Victor Anatolyevich Eremeyev is currently Professor at Gdansk University of Technology, Faculty of Civil and Environmental Engineering and at South Federal University and South Scientific Center of RAS, Department of Mathematics, Mechanics and Computer Science. He received his PhD degree from Rostov State University in 1990 with the thesis title "The stability of two-phase nonlinear thermo-elastic bodies". After received his Diploma of Associate Professor in 1996, he has developed his research and teaching activity in over twenty years of experience as Associated Professor of Divisions of Computer Science, Elasticity and Mathematical Modelling of Department of Mechanics&Mathematics of Rostov State University. Moreover, in 2004 he became Head of the Laboratory of Smart Materials in Southern Scientific center of RAS. In the same year, he was awarded Doctor of Physics & Mathematics (Dr. hab.) at Institute of Problems of Mechanical Engineering of RAS, in Saint-Petersburg.

His research interests relate with nonlinear elasticity, non-classic theories of plates and shells, models of generalized media, and with application of mathematical methods in the continuum and structural mechanics. In particular, he has developed an interesting approach to the linear stability analysis for elastic solids undergoing stress-induced phase transformations, he has achieved major results in static and quasistatic problems for shells and plates undergoing phase transitions, and he has formulated the notion of the local material symmetry group for nonlinear shells and micropolar media. Moreover, he has given interesting contributions in the analysis of the conditions for accelerating wave propagation and has investigated the existence and uniqueness of weak solutions for some boundary-value problems including shells and media with microstructure. His research activity has resulted in the development of several interesting methods and ideas, leading to more than one hundred papers published in international journals and to several books in English, Russian, and Spanish. During his exceptional career, he was awarded with the grants of International Science Foundations (ISF), Russian Foundation of Basic Research (RFBR), CRDF, Jozef Mianowski fund, DFG, Competition Center of Saint-Petersburg State University and Science program "Universities of Russia". Furthermore, his paper "The theory of elastic and viscoelastic micropolar fluids" was awarded by Elsevier as the best paper published in Prikladnaja Matematika i Mekhanika (J. Appl. Math. and Mech.) in 1999.

A model of a liquid medium with couple stresses, which generalizes the theory of a viscous micropolar liquid to the same degree with which the constitutive relations of a simple viscoelastic liquid generalize the equations of a state of a Newtonian liquid, was proposed by Eremeyev in:

- V.A.Yeremeyev, L.M.Zubov, "The theory of elastic and viscoelastic micropolar liquids", Journal of Applied Mathematics and Mechanics, 1999, 63.5: 755-767.

In particular, the similarity and distinction between the model of an elastic micropolar liquid and the model of a medium equipped with a director field was discussed and used to describe nematic liquid crystals. By means of variational methods, the equilibrium conditions of the phases of an elastic micropolar liquid and the flow of a viscoelastic liquid are derived. The results of this paper have found applications in several areas of Engineering such as mechanics of suspensions, magnetic and biological liquids, liquid crystals and other liquid media of complex structure.

In 2003, he was author of an interesting paper concerning the analysis of boundary value problems for bodies that undergo phase transitions under deformation:

- Eremeyev V. A., Freidin A. B., Sharipova L. L., "Nonuniqueness and Stability in Problems of equilibrium of Elastic Two-Phase Bodies", Doklady Physics. 2003. 48. No. 7. 359–363.

In this work, it was shown that solutions of the problem of equilibrium of two-phase configurations of elastic bodies can substantially differ from solutions obtained when designing two-phase composites of the optimal structure. Moreover, the role of the appearance of an additional degree of freedom associated with the change in the relative phase content was studied.

The general nonlinear theory of elastic shells with an account of phase transitions in the shell material was developed in

- Eremeyev V. A., Pietraszkiewicz W., "The nonlinear theory of elastic shells with phase transitions", J. Elasticity. 2004. 74. No. 1. 67–86.

This formulation was based on the dynamically and kinematically exact through-the-thickness reduction of three-dimensional description of the phenomenon to the two-dimensional form written on the shell base surface.

In 2005, he has studied conditions of the existence of weak discontinuous solutions of equations of motion for nonlinearly elastic micropolar media in:

- Eremeyev V. A., "Acceleration Waves in Micropolar Elastic Media", Doklady Physics, 2005, 50. No. 4. 204–206.

In particular, he has proved an analogue of the Fresnel–Hadamard–Duhem theorem on the existence of acoustic axes and real acoustic numbers. Moreover, the equivalence between the existence of an acceleration wave and the requirement of a strong ellipticity of equilibrium equations has been shown.

The local symmetry group of the dynamically and kinematically exact theory of elastic shells was established in the seminal paper:

- Eremeyev V. A. Pietraszkiewicz W., "Local Symmetry Group in the General Theory of Elastic Shells", J. Elasticity. 2006. 85. No 2. P. 125–152.

In particular, the definitions of the fluid shell, the solid shell, and the membrane shell are introduced in terms of members of the symmetry group. Moreover, within solid shells the isotropic, hemitropic, and orthotropic shells and corresponding invariant properties of the strain energy density were discussed. For the physically linear shells, when the density becomes a quadratic function of the shell strain and bending tensors, reduced representations of the density has been established for orthotropic, cubic-symmetric, and isotropic shells.

The study of the eigenfrequencies for nanoscopic objects has been performed by Eremeyev in:

- Eremeyev V. A., Ivanova E. A., Morozov N. F., Soloviev A. N., "On the Determination of Eigenfrequencies for Nanometer-Size Objects", Doklady Physics, 2006. 51. No. 2. 93–97.
- Eremeyev V. A., Ivanova E. A., Morozov N. F., Soloviev A. N., "Method of Determining the Eigenfrequencies of an Ordered System of Nanoobjects", Technical Physics. 2006. 52. No. 1. 1–6.
- Eremeyev V. A., Ivanova E. A., Morozov N. F., Strochkov S. E., "Natural Vibrations of Nanotubes", Doklady Physics. 2007. 52. No 8. 431–435.
- Eremeyev V. A., Ivanova E. A., Morozov N. F., Strochkov S. E., "The Spectrum of Natural Oscillations of an Array of Micro- or Nanospheres on an Elastic Substrate", Doklady Physics. 2007. 52, No. 12. 699–702.

In particular, the crucial problem of the determination of mechanical characteristic of nanometer-size objects has been addressed by an innovative method for the determination of the eigenfrequencies of certain nanostructures (e.g., nanotubes and nanocrystals). The method is based on measuring

eigenfrequencies of an “extended system” consisting of a highly oriented array (lattice) of identical nanotubes or nanocrystals located on a substrate.

The Eremeyev’s interest in the study of models of generalized media has led to the fundamental paper:

- Auffray, N.; dell'Isola, F.; Eremeyev, V. A., “Analytical continuum mechanics a la Hamilton-Piola least action principle for second gradient continua and capillary fluids”, Mathematics and Mechanics of Solids Volume: 20 Issue: 4 Pages: 375-417, 2015.

In this paper, a material description for second gradient continua is formulated. A Lagrangian action is introduced in both the material and spatial descriptions and the corresponding Euler-Lagrange equations and boundary conditions are found. Moreover, stationary action principle is proved to hold for capillary fluids, i.e. fluids for which the deformation energy has the form suggested, starting from molecular arguments.

Without any doubt, Victor A. Eremeyev can be considered one of the most influent scientists in his framework of study. The impact of his ideas, methods and analysis has led to major advancements in all the research area in which he has worked on. His interdisciplinary point of view and his creative approach have allowed the achievement of fundamental results in several problems of Mathematics and Mechanics.

For all exposed reasons the Scientific Committee of the *Levi-Civita Prize in Mechanical and Mathematical Sciences* is honoured to propose Victor Anatolyevich Eremeyev as recipient of the 2018 edition of the prize.