SCIENTIFIC LEGACY OF NATALIA SMIRNOVA: PHYSICAL CHEMISTRY FROM THE PERSPECTIVE OF MOLECULAR THERMODYNAMICS

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Conferences of this series started 65 years ago, but we owe to Natalia Smirnova the rebirth of these conferences (under the present name and logo) in 2002, after an almost 10-year break.

Corresponding member of RAS Natalia Alexandrovna Smirnova (1933-2023) is widely known for her outstanding contribution to Physical Chemistry. Professor and Chair of Physical Chemistry at St. Petersburg State University, the recipient of numerous scientific and State awards, she served on the editorial boards of several reputable journals and chaired Section of Physical and Colloid Chemistry of the Mendeleev Russian Chemical Society.

Her early scientific career started under the leadership of Prof. Storonkin, within the walls of the world-famous St.Petersburg Thermodynamic school that traces back to Konovalov and Vrevsky in the early 1900s. Later, her pioneering works combined experiment, theory and computer simulation in the studies of phase equilibria and interfacial phenomena, liquid crystals and self-assembly in complex fluids [1-4].

The novelty of her approach lied in extensive use of Statistical Thermodynamics for solving problems of Physical Chemistry, and in a while she herself became an internationally recognized leader of St.Petersburg school of Molecular Thermodynamics. More than 10 years prior to the appearance of the celebrated SAFT theories, she formulated the same idea in different mathematical language for the description of nonuiniform fluids [1]. Her excellent textbook [5] translated in many languages is part of curricula of many generations of undergrads and PhD students studying Chemistry. More than 20 PhD and 4 DrSci degrees have been performed under her supervision. Colleagues and former students keep in memory her bright personality and outstanding mentorship.

Some of the original Smirnova's ideas are applied and developed further in a number of contributions at this conference.

1. Smirnova N. A. Fluid Phase Equilib., 1978, 2, 1−25.

2. Smirnova N.A., Victorov A.I. In: Equations of state for fluids and fluid mixtures. Ed: Sengers J.V. et al., Elsevier, 2000, 255-289.

3. Smirnova N. A. J Colloid Interface Sci., 2009, 336, 793–802.

4. Morachevsky A.G. et al., Thermodynamics of vapor-liquid equilibrium, 1989, Khimia, 344p (in Russian).

5. Smirnova N.A. Methods of Statistical Thermodynamics in Physical Chemistry, 1982, Vysshaya Shkola, 422p (in Russian).