



## **To the memory of Professor Zbigniew Moser**

I met Prof. Moser for the first time in November 1976, a day after I defended my master's thesis at the Faculty of Non-Ferrous Metals of AGH University of Science and Technology, Kraków. I always dreamt of getting a position in an institute or university. I realized that it would be extremely difficult because at those times I had to obtain a permit of appropriate state employment agency. When I learnt that Prof. Moser was looking for a research worker I immediately decided to go there. When I was going for the interview I was as full of hope as of concern, because I knew so little about the Institute. The meeting went on in a serious atmosphere. Prof. Moser talked for nearly an hour about the Institute, the research carried out in his department, about perspectives of gaining scientific degrees, international contacts, conferences and about the character of work in his department.

He listened to me with attention when I informed him about my master's thesis, and since it had an experimental character we found time for a short discussion. And so it happened that I was accepted and started work on December 1<sup>st</sup> 1976.

In the initial years of cooperation, our interests were concentrated on investigations of thermodynamic properties of molten salts and alloys, which were interpreted with the equations proposed by Prof. Krupkowski, an older colleague and teacher, who was approached with great attention by Prof. Moser.

In the same year, professor Moser published a work, together with Dr J. F. Smith of the University of Iowa, on thermodynamic properties of alloys containing lithium, the lightest of metals. The work was published at the same time with the attempt of introduction of the subject matter, concerning that group of metals, into future research plans of the Department of Metallurgical Processes, because of wide possibilities of their applications as constructional materials in aviation as well as electrode materials in renewable high-temperature sources of energy.

The late 70ies were full of discussion and preparations to the thermodynamic investigations of lithium alloys, which required specific conditions of preparations and experiments. When it seemed that the challenge was too difficult, because of high activity of lithium, professor Moser established cooperation with Prof. Schwitzgebel of Saarland University in Saarbrücken. I was sent there to learn how to deal with such difficult matters. Soon, Prof. Moser followed me to carry out calorimetric investigations of lithium alloys and familiarize with the experimental technique in the Max-Planck Institute in Stuttgart. The gained experience allowed us to modernize generally the glove-box constructed earlier in the Institute and to start systematic investigations of lithium activity, which were continued for next several years. In the meantime professor Moser tried to receive funds to purchase a professional

glove-box, finalized with success in the second half of the 80ies. When the State Committee of Scientific Research put into practice a program of research projects, professor Moser was one of the first to obtain a grant for the realization of a project on properties of Al-Li-Mg alloys in cooperation with the aviation plant in Mielec, Poland.

Although over 30 years passed since the investigations of lithium alloys were started, the problem has been continued in the area of materials predicted to the storage of hydrogen. The tasks and research project realized in the discussed matter allowed us to publish over 24 works in renowned local and foreign journals and to present the results at several international conferences.

The ecological solder alloys form another very important research field, in which prof. Moser concentrated his efforts. He realized that the investigations should be performed in cooperation with industrial plants which produced solders or electronic systems as well as with research institutes cooperating with the electronic and electric industries. That was why, he initiated the cooperation with Tele and Radio Research Institute, Institute of Non-ferrous Metals, Warsaw Technical University, Electrotechnical Institute and Tohoku University in Sendai, Japan. The spectrum of investigations was widened with the meniscographic examinations (wetting time, wetting force, wetting angle, interfacial tension), strength of solders and joints, measurements of electrical properties as well as calculations of phase diagrams and modeling the solidification process. The investigations concerned the solders based on tin-silver-copper and tin-zinc eutectic modified with small additions of other metals. The crowning achievement of the investigations was electronic database of lead – free solders SURDAT published in 2007, a patent application for new Sn-Zn solders modified with lithium as well as the preparation of second widened edition of the SURDAT 2 database, which should be published this year. The results of investigations, contained in it, were executed within research projects, scientific nets and the Institute's and international research programs.

Apart from the scientific and research activity, professor Moser was engaged into the edition of the Archives of Metallurgy, followed by Archives of Metallurgy and Materials, as an editor in chief since 1980. Thanks to his insistent efforts the Archives of Metallurgy and Materials incorporated into the list of the Institute for Scientific Information in Philadelphia. During his long-lasting carrier, he was Associate Editor of some foreign periodicals. He also organized Associated Phase Diagram and Thermodynamic Committee and Polish Phase Diagram Committee and he was their president from the moment of their establishment. Professor Moser was the member of Polish Academy of Arts and Sciences and acted in Polish Committee for Cooperation with The Committee on Data for Science and Technology ICSU (CODATA).

He was the Director of the Institute from 1999 up to 2003, and in the last four years was the Chairman of the Scientific Board of IMMS PAS. For his scientific activity he was awarded state medals, among which Polonia Restituta Cavalier Cross. He was several times awarded a prize by the Polish Academy of Sciences and director of Institute of Metallurgy and Materials Science.

Professor Zbigniew Moser will stay forever in my memory as a superb promoter of scientific activity of the Institute world and country-wide, the initiator of new research fields always correlated with international trends, and an older colleague inspiring coworkers to implement new techniques and research projects.

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