Correction to: Structural, morphological and magnetic properties of Ni–Co ferrites by the Mn²⁺ ions substitution

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This correction is a clarification on the work reported, due to comments the editorial office has received.

A comment was received that the crystallite size as determined from the Scherrer equation cannot be accurate to two decimal places as shown in Table 1. The two decimal places shown refer to the calculation accuracy not to the application of the Scherrer equation. The constant “0.9” in the Scherrer equation depends on the crystal shape and distribution, and one needs to also consider the lattice strain for a more accurate evaluation. The crystallite size values in Table 1 are estimates only to a few nanometers and the two decimal values should be ignored.

A further comment was received that a porosity calculation for a powder sample has no scientific meaning, which is not compacted to make the ceramic. In the original paper, we have not explained how to measure the bulk density of the samples in detail. This may have caused confusion. The measurement process of bulk density is as follows:

The packing density of the disk-shaped particulate samples was calculated by considering the size and weight of the sample [1]:

$$\rho_b = M_s / (\pi R^2 t) \quad (1)$$

where the ferrite powder was ground for half an hour. Then, the ferrite powder was placed in the die of the tablet press ($r = 0.5$ cm). At the pressure of 18 MPa, all samples were pressed into a circular cylindrical disk. The sample is weighed using a balance, and its thickness is measured using a vernier caliper. M_s is the sample's mass, r is the sample's radius and t is the sample's thickness.

For the bulk density and porosity values given in Table 2 (in our article), we calculate their values under the above conditions. Meanwhile, we also refer to the relevant references. Kaur et al. [2] reported that physical and magnetic properties of Mn–Zr doped La–Sr ferrite prepared by the auto-combustion route. The porosity of the samples slightly decreases from 44 to 40% by increasing the Mn–Zr contents in prepared ferrites. Meanwhile, this shows that the ferrite samples have high porosity. Bhasker et al. [3] reported the effect of chromium substitution on structural, magnetic and electrical properties of magneto-ceramic cobalt ferrite nanoparticles. Self-combustion method is used to prepare Cr-substituted cobalt-ferrite ($\text{CoFe}_{2-x}\text{Cr}_x\text{O}_4$, $x = 0, 0.1, 0.15$ and 0.2) nanoparticles. The porosity (P) of ferrite is between 45 and 50%. The observed high porosity of the prepared pellets is because of very low sintering temperatures and sol-gel self combustion method that reduces grain-to-grain adhesivity. Ahmad et al. [4] reported that structural and complex impedance spectroscopic studies of Mg-substituted CoFe_2O_4 . In this work, the effect of Mg substitution on the structural and impedance spectroscopic characteristics of $\text{Co}_{1-x}\text{Mg}_x\text{Fe}_2\text{O}_4$ ($x = 0.0, 0.3, 0.6, 0.9$ and 1.0) samples, prepared by sol-gel auto-combustion method. The porosity of ferrite is between 48 and 54%.

The values of porosity are reported differently in different researches. This does not mean that the values of porosity given in the above table exceed typical high-end values reported in material science. The porosity increases with Mn

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substitution from 32.93 to 41.05%. When the Mn content reaches 0.4, the porosity is reduced from 41.05 to 33.98%. Therefore, we studied the effect of doping content on porosity under certain conditions. Meanwhile, this also shows that the ferrite samples have high porosity. So, we believe that the porosity calculated in our paper does not exceed typical high-end values found in material science, and it still has certain scientific value.

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