Preface

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Biographical notes: D.S. Andreyuk graduated in 1997 from the Biological Faculty of the Moscow State University named after M.V. Lomonosov (MSU). After getting a PhD in Biology (1999), he worked in the Biological Faculty of MSU. From 2004 till 2012, he worked in the NT-MDT Group, the last position was Director of Marketing. Now, he works as Executive Vice-President of the Nanotechnological Society of Russia (NSR) and Executive Director of the Russian Association for the Advancement to Science (RAAS). His academic positions are in MSU Faculty of Economics, and in Mental Health Clinical Hospital No. 1 named after N.A. Alekseev of Moscow Health Department.

This special edition of the *International Journal of Nanotechnology* was assembled in highly complicated conditions. I need not remind you of the spring of 2020, the first wave of the pandemic, or the series of lockdowns around the world. The NSR conference had to be postponed, and communication in the form of offline seminars was terminated. Unfortunately, some active members of our society left us.

In these difficult times, it was decided to activate online communication. We conducted online discussions of the works submitted for publication in the special edition and, as experts of the Society, came to a collective conclusion that they were interesting and reflected the points of growth that are active in the NSR today. One of these new lines of activity emerged to be the tendency to engage humanitarian disciplines into working on nanotechnological projects.

For instance, the edition contains an article on regional economics – that is, when nanotechnological industries appear to become the drivers of growth or at least the mechanisms of diversifying risks in economics of a large Russian region. Three research teams submitted their papers on the methods to harmonise interactions and enhance cooperation within large projects, in nanotechnology in particular and in science in general. In one case, the focus lies on discerning language hindrances, the matter extending beyond concentration only on multilingual communication – namely, discovering that even when individuals use one language, a number of information losses and distortions occur. Another study attempts to harmonise the basics of cooperation,

that is, to determine the cultural code structure – a certain set of values that should be shared by all participants of a large project to provide for their intuitive mutual understanding. Finally, the attempts to construct a model of communication in social groups led another research team to formulating a logic of a model which should in the future allow to observe more long-term processes up to human sociality evolution.

The set of other topics remained primarily traditional. As always, studies on electronics and instrument-making are present, this time concerning supporting technologies for creating very large-scale integrated circuits. There also are works on metallurgy and modification of machine details characteristics using nanotechnologies. One article has to do with the modification of sliding electrical contacts by reinforcing them with superelastic hard carbon particles produced from fullerenes upon high-pressure high-temperature synthesis of metal-fullerene mixtures. Another one proposes to improve tribological characteristics of agricultural machinery by nanostructuring the surface layer of its working bodies using the method of vibroplasma treatment.

The creation and modification of nanostructured polymeric coatings is another traditional section of our conference which constantly generates fascinating applied research works. This issue contains an article on the formation and anti-adhesive, non-stick properties of ultra-thin fluorinated coatings created by self-assembly.

Another traditionally vastly represented area is nanobiotechnology. To be more specific, one of the studies suggests a method of delivering such antitumour drugs as benzophenanthridine alkaloid sanguinarine with pH-sensitive liposomes. Two works present studies on the environmental impact of metal nanoparticles, including long-term ones.

I sincerely hope that the pandemic will not impede effective scientific research. I wish everyone to stay healthy and have an exciting reading!