

*Personalia*

## 80th birthday of Oleksandr Bakai



On September 16, 2018 an outstanding Ukrainian theoretical physicist, Full member of the National Academy of Sciences of Ukraine, Professor Oleksandr Bakai turned 80. All scientific activities of Oleksandr Bakai are connected with his hometown of Kharkiv, where, upon the graduation from Kharkiv State University (1961), he was working at the famous Kharkiv Physical-Technical Institute, and where he has headed a theoretical department since 1981.

The scope of scientific problems targeted by Oleksandr Bakai is extremely wide: together with O.I. Akhiezer — a theory of stochastic acceleration of particles based of Fermi-Ulam model was proposed; in cooperation with V.G. Baryakhtar — the processes of parametric excitation of sound by uniform magnetic field in ferromagnets were studied; he formulated a theory of non-linear waves in plasma, suggested a polycluster concept of amorphous solids and the theory of polyamorphous transitions in orientational glasses, estimated the nature of the long-range correlations of density fluctuations in glass-forming liquids.

The ideas by O. Bakai were very fruitful regarding the nature and features of heterophase fluctuations in a vicinity of liquid-solid and gas-liquid phase transitions. In the recent years, a new direction emerged in the studies by Oleksandr Bakai — the gas-semimetal and semimetal-metal transitions in expanded mercury and in liquid mercury, a system with a non-trivial phase diagram. The recently published studies on liquid Hg established structural and thermodynamic features of the transition between metallic and non-metallic states of Hg on the basis of the originally developed three-state model of heterophase system with density fluctuations of three types: metallic, non-metallic and gaseous ones. In particular, a region of changes in fluctuon parameters was estimated, for which a smooth liquid-liquid transition can be observed.

Professor Bakai authored 4 books and about 300 papers. His scientific works brought him a State prize of Ukraine in science and technology (1992) and an academic O. Leypunski prize (2008). In 2009 O. Bakai was elected to the National Academy of Sciences of Ukraine as its Full member.

Oleksandr Bakai has a tight collaboration with scientific institutions all over Ukraine, and with those from Lviv in particular. In 2013, the Scientific Council of the Institute for Condensed Matter Physics of NAS of Ukraine conferred the honorary title of Doctor honoris causa to Professor Bakai with a formulation “for outstanding contribution to the theory of plasma, glass and liquid states, development of material physics for nuclear industry, support of Ukrainian culture and its spreading all over the world, and for tight collaboration with ICMP in studies of disordered systems, phase transitions and critical phenomena”.

Being a very kind and intelligent person, Oleksandr Bakai is always open for a discussion with fellow scientists and students on a wide spectrum of scientific problems. His passion to science Oleksandr Bakai shares with his long-time fascination of hiking. Lviv colleagues remember the recent joint mount trips to the origin of Dnister-river and to the top of the Hoverla mount.

Editorial Board of Condensed Matter Physics and all colleagues-physicists wish Professor Oleksandr Bakai a very Happy Birthday and many fruitful years to come in scientific research!