
Introduction

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Biographical notes: Denis S. Andreyuk graduated in 1997 from Biological Faculty of the Moscow State University named after M.V. Lomonosov. After getting PhD in Biology (1999), he worked in Biological Faculty of MSU. From 2004 till 2012, he worked in the NT-MDT Group, the last position was Director of Marketing. From 2012 till now, he is an Executive Vice-President of the Nanotechnological Society of Russia. From 2015 till now, he is an Associate Professor in MSU, Faculty of Economics.

Dear Colleagues,

I am happy to present this Special Issue of IJNT with selected papers about nanoscience and nanotechnology in Russia. The annual meeting of the Nanotechnological Society of Russia (NTSR) showed the snapshot of scientific topics most actual in the past year.

A few words about the NTSR. This is a non-governmental and non-commercial scientific society established in 2008. Currently it includes more than 1400 individual scientists working on the field of nanoscience and nanotechnology. Foreign members are from 12 countries worldwide. The *2017 Annual NTSR Conference* held on 30–31 of March in Dmitry Mendeleev University of Chemical Technology hosted more than 150 participants from 47 regions of Russian Federation. 50+ oral speeches were presented in nine sections. More than 30 young scientists shared their results during poster section. The most prominent oral reports have been invited to be presented in form of full-text papers for this special issue of IJNT.

What are the main topics?

Material sciences traditionally attract the focus of applied efforts in utilising nano-scaled effects. Carbon nanotubes, metallic nanoparticles, quantum dots still attract attention as active minor components of advanced materials. Thus, it is not surprising that properties of different nanoparticles in wide range of conditions are scrutinised by many teams. As for large-scaled materials their abnormal and unexpected bulk characteristics usually represent one of the biggest pools of new knowledge each year. And the last one was no exception. Nanocomposites with polymeric matrix and nano-structured metals/alloys are of most interest among bulk materials.

Next to bulk materials are coatings. Nanotechnologies allow to improve substantially anticorrosion and antifriction protective coatings. Hydrophobic soft films occupy the second position, while the optic-active films finalise the top-3 of informal “films-&-coatings rating”.

Large effects of nano lay in part in synergy between different levels of matter complexity. The neuromorphic ICs can be an example of this case. Neuromorphic networks are not something new for at least 50 years already. Memristors as principal elements of electronic circuits have been described several decades ago as well. But implementation of metal oxide memristors with characteristic dimensions of tens of nanometres into widespread technologies of silicon ICs made it possible to construct microprocessors with calculation power of simple biological neuron networks. So, the neuromorphic hardware for artificial intelligence is now one of the mainstreams in nanotechnologies.

Life sciences represent another line of explosive progress where nanotechnologies are strongly demanded. New approaches in oncology and advances in agriculture technologies can be mentioned in context of this special issue.

Social impacts of nanoscience and nanotechnologies in this issue are mirrored in the discussion on new educational paradigm. What should be obligatory in teaching and where the freedom would be more effective, which dangers students and even high school pupils should be informed about – questions of this kind were acute in the agenda of the *Annual NTSR Conference 2017* and are reflected here.

Members of Nanotechnological Society of Russia in their reports expressed consciousness and concern. We understand how vulnerable the global ecosystem is and how dangerous for human civilisation technological progress can be. This is our common responsibility to keep the world safe for future generations.

With best regards,

Denis S. Andreyuk, PhD

Executive Vice-President of Nanotechnological Society of Russia