

Correction to the paper “Synthesis and magnetic properties of cobalt ferrite nanoparticles formed under hydro and solvothermal condition”

Boris V. Vasil'ev^{1,2,a}, Ruslan Yu. Smyslov^{1,b}, Demid A. Kirilenko^{3,4,c}, Alexander N. Bugrov^{1,2,d}

¹Institute of Macromolecular Compounds RAS, St. Petersburg, Russia

²St. Petersburg Electrotechnical University “LETI”, St. Petersburg, Russia

³Ioffe Institute RAS, St. Petersburg, Russia

⁴ITMO University, St. Petersburg, Russia

^aboris8152@gmail.com, ^burs@macro.ru, ^cdemid.kirilenko@mail.ioffe.ru, ^dalexander.n.bugrov@gmail.com

Corresponding author: Boris V. Vasil'ev, boris8152@gmail.com

PACS 75.20.-g; 75.75.+a

ABSTRACT This paper is a corrigendum related to the article Vasil'ev B.V., Smyslov R.Yu., Kirilenko D.A., Bugrov A.N. Synthesis and magnetic properties of cobalt ferrite nanoparticles formed under hydro and solvothermal condition. *Nanosystems: Phys. Chem. Math.*, 2021, **12** (4), P. 492–504, <http://nanojournal.ifmo.ru/en/articles-2/volume12/12-4/chemistry/paper11/>

KEYWORDS single-domain cobalt ferrite, ferrimagnetic nanocrystals, size-controlled synthesis, stoichiometry, Rietveld refinement, coercive field, saturation magnetization, squareness

FOR CITATION Vasil'ev B.V., Smyslov R.Yu., Kirilenko D.A., Bugrov A.N. Correction to the paper “Synthesis and magnetic properties of cobalt ferrite nanoparticles formed under hydro and solvothermal condition”. *Nanosystems: Phys. Chem. Math.*, 2023, **14** (1), 142–143.

In the paper [1], Fig. 3 contains a graphic misprint. The correct part (b) in this figure is given below.

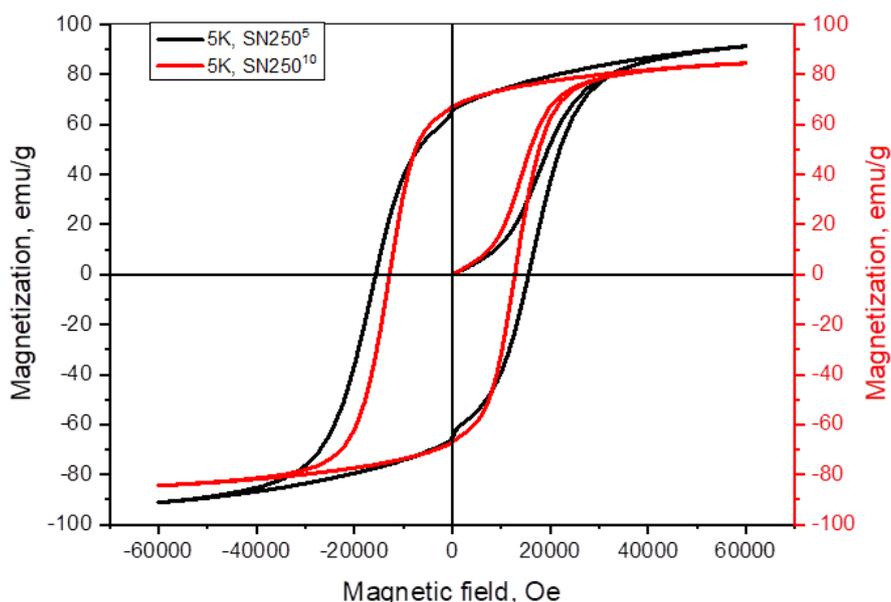


FIG. 1. The low-temperature magnetic hysteresis (M–H) loops for $\text{Co}_x\text{Fe}_{3-x}\text{O}_4$ nanoparticles synthesized under solvo- (a,b) and hydrothermal conditions (c)

In connection with the correction of Fig. 3(b) [1], it is necessary to correct a paragraph on p. 497. Now it should read like this:

Studies of the synthesized cobalt ferrite nanoparticles using SQUID magnetometry showed that their magnetization curves have hysteresis loops regardless of the type of precursor used, as well as the chosen conditions of hydrolysis and dehydration (Fig. 3, Table 3). It should also be noted that “constricted” hysteresis loops were recorded for cobalt ferrite nanoparticles obtained under hydrothermal conditions or in an organic solvent at temperatures of 150 and 200 °C (Fig. 3), which are typical for a mixture of soft and hard magnetic materials [1, 29, 30]. In this case, such a “necking” in the central part of the M–H loop can be explained by a small amount of superparamagnetic single-domain particles in ferrimagnetic $\text{Co}_x\text{Fe}_{3-x}\text{O}_4$ nanocrystals.

In Table 3 on Page 502 [1], the row titled “SN250⁵” should be now written as:

SN250 ⁵	0.72	65.7	91	15700	0.09	7	77	245	—	0	65	0
--------------------	------	------	----	-------	------	---	----	-----	---	---	----	---

In ACKNOWLEDGMENTS, some information was omitted by the authors. Therefore, the correct version of the acknowledgments is given below.

Acknowledgments

X-ray diffraction experiments were performed on the Engineering Center equipment of the St. Petersburg State Technological Institute (Technical University). TEM studies were carried out in the Federal Joint Research Center “Material science and characterization in advanced technology” funded by the Ministry of Education and Science of the Russian Federation. We appreciate Evgeniy V. Shevchenko from the Centre for Diagnostics of Functional Materials for Medicine, Pharmacology and Nanoelectronics (SPbU Research Park) for finding the discrepancy in the data obtained by measuring the magnetic characteristics of the ferrites by SQUID magnetometry. We give special thanks to Alexandr S. Sakhatskiy from the latter Research Park for measuring our systems using a SQUID magnetometer, as well as Ilya S. Kritchenkov from St. Petersburg State University for helping with this measuring.

References

- [1] Vasil’ev B.V., Smyslov R.Yu., Kirilenko D.A., Bugrov A.N. Synthesis and magnetic properties of cobalt ferrite nanoparticles formed under hydro and solvothermal condition. *Nanosystems: Phys. Chem. Math.*, 2021, **12** (4), P. 492–504.

Submitted 6 February 2023; accepted 7 February 2023

Information about the authors:

Boris V. Vasil’ev – Institute of Macromolecular Compounds RAS, Bolshoy pr. 31, 199004 Saint Petersburg, Russia; Saint Petersburg Electrotechnical University “LETI”, ul. Professora Popova 5, 197022 Saint Petersburg, Russia; ORCID 0000-0002-9315-7087; boris8152@gmail.com

Ruslan Yu. Smyslov – Institute of Macromolecular Compounds RAS, Bolshoy pr. 31, 199004 Saint Petersburg, Russia; ORCID 0000-0003-3633-4347; urs@macro.ru

Demid A. Kirilenko – Ioffe Institute RAS, Politekhnicheskaya ul. 26, 194021 Saint Petersburg, Russia; ITMO University, Kronverskii avenue 49, 197101 Saint Petersburg, Russia; ORCID 0000-0002-1571-209X; demid.kirilenko@mail.ioffe.ru

Alexander N. Bugrov – Institute of Macromolecular Compounds RAS, Bolshoy pr. 31, 199004 Saint Petersburg, Russia; Saint Petersburg Electrotechnical University “LETI”, ul. Professora Popova 5, 197022 Saint Petersburg, Russia; ORCID 0000-0003-1052-4919; alexander.n.bugrov@gmail.com

Conflict of interest: the authors declare no conflict of interest.