ABSTRACT BOOK

International research and practice conference:

NANOTECHNOLOGY AND NANOMATERIALS (NANO-2022)

25-27 August 2022
Lviv, Ukraine

INTERNATIONAL RESEARCH AND PRACTICE CONFERENCE "NANOTECHNOLOGY AND NANOMATERIALS"

(The NANO-2022 Conference is dedicated to the International Year of Basic Sciences for Sustainable Development)

25-27 of August 2022

Lviv, UKRAINE

Abstract book

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This book contains the abstracts of contributions presented at the International research and practice conference "Nanotechnology and Nanomaterials" (NANO-2022).

The NANO-2022 Conference was organized by the Institute of Physics of NAS of Ukraine with the participation of the University of Tartu (Estonia), the Lviv Polytechnic National University, University of Turin (Italy) and Pierre and Marie Curie University – Paris 6 (France).

NANO-2021 was the ninth 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 2014-2017, 450 scientists took part and in 2018 it gathered above 650 participants. In 2021 conference was attended by more than 700 scientists 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 2021 the Organizer Committee has received more than 800 application forms from about 25 countries of the world.

The NANO-2022 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.

Website of the Nano-2022 conference: http://nano-conference.iop.kiev.ua

In order to support the formation of the communications between the scientific and innovation communities the EEN-Ukraine consortium together with EEN partners in Germany organized STARTUP2022 competition for selection 10 the best Ukrainian startups for participation in the Start-up BW Summit, Germany.

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Synthesis of Bi_2O_3-SiO_2 and Gd_2O_3-SiO_2 core-shell structures towards improvement of fresh and hardened properties of cement-based composites

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Concrete is one of the most widely used materials for radiation shielding in radiation therapy facilities, hospitals, nuclear reactors as well as in military applications. In general, materials such as lead, with a high atomic number (High-Z), are preferred for absorbing ionizing radiation. Unfortunately, in the recent years serious concerns are raised regarding use of lead due to its potentially hazardous effects.

In recent years, special attention has been particularly paid to nanosized admixtures, which lead to far greater improvements in cementitious systems, in comparison to their micro-sized counterparts. Inclusion of high dosage of metal oxide nanoparticles results in decrement of heat of hydration as well as can negatively affect mechanical, microstructural and durability-related properties of cement-based composites. Therefore, methods towards improving the reactivity of metal oxide nanoparticles are required.

This study is devoted to synthesis of Bi_2O_3-SiO_2 and Gd_2O_3-SiO_2 core-shell structures towards improvement of fresh and hardened properties of cement-based composites. Hydration studies including isothermal calorimetry and thermogravimetric analysis were performed. In addition, rheological and mechanical properties were determined.

Study showed that cement can be effectively replaced with up to 10 wt% of nanoparticles without deteriorating substantially the properties of Portland cement paste. Therefore, inclusion of such nanoparticles into cementitious system can find its utilization in production of radiation shielding cement-based composites.

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STARTUP2022 event – in order to support the formation of the communications between the scientific and innovation communities the EEN-Ukraine consortium together with EEN-Germany partners organized STARTUP2022 competition for selection 10 the best Ukrainian startups for participation in the Start-up BW Summit, Germany.

Our publications

Abstracts Book of the 1st International Summer School (2012)
Abstracts Book of the 1st International Summer School and International Conference NANO-2013
Abstracts Book of the 2-nd International Summer School and International Conference NANO-2014
Abstracts Book of the 3-rd International Conference NANO-2015
Abstracts Book of the 4-th International Conference NANO-2016
Abstracts Book of the 5-th International Conference NANO-2017
Abstracts Book of the 6-th International Conference NANO-2018
Abstracts Book of the 7-th International Conference NANO-2019

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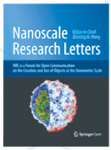
O. Fesenko, L. Yatsenko, Nanophysics, Nanophotonics, Surface Studies, and Applications 183, DOI: 10.1007/978-3-319-30737-4, ©Springer International Publishing, Switzerland 2016



Participants of International Summer Schools and International NANO Conferences – published their articles in Special Issue of Springer Open Journal "Nanoscale Research Letters" (in 2013, 2014 and 2015) dedicated to NANO Conferences. Impact Factor of Journal – 2.779.

www.springer.com/materials/nanotechnology/journal/11671

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