YURIY IVANOVYCH SHYMANS’KYI (1928–1998)
(to the 90th anniversary of his birthday)

July 10, 2018 marks the 90th anniversary of the birth-
day of the outstanding Ukrainian scientist in molec-
ular physics, one of the founders of the physics of
liquid state in Ukraine, Professor, Dr. Sci. in physics
and mathematics, Academician of the Academy of
Sciences of the Higher Schools of Ukraine Yuriy
Ivanovych Shymans’kyi.

Yuriy Ivanovych was born in Kyiv in 1928 in a
family of teachers. His father Ivan Yevgenovych Shy-
mans’kyi taught higher mathematics at the Kyiv Hy-
drometeorological Institute, and his mother Lyud-
myla Mykolaivna Krasylnykova-Shymans’ka was a
teacher of the French language.

From 1946 to 1951, Yuriy Ivanovych studied at the
Faculty of Physics of the T.G. Shevchenko State Uni-
versity of Kyiv (KSU). In 1951–1954, he was a post-
graduate student at the Chair of Molecular Physics
of the KSU. His scientific adviser was Prof. O.Z. Golyk.
The first scientific works of Yuriy Ivanovych were
devoted to the study of the latent evaporation heat of
liquids, as well as the viscosity, density, and critical
temperature of binary alcohol solutions. In 1954, hav-
ing analyzed the literature and his own experimental
data, he proposed an original empirical relationship
for the temperature dependence of the liquid evap-
oration heat, known at present as the Shymans’kyi
equation (later, he theoretically substantiated this
equation and published it in 1958). In 1955, he de-
fended his Ph.D. thesis “The structure and physical
properties of binary alcohol solutions”. In 1958, he
was awarded the title of Associate Professor of the
Chair of Molecular Physics.

Further scientific researches of Yuriy Ivanovych
were devoted to the experimental study of criti-
cal phenomena and the gravitational effect in high-
temperature molecular fluids and liquid solutions,
using the Toepler optical method, the microprism
method, and the original version of the flotation
method with free microfloats, as well as to the de-
velopment of fundamental ideas concerning the evap-
oration and condensation growth of liquid droplets
under various conditions. The method of microfloats
improved by Yuriy Ivanovych has supplemented the
arsenal of classical methods used while studying
critical phenomena. Those researches resulted in the
Dr. Sci. dissertation “Research of quasistatic transfor-
mations in one-component and binary systems near
the liquid-vapor critical point and quasistationary
liquid-vapor phase transitions in some substances
and solutions”, which Yuriy Ivanovych defended in
1969. In 1970, Yu.I. Shymans’kyi was awarded the
title of Professor of the Chair of Molecular Physics.

At that time his scholarly friendship with leading
scientists from different republics of the Soviet
Union, who worked in the field of investigations of a
liquid state of substances, professors R.I. Krichevsky,
Yu. I. Shymans'kyi was an author of coexistence curves and isoterms in a vicinity of the critical point. His work devoted to the statistical theory of liquids and multiphase systems. Those works by Yu.I. Shymans'kyi revived the Ukrainian scientific school aimed at studying the phase transformations and critical phenomena. Yu. I. Shymans'kyi worked at the T.G. Shevchenko State University of Kyiv from 1953 to 1998. In 1978–1989, he headed the Chair of Molecular Physics. In 1983–1998, he was a scientific supervisor of the problem laboratory of aerodispersive systems. In 1970–1973 and 1981–1995, Yu.Ivanovych was a Dean of the Faculty of advanced training of the Kiev University. He was active in the public work at both the University and the faculty. He paid a large attention to the scientific youth.

After the revival of the National University of Kyiv-Mohyla Academy, Prof. Yu. I. Shymans'kyi headed the Chair of Physics and Mathematics at this University (in 1993–1998). At the Chair, he created a powerful scientific community. It was not his mistake. He recognized well that the values of critical indices depend, to some extent, on the choice of system’s order parameter. This circumstance is especially important for binary and multicomponent solutions. Therefore, he spared no effort and time to construct the optimal order parameter of the system. His work devoted to establishing the character of singularity for the rectangular diameter of coexistence curves gained the world recognition.

He proposed the extended scale equations to describe coexistence curves and isoterms in a vicinity of the critical point. Yu.I. Shymans'kyi is an author of the classical theory for the temperature dependences of the evaporation heat, density, and isochoric heat capacity near the critical state. Yu. I. Shymans'kyi was a scientific adviser of 14 Ph.D. and Dr. Sci. theses.


Professor Yu.I. Shymans'kyi worked at the T.G. Shevchenko State University of Kyiv from 1953 to 1998. In 1978–1989, he headed the Chair of Molecular Physics. In 1983–1998, he was a scientific supervisor of the problem laboratory of aerodispersive systems. In 1970–1973 and 1981–1995, Yu.Ivanovych was a Dean of the Faculty of advanced training of the higher-school teaching staff at the Kyiv University. He was active in the public work at both the University and the faculty. He paid a large attention to the scientific youth.
teaching staff by engaging famous scientists from the academic institutions of Kyiv.

Yurii Ivanovych was a wonderful lecturer. He lectured the “Molecular physics” course at the Faculty of physics of the KSU. Yurii Ivanovych also excellently lectured the courses “Physics of phase transitions” and “Physics of gases and liquids” at the Faculty of physics of the KSU, the course of general physics at the KSU natural-science faculties, and the courses “Some issues of molecular physics and their teaching” and “Fundamentals of thermodynamics and statistical physics” at the Faculty of advanced training (the Institute of advanced training of the higher-school teaching staff). Yurii Ivanovych was very responsible for preparing his lectures and holding the pedagogical discipline. His lectures were considered by students with great attention. At those lectures, we, young teachers at that time, got lecturer’s experience, and we are all sincerely grateful to him for his “Lessons”. In 1968, he lectured at the Leipzig, and in 1969 at the Debrecen Universities. On the basis of those lectures, he, in co-authorship with O.T. Shymans’ka, wrote the textbook Molecular Physics, which was published after his death.

Yurii Ivanovych Shymans’kyi is an author and co-author of more than 300 scientific publications. Among them, there are the textbooks Critical State of Pure Substances and Thermodynamic Theory of Critical Phenomena (in coauthorship with O.T. Shymans’ka). At different times, Prof. Yu.I. Shymans’kyi was a member of the editorial board of the collection of treaties Physics of Liquid State, the interdepartmental collection of treaties Physics of Aerodynamic Systems, and the journal Bulletin of Higher Educational Institutions. Physics.

Yurii Ivanovych Shymans’kyi was a highly intelligent person, with a good sense of humor. He was an outstanding scientist and pedagogue, and made a considerable contribution to the formation and development of molecular physics.

The kind blessed memory left after Yurii Ivanovych will be preserved in the hearts of his disciples, friends, colleagues, and everybody who knew him.

**Academician of the Nat. Acad. of Sci. of Ukraine, Dr. Sci. in physics and mathematics, Prof. L. BULAVIN;**
**Corresponding Member of the Nat. Acad. of Sci. of Ukraine, Dr. Sci. in engineering, Prof. B. BASKO;**
**Corresponding Member of the Nat. Acad. of Pedagogical Sci. of Ukraine, Dr. Sci. in physics and mathematics, Prof. O. CHALYI;**
**Dr. Sci. in physics and mathematics, Prof. D. GAVRYUSHENKO;**
**Dr. Sci. in physics and mathematics, Prof. Yu. ZABASHTA;**
**Dr. Sci. in physics and mathematics, Prof. V. KLEPKO;**
**Dr. Sci. in physics and mathematics, Prof. M. LEBOVKA;**
**Dr. Sci. in physics and mathematics, Prof. M. MALOMUZH;**
**Dr. Sci. in physics and mathematics, Prof. V. POGORELOV;**
**Dr. Sci. in physics and mathematics, Prof. L. POPERENKO;**
**Dr. Sci. in physics and mathematics, Prof. V. SYSOEV**


457