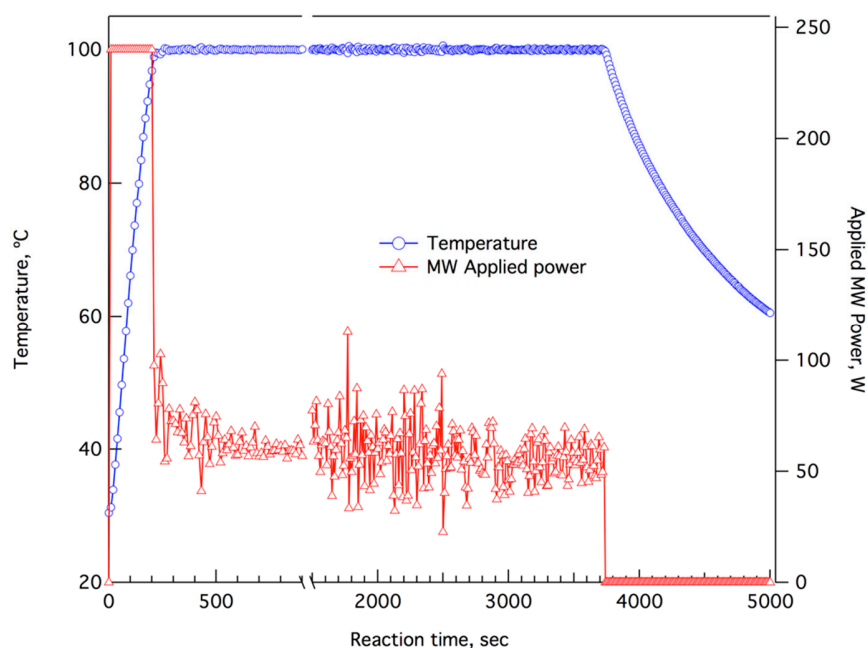


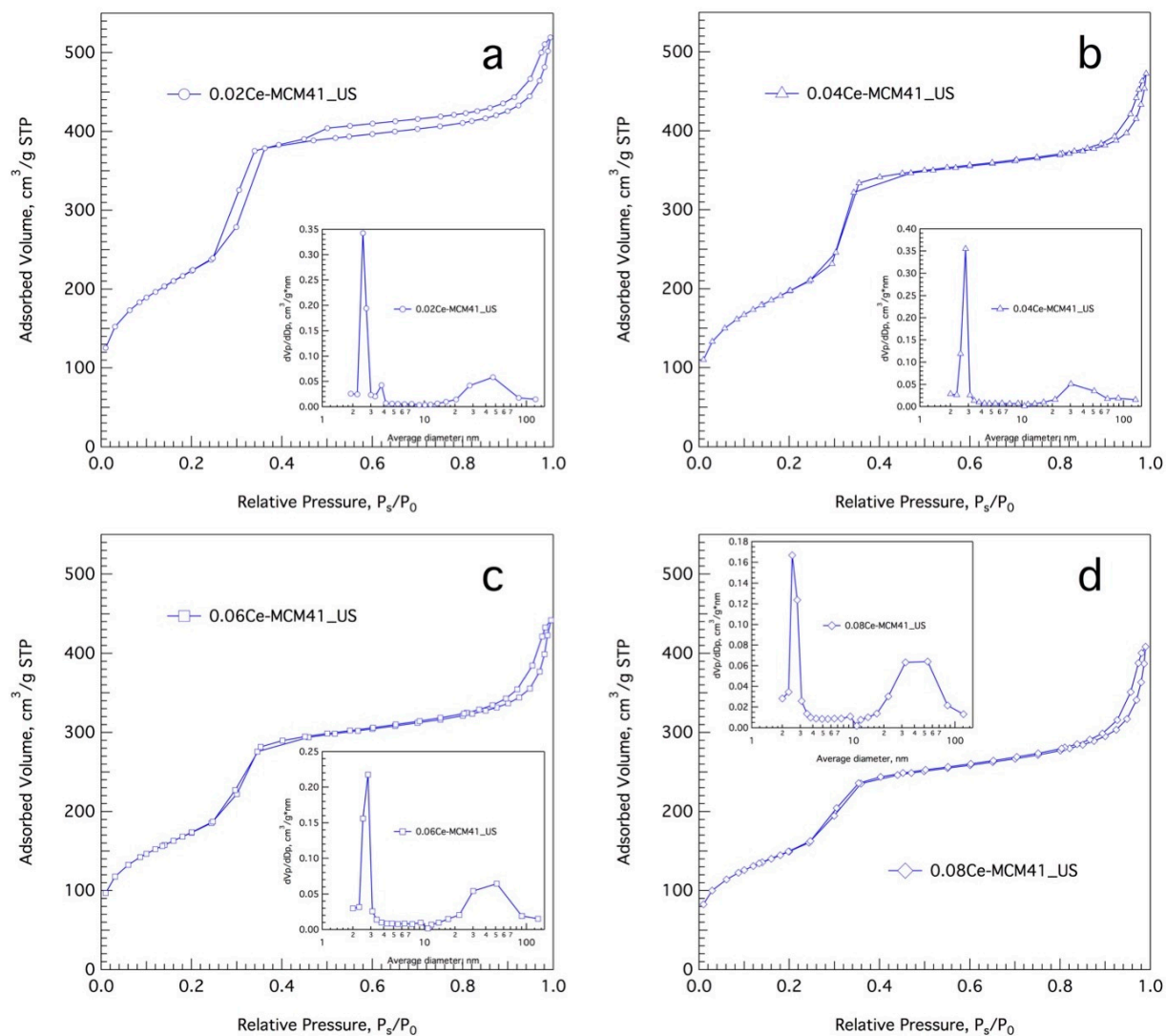
## Electronic Supplementary Information

# Ultrasound and microwave-assisted synthesis of hexagonally ordered Ce-promoted mesoporous silica as Ni supports for ethanol steam reforming

Jorge Tovar-Rodriguez<sup>1</sup>, Emiliano Fratini<sup>1,\*</sup>, Piero Baglioni<sup>1</sup>, Carlo Ferrari<sup>2</sup>, José Antonio de los Reyes-Heredia<sup>3</sup>, Yonatan Ramírez-Hernández<sup>4</sup> and Ignacio René Galindo-Esquivel<sup>4,\*</sup>



**Figure S1.** Temperature profile for the MW-assisted hydrothermal synthesis of 0.02Ce-mesoporous silica.



**Figure S2.** Nitrogen adsorption and desorption isotherms for a) 0.02Ce-MCM-41\_US, b) 0.04Ce-MCM-41\_US, c) 0.06Ce-MCM-41\_US and d) 0.08Ce-MCM-41\_US materials after calcination. Inset graphs: BJH pore size distribution for the same materials.

**Table S1.**  $Q^n$  distributions for the Silicon species in xCe-MCM-41\_US calcined materials.

Sample	$Q^4$	$Q^3$	$Q^2$	$Q^3/Q^4$	$(Q^2+Q^3)/Q^4$
MCM-41	50.4	38.4	11.2	0.76	0.99
0.02Ce-MCM-41_US	62.9	22.6	14.5	0.36	0.59
0.04Ce-MCM-41_US	59.2	23.1	17.7	0.39	0.69
0.06Ce-MCM-41_US	59.6	26.6	13.8	0.45	0.68
0.08Ce-MCM-41_US	57.9	21.0	20.9	0.36	0.72

**Table S2.** Ethanol conversion ( $X_{EtOH}$ ) and product yield after 1 and 6h for the Ni/xCe-MCM-41 catalysts series in the ethanol steam reforming reaction (all reactions were performed at T = 773 K).

Catalyst	$X_{EtOH}$ at 1h	Product yield after 1 h				$X_{EtOH}$ at 6h	Product yield after 6 h			
		H <sub>2</sub>	CH <sub>4</sub>	CO	CO <sub>2</sub>		H <sub>2</sub>	CH <sub>4</sub>	CO	CO <sub>2</sub>
Ni/0.02Ce-MCM-41_US	100	3.02	0.74	0.33	0.94	100	3.48	0.48	0.27	1.25
Ni/0.04Ce-MCM-41_US	100	3.11	0.58	0.35	1.08	100	3.38	0.55	0.33	1.12
Ni/0.06Ce-MCM-41_US	100	3.13	0.59	0.39	0.98	100	3.49	0.56	0.33	1.11
Ni/0.08Ce-MCM-41_US	100	3.38	0.51	0.30	1.10	100	3.14	0.47	0.34	1.19