



## INTRODUCTION

The presence of Professor Vytautas Balevičius at the premises of the Institute of Chemical Physics in Saulėtekis is unmistakable. His loud, joyful conversations with colleagues in the corridor and his distinctive laugh are immediately recognizable. Although naturally talkative, what truly distinguishes him is his enduring, almost childlike passion for physics and his remarkable willingness to share knowledge. His office door has always been open to colleagues and students alike: one could knock to discuss a scientific problem and typically leave – if not with a definitive answer – then at least with a valuable reference or an insightful suggestion pointing toward the right direction. He is equally appreciated by students. Although Vytautas Balevičius stopped delivering regular lectures only a few years ago, those fortunate enough to attend his classes vividly recall his unconventional teaching style, lucid explanations, well-chosen examples, and the characteristic panache with which he presented the material.

Professor Vytautas Balevičius will celebrate his 75th birthday on 26 July 2026. This milestone is difficult to infer either from his youthful appearance – which suggests a considerably smaller number – or from his current level of activity. He continues to chop wood and clean the chimney of his house himself, and he still remains scientifically active at the Institute of Chemical Physics as Professor Emeritus. His career as a professional physicist began in 1969 when he enrolled in the Faculty of Physics at Vilnius University. He joined the Radiospectroscopy Group at the Department of General Physics and Spectroscopy during his sophomore year. Under the supervision of Professor Liudvikas Kimtys, he performed his first serious NMR measurements on organic mixtures exhibiting hydrogen bonding. His early scientific results were presented at several student conferences, culminating in the award of a medal from the then Ministry of Higher and Specialized Secondary Education for the best student work in 1973.

After graduating from the Faculty of Physics in 1974, V. Balevičius remained with the Radiospectroscopy Group as an assistant. He continued his investigations into the properties of organic mixtures and hydrogen bonding using NMR spectroscopy. Although he never enrolled in a PhD program, V. Balevičius managed to prepare his Doctoral Dissertation entitled ‘NMR spectroscopy of ternary systems with hydrogen bonding’. The dissertation was mainly based on five publications [1–5], two of which appeared – notably for that time – in the journal published beyond the Iron Curtain, *Organic Magnetic Resonance*. He successfully defended his dissertation at the Institute of Physics of the Academy



Professor Liudvikas Kimtys and Dr. Vytautas Balevičius at the NMR spectrometer in the Faculty of Physics of Vilnius University in 1978.

of Sciences of the Belorussian SSR in Minsk in 1977, receiving the degree of Candidate of Sciences in Physics and Mathematics. The reviewers of his dissertation were Prof. P. M. Borodin (St. Petersburg University) and N. N. Shapetko (Karpov Institute, Moscow).

Professor Balevičius has cultivated extensive and long-standing international collaborations. In 1979–1980, he worked as a postdoctoral researcher at the National Institute of Chemistry in Ljubljana, Slovenia. Under the supervision of Professor Dušan Hadži (1921–2019), one of the pioneers of hydrogen-bond research, he investigated phase transitions in organic systems using vibrational spectroscopy. During this period, he initiated fruitful collaborations with prominent Slovenian scientists Jernej Stare, Janez Mavri, Janez Plavec and Professor Robert Blinc (1933–2011). More than two decades later, in 2002, he returned to Slovenia for another extended research stay devoted primarily to studying hydrogen-bonded molecular systems.

Between 1990 and 1992, V. Balevičius conducted research at the Darmstadt University of Technology, Germany, as a recipient of an Alexander von Humboldt Fellowship. Working with Professor Alarich Weiss and Professor Dieter Woermann (University of Cologne), he redirected part of his scientific focus toward NMR studies of phase transitions in complex ternary aqueous systems of organic compounds and inorganic salts. He was among the first to apply novel time renormalization group approaches and decorated lattice models to interpret the dependence of phase diagrams of such complex molecular systems on salt type and concentration. During his stay in Darmstadt, he also established a collaboration with Professor Hartmut Fuess, studying critical phenomena in binary salt solutions using NMR relaxation measurements. V. Balevičius later coordinated several bilateral German-Lithuanian research projects on phase transitions in ionic systems and dynamic nuclear polarization in solid-state materials.

The scientific achievements of V. Balevičius during 1974–1995 were summarized in his Habilitation Thesis entitled ‘NMR and vibrational spectroscopy of phase transitions in partially ordered systems’. This work presented original contributions to the understanding of phase transitions in liquids and orientationally disordered crystals, as well as order-disorder phenomena in organic and ionic solutions studied by NMR, IR absorption and Raman spectroscopy. He successfully defended his habilitation at Vilnius University in 1996 and was awarded the degree of *Doctor habilitatus*.

In the post-habilitation period, Professor Balevičius expanded his research toward NMR investigations of ionic liquids, lyotropic chromonic liquid crystals of biomedical relevance, solid-state polymers, and low-dimensional proton conductors with potential applications in innovative medicine. In

these areas, he collaborated extensively with Prof. Zofia Gdaniec (Institute of Bioorganic Chemistry, Polish Academy of Sciences, Poznań), Prof. Vladimir I. Chizhik (St. Petersburg University), Professors Valeriy Pogorelov and Iryna Doroshenko (Taras Shevchenko National University of Kyiv), Dr. Vaidas Klimkevičius (Vilnius University), Prof. Aivaras Kareiva (Vilnius University), Prof. Jūras Banys (Vilnius University) and Prof. Jérôme Hirschinger (Strasbourg University). In addition, proton stretching with anharmonic coupling in strongly hydrogen-bonded molecular systems was investigated by IR spectroscopy in close collaboration with Dr. George Pitsevich (Belarusian State University, Minsk).

Over the course of his career, V. Balevičius has authored more than 130 scientific publications and delivered over 100 invited and contributed presentations at international conferences. In 2012, he shared the Lithuanian Science Prize of the Lithuanian Academy of Sciences with his close colleague Prof. Valdas Šablinskas – the highest national recognition for scientific achievements. In 2016, the International Association of Advanced Materials honoured him with its medal in recognition of his significant contributions to materials science, engineering and technology.

Professor V. Balevičius has earned the trust of the Faculty of Physics community, serving as Head of the Department of General Physics and Spectroscopy (2006–2015) and as Dean of the Faculty (2007–2017). He has played a pivotal role in establishing modern NMR and EPR laboratories at the Faculty of Physics of Vilnius University in 2012. He also secured support from the Alexander von Humboldt Foundation for the acquisition of advanced vibrational spectroscopy equipment, including a high-power continuous-wave argon laser and a Bruker FTIR Vertex spectrometer. He has supervised three PhD students Valdas Šablinskas, Vytautas Klimavičius and Laurynas Dagys, and he served as consultant to a PhD student Kristina Kristinaitytė. Valdas Šablinskas became a leading specialist in vibrational spectroscopy at Vilnius University and later headed both the Department of General Physics and Spectroscopy and the newly established Institute of Chemical Physics at the Faculty of Physics. Vytautas Klimavičius defended his PhD Thesis in 2017 and subsequently received an Alexander von Humboldt Fellowship to pursue advanced studies of dynamic nuclear polarization in solid-state materials at the Darmstadt University of Technology. He returned to Vilnius University in 2020, and now leads the NMR Laboratory at the Institute of Chemical Physics. Laurynas Dagys obtained his PhD in 2019. He completed postdoctoral work in the NMR group of Professor Malcolm Levitt at the University of Southampton where he investigated spin dynamics in high and low magnetic fields during the period 2018–2022. Together with colleagues, L. Dagys received the prestigious Schrödinger Award in 2021. After a period at NVision Imaging Technologies GmbH in Ulm, he returned to the Institute of Chemical Physics in 2023 and contributes to the advancement of NMR research at the Institute.

This special issue of the *Lithuanian Journal of Physics* is a tribute from colleagues and friends of Vytautas Balevičius on the occasion of his 75th birthday. It is offered in sincere appreciation of his many years of fruitful collaboration, inspiring scientific discussions, dedicated mentorship, and enduring friendship.

Prof. Dr. Habil. Liudvikas Kimtys<sup>†</sup> and Prof. Dr. Kęstutis Aidas  
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