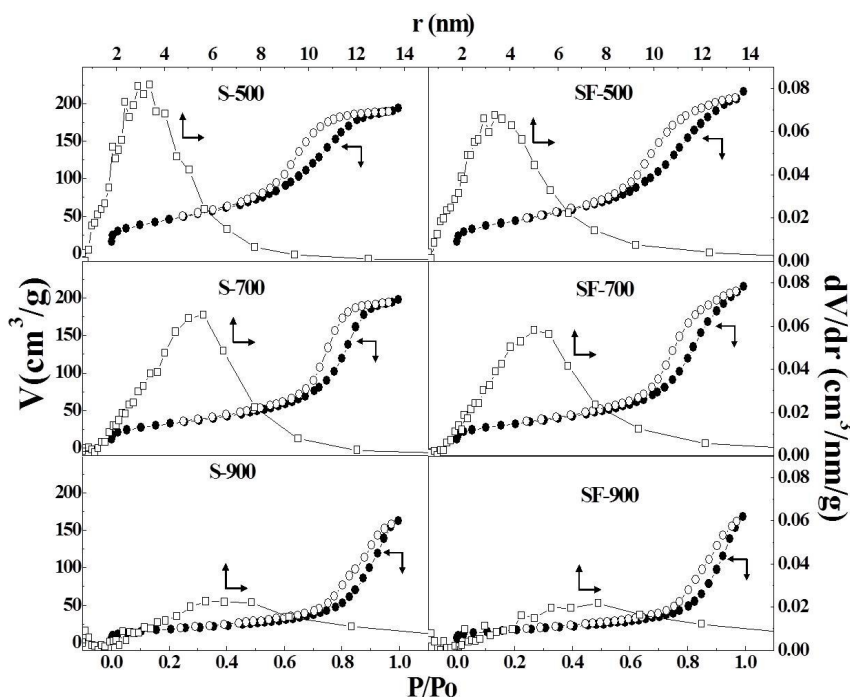
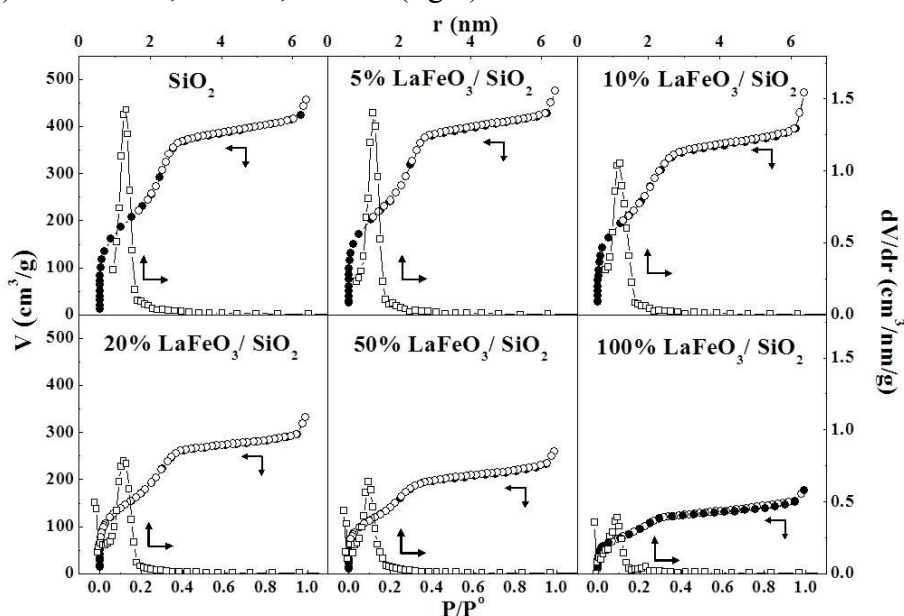


### Supplementary Information

**S.I.-1.** The N<sub>2</sub> adsorption –desorption isotherms and the pore size distribution for samples S-500, S-700, S-900 and SF-500, SF-700, SF-900 (upper part) and x% LaFeO<sub>3</sub>/SiO<sub>2</sub> (lower part) [data from ref.<sup>18</sup>].

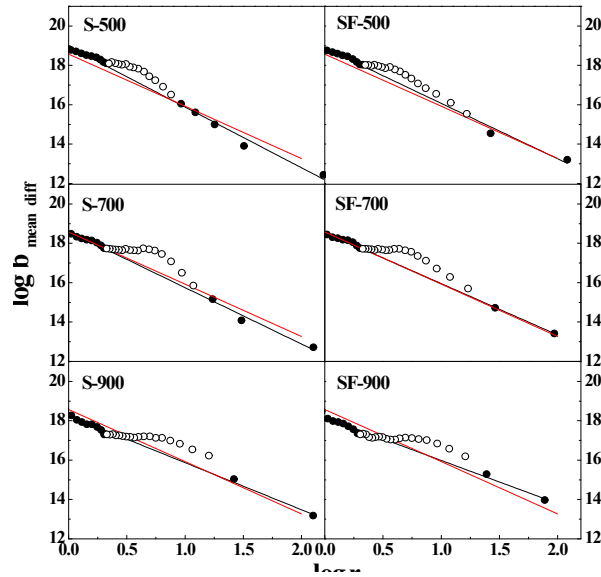


The N<sub>2</sub> adsorption (●) and desorption (○) isotherms and the corresponding pore size distributions (□) estimated from the adsorption branch for samples S-500, S-700, S-900(left) and SF-500, SF-700, SF-900 (right)<sup>18</sup>.

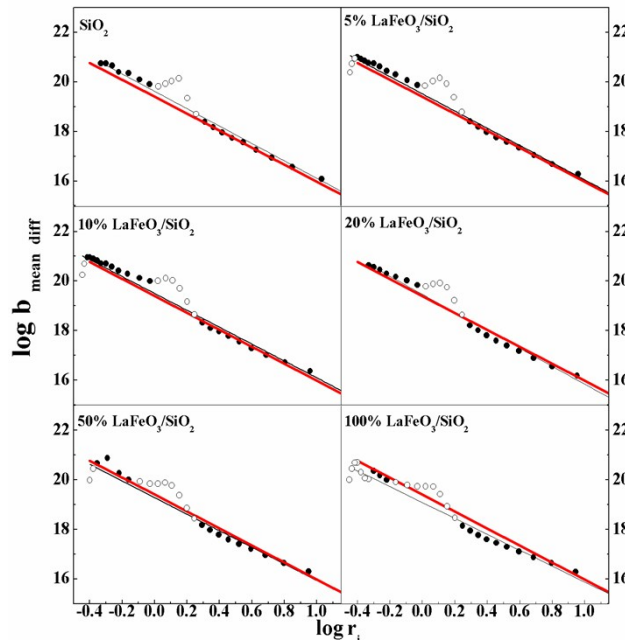


The adsorption (●) and desorption (○) isotherms of the porous materials x% LaFeO<sub>3</sub>/SiO<sub>2</sub> and the corresponding pore size distribution (□) estimated via the BJH algorithm<sup>18</sup>.

S.I. - 2. The Zipf plots for samples S-500, S-700, S-900 and SF-500, SF-700, SF-900 (upper part) and x% LaFeO<sub>3</sub>/SiO<sub>2</sub> (lower part) [data from ref.<sup>18</sup>].



Zipf's plots of the form  $\log[b_{\text{mean,diff}}] = f[\log(r_i)]$  for the S and SF spinels. *Black cycles and black line*: The experimental points used for the linear fit of equation (3); *Empty cycles*: Experimental points not taken into account for the linear fit; *Red line*: The equation  $y=18.57-2.70x$  drawn using the average slope and the average intercept of all samples<sup>18</sup>.



Zipf's plots of the form  $\log[b_{\text{mean,diff}}] = f[\log(r_i)]$  for the x% LaFeO<sub>3</sub>/SiO<sub>2</sub> materials. *Black cycles and black line*: The experimental points used for the linear fit of equation (3); *Empty cycles*: Experimental points not taken into account for the linear fit; *Red line*: The equation  $y=19.40-3.42x$  drawn according to the mean slope and mean intercept values from all the samples<sup>18</sup>.

**S.I.-3.** Table containing the data for the estimation of the relative pore ratios  $N_{500}/N_{700}/N_{900}$  and the Mean values of the average pore diameters  $D(\text{nm}) = (D_{\text{max},T} + D_{\text{mean},T})/2$  for the S plus the SF solids (nm) at temperatures 500, 700 and 900°C respectively for S -plus SF- solids. For details see text.

Material and thermal treatment	$(N_1/N_2)_{\text{mean}}$	
	Based on $D_{\text{max}}$ (BJH)	Based on $D_{\text{mean}}$ ( $4V_p/S_p$ )
S-materials- <i>Heating step</i> 500 → 700°C	4.40/1 or 100/ 23	3.75/1 or 100/27
S-materials - <i>Heating step</i> 700 → 900°C	1.30 /1 or 23/ 17	4.00/1 or 27/7
SF-materials- <i>Heating step</i> 500 → 700°C	3.00/1 or 100/33	2.57/1 or 100/ 39
SF-materials - <i>Heating step</i> 700 → 900°C	4.80/1 or 33/7	3.00/1 or 39/13
S- materials: Relative ratio $N_{500}/N_{700}/N_{900}$	100/23/17	100>27>7
SF- materials: Relative ratio $N_{500}/N_{700}/N_{900}$	100/33/7	100>39>13
Average relative ratios $N_{500}/N_{700}/N_{900}$ for S -plus SF- solids	100/28/12	100>33>10
<b>Mean values of the average relative ratios <math>N_{500}/N_{700}/N_{900}</math> for S -plus SF- solids</b>	<b>100/31/11</b>	
<b>Log of the mean average relative ratios <math>N_{500}/N_{700}/N_{900}</math></b>	<b>2/1.49/1.04</b>	
Average pore diameters (nm) $D_{\text{max},500}/D_{\text{max},700}/D_{\text{max},900}$ (left) and $D_{\text{mean},500}/D_{\text{mean},700}/D_{\text{mean},900}$ (right) for the S -plus the SF- solids	6.77/10.65/13.40	7.54/10.68/15.62
<b>Mean values of the average pore diameters <math>D(\text{nm}) = (D_{\text{max},T} + D_{\text{mean},T})/2</math> for the S -plus the SF- solids (nm)</b>	<b>7.15/10.67/14.51</b>	
<b>1000/T at 500, 700 and 900°C</b>	<b>1.29 / 1.03 / 0.85</b>	