



Ing. Karel Žďánský, CSc.
† 30. April 2013

On Tuesday 30th April passed away, at the age of 79, one of the leading scientists of our Institute, Karel Žďánský.

Karel was born in Neratovice, Czech Republic and spent his school years in Ústí nad Labem. In 1957 he obtained his MSc. degree with honours from the Czech Technical University's Faculty of Electrical Engineering in Prague and in the same year he joined the Institute of Physics at the Czechoslovak Academy of Sciences. In 1959 he joined the Academy of Science's Institute of Radio Engineering and Electronics (IREE), where he began his PhD studies. He defended his PhD thesis on electron

paramagnetic resonance in 1962. IREE was later transformed into today's Institute of Photonics and Electronics (IPE), Academy of Sciences of the Czech Republic.

At the Institute he participated in the development of the Electron Paramagnetic Resonance (EPR) laboratory and in particular in the development of its highly sensitive EPR spectrometer. Thanks to his efforts it became possible to perform a number of high-quality studies of spin impurities in ionic crystals, and the EPR laboratory in IREE soon became a globally-recognised within the EPR field. In 1969 Karel was invited by Prof. Brian G. Wybourne to join his group at the University of Canterbury, Christchurch, New Zealand. Karel was appointed to a position of Reader in the Department of Physics, and besides the teaching of regular courses he continued his studies of localized impurities in crystals. Over the three years that he spent at the University of Canterbury, he published several important and highly-cited results, mostly in cooperation with Glynn D. Jones.

Just before his departure to New Zealand in 1968 he initiated, the formation and became the head of a new department at IREE aimed at preparing and investigating III-V semiconductor layers and structures. The Section of Materials, one of the key research units of the Institute, has gradually evolved from that particular research group.

After his return from New Zealand he was shortly engaged in theoretical studies of the dynamical charge transfer during sputtering from solid state surfaces within the context of Secondary Ion Mass Spectroscopy (SIMS). Gradually and systematically he became fully involved in the development of the laboratory devoted to electrical measurements. In particular, he introduced and pursued the Deep Level Transient Spectroscopy (DLTS) and the temperature-dependent Hall effect, and became fully involved in the experimental and theoretical investigation of the transport properties of semiconductor structures. In the mean time he again became the head of „his“ department and later on also the head of the Section of Materials. With his co-workers, Karel published several important contributions on the nature of DX centers in semiconductors, and was invited by Prof. Anthony R. Peaker to join his group at UMIST, Manchester. He twice spent two months at UMIST in 1991 and 1993. He became a well-known specialist in the field of semiconductor materials and structures suitable for the detection of ionising radiation –

particularly thanks to his studies of InP single crystals doped with Ti and Mn. He was invited by Dr. Brian K. Jones from Lancaster University to join the investigation of GaAs detection structures, and this cooperation resulted in several highly-cited publications. Karel visited Lancaster several times in 1994 and 1995.

Karel had been systematically researching ways of suppressing the effect of Fermi level pinning that prevented the preparation (using standard approaches) of high quality Schottky barriers on *n*-type InP. Fermi level pinning was a fundamental problem that also limited the utilisation of InP for the ionising radiation detection. He introduced and established, at IPE, the methodology of electrophoretic deposition of metal nanoparticles from colloid solutions on a semiconductor surface. This project was started in cooperation with Prof. Anton Fojtík of the Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague, and soon they obtained high-quality Schottky barriers with the highest published barrier height for InP. This concentrated effort led, in the case of Pd and Pt deposition, to the preparation of highly sensitive hydrogen sensor structures by using semiconductor InP/Pd, Pt and GaN/Pd, Pt structures. He had been pursuing this subject, in the last two years in cooperation with Prof. James H. Dickerson of the Brookhaven National Laboratory, very intensively when his work was interrupted by his sudden death.

Karel Žďánský published 158 papers according to WOS with more than 850 citations. He was very active in the supervision of master and PhD students from Charles University and the Czech Technical University. He mentored a number of the Institute's young scientists, and continued in his research activities to an advanced age. He had been officially retired since 2012 but continued to work, as an Emeritus of the Academy of Sciences, on a day-to-day basis.

Karel Žďánský was known for his friendly and courageous character, his diligence and endurance, and his knowledge and experience. Throughout his life he maintained an optimistic approach to people and to research work, despite living with various limitations and pain caused by joint-related illness.

On behalf of his friends and colleagues

Zdeněk Šroubek and Jiří Zavadil