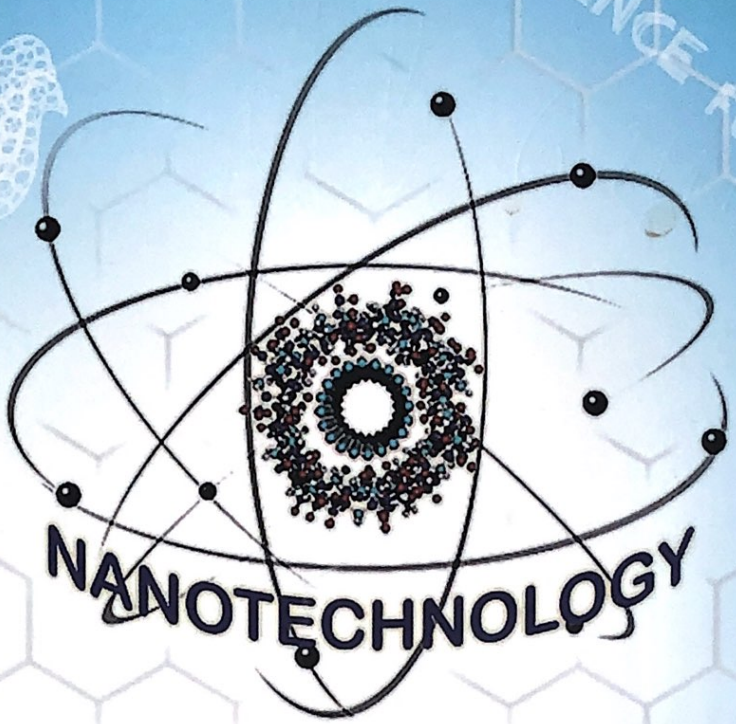

ABSTRACT BOOK

International research and practice conference:

NANOTECHNOLOGY AND NANOMATERIALS (NANO-2018)

27-30 August 2018
Kyiv, Ukraine

dedicated to the 100th Anniversary
of the National Academy of Sciences of Ukraine

INTERNATIONAL RESEARCH AND PRACTICE CONFERENCE "NANOTECHNOLOGY AND NANOMATERIALS" (NANO-2018)

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This book contains the abstracts of contributions presented at the International research and practice conference "Nanotechnology and Nanomaterials" (NANO-2018).

The NANO-2018 Conference was organized by the Institute of Physics of NAS of Ukraine with the participation of the Taras Shevchenko National University of Kyiv (Ukraine), University of Tartu (Estonia), University of Turin (Italy) and Pierre and Marie Curie University – Paris 6 (France).

NANO-2018 was the sixth conference in the series of NANO-conferences initiated by the Institute of Physics of NAS of Ukraine in 2012 in the framework of FP7 Nanotwining project. From year to year, they attract more attention and participants. In 2012, the first meeting was held in the format of International Summer School for young scientists «Nanotechnology: from fundamental research to innovations». The 2013 and 2014 conferences were organized in conjunction with the International Summer Schools for young scientists under the same title. In 2013, this event was attended by more than 300 scientists, in 2014-2016, 450 scientists took part and in 2017 it gathered above 700 participants from Ukraine, Poland, Italy, Estonia, France, Austria, Germany, Greece, Turkey, USA, Romania, Moldova, Czech Republic, Taiwan, Lithuania, Egypt, Iran, India, Algeria, Indonesia and other countries. In 2017 Organizer Committee has received more than 700 application forms from about 25 countries of the world.

The NANO-2018 conference brought together leading scientists and young researchers from many countries of the world. This year its topics were as follows: Nanobiotechnology for health-care; Nanochemistry and biotechnology; Nanocomposites and nanomaterials; Nanoobjects microscopy; Nanooptics and photonics; Nanoplasmonics and surface enhanced spectroscopy; Nanoscale physics; Nanostructured surfaces; Physico-chemical nanomaterials science.

This year the NANO-2018 Conference was organized in the framework of the NAS of Ukraine Program «Fundamental issues of creation of new nanomaterials and nanotechnologies» for 2015-2019.

Conference of this year is dedicated to celebration of 100 years of National Academy of Science of Ukraine foundation. It's a great honor for us to organized conference where our scientists can get, exchange and share experience with abroad colleagues, and it is pleasure to be part of this. We always will work in this direction.

Website of the Nano-2018 conference: http://nano-conference.iop.kiev.ua//

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Green synthesis and characterization of Zn-doped cobalt ferrites nanoparticles using *Ginkgo biloba* leaf extract

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Green chemistry is considered as one of the techniques applied for nanoparticles synthesis and involves the using of the non-toxic plant extracts as effective reducing agent. In this study, the nanoparticles of Zn-doped cobalt ferrites with the general formula $Co_{1-x}Zn_xFe_2O_4$ ($0 \le x < 1.0$ with step 0.2) have been obtained through the green chemistry method with using of *Ginkgo biloba* leaf extract. The reducing capability of this plant is based on several reactive components such as polyphenols, terpenoids, amino acids etc. The ferrite nanoparticles were synthesized from $Co(CH_3COO)_2 \cdot 4H_2O$, $Zn(NO_3)_2 \cdot 6H_2O$ and $Fe(NO_3)_3 \cdot 9H_2O$ as starting materials and plant extract as an effective reducing agent. The powders were characterized using XRD, SEM, EDX, FTIR and Mossbauer spectroscopy. The lattice parameters and crystallite size for samples are obtained from XRD data: *a* increases from 0,835 to 0,842 nm, while crystallite sizes are in the range 15-20 nm. The FTIR spectra contain two main peaks in the range 600-550 cm^{-1} and 420-360 cm^{-1} that correspond to tetrahedral and octahedral sites in spinel structure respectively. The surface morphology of the synthesized spinels shows agglomerated nanoparticles due to their magnetic properties. The cationic distribution was estimated from Mossbauer spectroscopy data. A new antistructural modeling for describing of active surface centers for $Co_{1-x}Zn_xFe_2O_4$ samples is discussed at the first time.

1. *Anastas P., Eghbalia N. Green Chemistry: Principles and Practice // Chem. Soc. Rev.- 2010.- 39.-P. 301-312.*
2. *Vaseghi Z., Nematollahzadeh A., Tavakoli O. Green methods for the synthesis of metal nanoparticles using biogenic reducing agents: a review // Reviews in Chemical Engineering.-2017.- doi:10.1515/revce-2017-0005*