

Room-temperature superconductivity: from dream to reality

(Scientific session of the Physical Sciences Division of the Russian Academy of Sciences, May 12, 2021)

DOI: <https://doi.org/10.3367/UFNe.2021.05.039006>

An important task — perhaps one of the most important tasks — in the field of nanotechnology is the creation of room-temperature superconductors. The challenge today is to find or create substances with $T_c \sim 300$ K, that is, room-temperature superconductors (RTSCs).

V L Ginzburg (*Poisk* newspaper, 22.02.2008)

On May 12, 2021, the scientific session of the Physical Sciences Division of the Russian Academy of Sciences on the topic “Room-temperature superconductivity: from dream to reality” was held online.

The agenda of the meeting, announced on the website of the Physical Sciences Division of the Russian Academy of Sciences, included the following reports:

(1) **Sadovskii M V** (Institute for Electrophysics, Russian Academy of Sciences, Ural Branch, Ekaterinburg, Russia) “Limits of Eliashberg theory and bounds for superconducting transition temperature.”

(2) **Struzhkin V I** (Center for High Pressure Science and Technology Advanced Research, Shanghai, China) “Magnetic susceptibility studies in new hydride superconductors.”

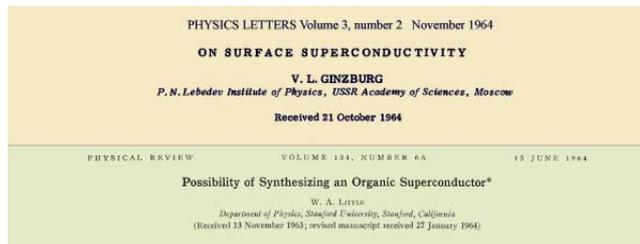
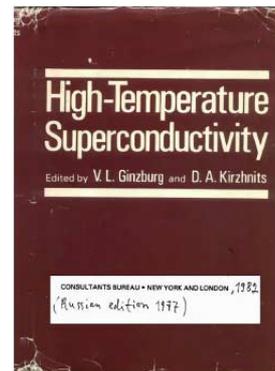
(3) **Troyan I A** (Federal Research Center Crystallography and Photonics, Russian Academy of Sciences, Moscow, Russia) “Superconductivity in yttrium and lanthanum superhydrides.”

(4) **Pudalov V M** (Lebedev Physical Institute, Russian Academy of Sciences (LPI RAS), Moscow, Russia) “The mystery of the existence of superconductivity and magnetism in $RbEuFe_4As_4$.”

Published further in this issue are articles written on the basis of reports 1, 3, and 4.



Vitaly Lazarevich Ginzburg (1916–2009) and the world’s first monograph on HTSC



Titles of papers by Ginzburg and Little (1964) in which the question of the possibility of nonphonon superconductivity was first raised



Building of the Center for High-Temperature Superconductivity (HTSC) and Quantum Materials, created on the initiative of V L Ginzburg (LPI RAS)



Panorama of setups for solid-phase synthesis of high-temperature superconductors (Ginzburg Center, LPI RAS)



Panorama of setups for the characterization of new synthesized HTSC materials (Ginzburg Center, LPI RAS)