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Discussion

Reply to "Comment on influence of the calcination temperature on the structure and reducibility of nanoceria obtained from crystalline $Ce(OH)CO_3$ precursor" by Dr Ernesto Paparazzo

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First of all, we would like to thank the author [1] for his comments regarding the XPS fit analysis of Ce3d spectra in our publication [2]. Our research work has been focused on the study of the influence of calcination temperature on ceria catalytic properties. For this purpose, we have used several techniques to understand this effect. Among these techniques (H_2-TPR, PXRD, BET, XPS), we have particularly used XPS spectra to find the Ce^{3+} surface fraction in the samples.

According to the comments given in [1], we have re-evaluated our deconvolution results for all samples. We have corrected the ratio between doublets area for the peaks assigned to Ce^{3+}, and it was verified that the corrected ratio was accomplished for the Ce^{4+} peaks. In this way, the deconvolution process gave mathematical and physical meaning results. The new and original results are shown in Fig. 1.

As it can be seen in Fig. 1, the results show a lowest dispersion compared to the original fitting, only at low calcination temperatures; at high calcinations temperatures, the results are almost identical to those originally published. As a consequence, our conclusions for Section 3.2 ("X-ray photoelectron spectroscopy") and for the whole work have not been modified.

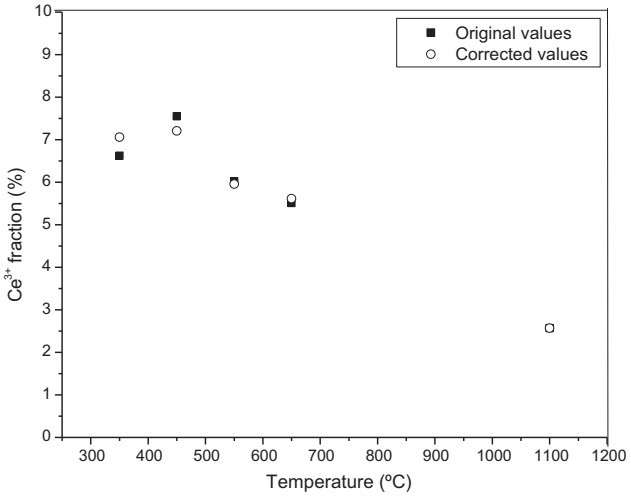

Fig. 1 – Original and corrected values of Ce^{3+} fraction obtained by XPS deconvoluted spectra of samples.

REFERENCES

[1] Paparazzo E. 2012. manuscript number: HE-D-12–00661.
[2] Poggio E, Jobbágy M, Moreno M, Laborde M, Mariño F, Baronetti G. Influence of the calcination temperature on the structure and reducibility of nanoceria obtained from crystalline $Ce(OH)CO_3$ precursor. Int J Hydrogen Energy 2011; 36:15899–905.

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