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Tribute to Professor Rimantas Petras Sližys on his 70th birthday

With this tribute on the occasion of Professor Rimantas Petras Sližys' 70th birthday on June 8th, 2006, the electrochemical community of Lithuania recognizes his marked contribution to fundamental electrochemistry to which he has truly dedicated his professional life to teaching and education and also to all kinds of administrative work he has done.

One of us (A. S.) has known Rimantas Sližys for over 50 years, the other (E. J.) for a somewhat shorter time, when he started his Ph.D. under the supervision of Professor. Our long-term acquaintance with him has encouraged us to take a friendly look not only at Rimantas' scientific and teaching activities, but also to say some words about his personality and his main achievements in the scientific and administrative management. It is quite obvious that due to Professor's great enthusiasm in the latter work and also the need to take into account so many diverse views, often diametrically opposed, among the scientists, scientific institutes and higher education institutions about the ways and modes of reorganization of the system of science and studies in Lithuania throughout the last 15 years, such a task should be carried out equally with thoughtfulness and with appropriate caution. People and colleagues, events and their consequences, activities and qualities, career and its changes, emotions – all are life and compose his experience. That is why there is much to say about him. So, let the curtain to be opened.

Born in Kaunas to 1936 in the family of employees, Rimantas Sližys in 1953 finished the 1st secondary school in Vilnius and began his chemistry studies at Vilnius University. After graduating from the Faculty of Chemistry in 1958, he served as a laboratory assistant and a senior laboratory assistant at the Physical Chemistry Departament of this faculty.

Shortly afterwards, in 1960, Rimantas Sližys started his post-graduate studies at the Institute of Chemistry and Chemical Technology of the Lithuanian Academy of Sciences (now Institute of Chemistry), where, under the supervision of Professor Juozas Matulis, he entered the field of metal electrochemistry in aqueous solutions. In particular, his scientific career started from the investigation of some electrochemical phenomena occurring in the vicinity of a non-polarized or cathodically polarized nickel electrode. Performing accurate measurements of pH in the vicinity of the electrode surface, it was established that the changes in the potential of both non-polarized and polarized nickel electrode were due to the regular changes in the acidity of the solution in the layer near the electrode. These results were summarized in his dissertation entitled "Some electrochemical phenomena in the vicinity of non-polarized and cathodically polarized electrodeposited nickel" for a candidate degree (now Ph.D.), which he defended in 1964 at Vilnius University.

With regard to the beginning of his research work, particularly notable is a paper by J. Matulis and R. Sližys in *Electrochimica Acta* for 1964, in which the authors interpreted the relationship of the potential of nickel electrodes with pH in the diffusion layer of nickel plating solutions. This paper has become a distinct citation classic among electrochemists in our country and abroad.

At the Institute of Chemistry, he held successive positions of a research fellow assistant (1963–1966), later senior research fellow at the Laboratory of Electrolytical Alloys (1966–1978), Head of the Laboratory of New Electrochemical Methods and Automatization (1978–1991), a head research fellow at the same laboratory (1991), at the Laboratory of Electrochemical Kinetics (1992–1993 quarter-time, 1993–1997 full-time), at the Department of Corrosion Investigations (full-time 1997–1998, shortly half-time, not on the main staff in 1998) and finally at the same department from 1999 until he retired in 2000.

After finishing his Ph.D., Rimantas Sližys extended his scientific interest to other topics, such as investigation of changes of the concentrations of copper ions in a diffusion layer, using platinum microelectrodes as probes located at different distances from the cathode surface when copper was deposited from acidic sulphate solutions in the absence or presence of some additives; the evaluation of the state of metal electrode surface by measuring the interphase resistance and composition of diffusion layers, using various ring-shaped probes; the mechanisms and kinetics of electrodeposition of copper, zinc and their alloys from slightly alkaline pyrophosphate solutions; the discharge of hydrogen ions under limiting conditions in acidic sulphate nickel plating solutions, etc. Mention should be also made of the interesting and elegant work carried out by Rimantas Sližys in cooperation with a professional physician, which resulted in the elaboration of a new method for the determination of congenital heart disease by means of the electrochemical methods with the use of microprobes. This clearly demonstrates how a method proposed initially for electrochemical measurements and providing its high reliability was successfully applied in a new field.

Towards the end of the 1970s, when the preparation of a habilitation work became more and more realistic, Rimantas Sližys' research dealt mainly with the theoretical aspects of kinetics of electrocrystalization and corrosion of those metals the ions of which discharge through two consecutive one-electron transfer stages. By choosing the process of electrocrystalization of copper from acidic sulphate solutions as the main model system, he successed in proving that the stage of the surface diffusion of copper adatoms should be taken into account. The criteria allowing to discriminate between this model and another model describing the direct incorporation of adatoms into growing metal crystallite, i.e., excluding the stage of surface diffusion of adatoms, were formulated. The proposed model was also applied in explaining the mechanisms of acceleration or retardation of the electrode reaction in the presence of additives. Evidences for the suitability of this model in the elucidation of the kinetics of electrocrystallization of nickel as well were found. Although these results were met with a certain scepticism, the question as to some main pecularities of the kinetics of metal electrocrystallization or their anodic dissolution and corrosion behaviour, in our opinion, have not been resolved completely.

The results of these investigations and part of those obtained earlier were presented in Rimantas Sližys' D. Sc. dissertation "Kinetics of electrocrystallization of copper and nickel" defended in 1986. In 1990 he became a professor.

In 1987, Rimantas Sližys was sent for post-doctoral studies to Bulgaria where he participated in the studies of electrocrystalization of metals at the Institute of Physical Chemistry of the Bulgarian Academy of Sciences. The studies of this kind performed by the Bulgarian scientists had already been widely recognized as an excellent contribution to the general theory of metal electrocrystalization.

More recently, in the last decade, Professor Rimantas Sližys' research work also covered many areas of electrochemistry, including the influence of a number of additives on the kinetics of copper electrocrystallization; the kinetics of the discharge of hydrogen ions onto electrodeposited nickel, the interaction of some additive agents and the effect of these substances or products of their chemical and/or electrochemical changes onto the codeposition of nickel and hydrogen; the kinetics of the anodic dissolution and corrosion of nickel in sulphate and chloride solutions; adsorption of anions onto copper studied by SERS technique; the simulation of electrochemical colouring of anodized aluminium in aqueous solutions of copper salts, etc.

Some of these works are not only of great scientific importance, but have a practical value as well. Professor Rimantas Sližys is the co-author of several inventions.

He has always had high demands regarding the reproducibility of experimental results and the quality of papers to be prepared for publication. He used to awake a true scientific interest of his younger colleagues in a research work, in the analysis of experimental results, in presenting their own ideas clearly and in making justified assumptions or conclusions. We remember the comprehensive discussions and repeated corrections, until Professor was satisfied with the interpretation and presentation of the results.

It is also important to highlight the fact that Professor has been very successful in mentoring young scientists: he was a supervisor of 11 Ph. Ds., a member of a great number of doctorate committees and a skilled opponent for many Ph.Ds. No less important was his engagement as an excellent teacher, either giving lectures at the Institute and at Vilnius University, Faculty of Chemistry, or taking an active part in various seminars. It should be emphasized that Professor is liked not only because he has a good knowledge of the fundamental aspects of electrochemistry and is well-versed in modern electrochemical methods, but he is widely known to devote his time to giving exhaustive consultations or useful advice to younger workers as well. This feature of his teaching activity still remains unforgotten at our institute.

Indeed, he has had a lot more to say in modern electrochemistry, in corrosion and in teaching, but… This great *but*!

After Lithuania restored its independence, Professor Rimantas Sližys, like the majority of the academic community in Lithuania, became an active participant in all the events seeking for the reorganization of the existing system of management of science and studies. Professor is one of the initiators of founding the Scientists Union of Lithuania, and under his guidance a draft law of science and studies was soon prepared. In 1990, Professor became Director General of the newly established Science and Studies Department (under the Government of Lithuania). Due to Professor's great efforts, the mentioned draft law was passed by the

then Supreme Soviet in 1991. There is no doubt that the majority of scientists admitted that a considerable reorganization of science and studies was necessary. However, there arose a strong disagreement among the supporters of different views on the ways and methods this reorganization should be realized. We remember those times! Intensive disputes, often even drastic, the unjustified rumours, not always sufficiently qualified commissions of experts, at last the financing problems – all these circumstances only served to aggravate the situation. Soon after the January 1991 tragic events, Professor Rimantas Sližys resigned and the Science and Studies Department was abolished. It seems that the principled Director General, his enthusiasm, his clear position and especially his activity in favour of the academic independence and the autonomy of science and studies institutions were like an uncomfortable splinter to some people.

In the same year, the Government established the Science and Studies Commission to deal with a range of problems related to reorganization, and Professor Rimantas Sližys was appointed Chairman. This Commission prepared a typical statute of scientific institutions, started working on other problems such as financing of science and studies, the system of scientific degrees and titles, special pensions for scientists; it participated in preparing a draft statute of the Science Council of Lithuania. At the end of 1991 when this statute was approved, the Science Council started functioning and Rimantas Sližys was elected Chairman. At the beginning of 1992, the statute of scientific degrees and titles came into force. So, the science and studies institutions were qualified for a final decision. From 1993 to 2002, not being Chairman, Professor remained to be one of the most active members of the Science Council. In 1998–1999 he was Director of the Science and Studies Departament of the Ministry of Education and Science and Vice-minister of this Ministry. Since 2005 Professor has been Deputy Chairman of the Council for Evaluation of Science and Studies Institutions.

For many years we have known Professor Rimantas Sližys as an intelligent, wise and witty man. Among his other characteristic features his colleagues and co-workers, especially these belonging to his generation, remember him in primis as a goodwill and tolerant person who not infrequently has helped them in certain rather complicated or even almost uncontrollable situations. He has a number of interests outside work. He appreciates belles-lettres, does not discriminate crime fiction. From his words, it is known that he likes music, especially pieces by L. van Beethoven, G. Verdi, F. Liszt, G. Gershwin. At the Institute he has been known to be in good voice and to like singing. In his younger days, he used to enjoy playing table tennis. Professor has always enjoyed a good company of his friends and colleagues at the Institute and earlier in the English Club. Some of his expressions have become part of the so-called Institute folklore, for instance, his words “If you...” said delicately together with raising eyebrows before drinking a wineglass.

We congratulate Professor Rimantas Sližys and wish him all the best for the future. We hope that many colleagues join us in the same wishing. We also hope to have chances again and again for further nice conversations with Professor.

Prof. Eimutis Juzeliūnas
Dr. Antanas Steponavičius

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