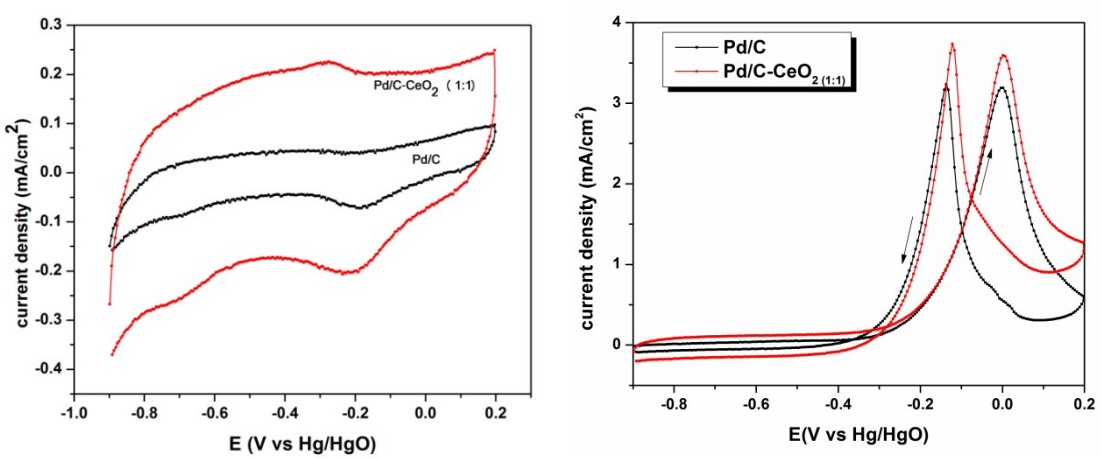

Figure S7) *CV profiles recorded for Pd/C and Pd/C-CeO_2 samples a) in N_2 saturated 0.1M KOH and b) EGOR activity in N_2 saturated 0.1M KOH+0.5M EG*