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MICROBEAM ANALYSIS IN POLAND - PAST AND FUTURE

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Professor Jan Kusinski holds degrees of M.Sc. (1969), Ph.D. (1976), and D.Sc. (1989) from the University of Mining and Metallurgy, Krakow, Poland. Following a one-year post-master appointment at the Materials Analysis Division of the Faculty of Metallurgy (AGH), he became Principal Investigator in charge of the microprobe (Cameca) laboratory at the Faculty of Metallurgy (AGH) in 1969. He began his academic career as a Lecturer at the University of Mining and Metallurgy, Krakow campus in 1972, later becoming an Assistant Professor in 1976, and Associate Professor-in-Residence in 1990, and ultimately accepting a full-time appointment to the faculty in 1998. He is Head of the Surface Engineering and Materials Characterization Department.

Professor Kusinski's research contributions span the study of surface engineering, nanostructured materials, aerospace alloys, oxides, electronic materials and devices. He is author or co-author of over 200 technical publications.

1. ABSTRACT

The aim of this work is to present the development of X-ray microanalysis in Poland.

Forty six years ago, in 1963 Prof. Z. Bojarski (in Gliwice) installed the very first microprobe (Cambridge Microscan) in Poland and started with his co-workers to apply this technique in metallurgy, mineralogy, ceramics, and solid state physics research. Four years later, in 1967, he installed a newer machine Jeol JXA-3A. At the same time, Dr. E. Barszcz, after finishing his stage at IRSID (France) in the group of Prof. Philibert, joined Bojarski's team.

Up to the end of 70's several microprobes were installed in Poland, namely, in 1968 a Cameca MS46 at AGH in Krakow, in 1968 a Jeol JXA-3A at the Technical University of Warsaw, etc. Currently several WDS microprobes and more than 200 EDS systems, attached to SEM or TEM, are working at universities, scientific institutes and in industries in Poland.

Parallel to his research, Prof. Bojarski started organizing courses on microanalysis for new potential users, seminars and conferences. Beginning from 1971, every two years, up to the Marshal Law in 1981, six Polish National Symposia on X-ray microanalysis have been organized in Gliwice, Krakow and Jablonna. Also, four Summer Schools were organized for Polish users and applicants of microprobe techniques. Also, participants of the Polish International Conferences on Applied Crystallography and on Electron Microscopy had an opportunity to attend the lectures given by the invited speakers - specialist on microanalysis such as: D.B. Williams, C. Colliex, G.W. Lorimer, J.L. Labar, J.M. Dijkstra, etc. Polish scientists participated in the series of "Tagung Microsonde" conferences organized in 70's in the German Democratic Republic, and in the International Congresses on X-ray Optics and Microanalysis. By the way, the XIIth Congress in this series was organized in 1989 in Krakow.

With the development of microprobes and computer science several Ph.D.-theses and habilitations, dealing with different theoretical and practical aspects of microanalysis were successfully defended in Poland, for example: M. Zelechower, J. Paduch, P. Zieba, K. Sikorski, L. Kaczynski, K. Stroz, and others. The increased spatial resolution of the actually produced instruments as well as development in micro-chemical analysis presented by the before-mentioned authors have allowed them to explore problems where reactions occur at the boundaries and interfaces or within small particles or phases in bulk samples, allowing them to obtain chemical information from areas smaller than 100 nm in thin samples.

At present, in a few Polish academic centres X-ray microanalysis is in the graduate and Ph.D. students programmes at a basic or advanced course level. Yearly, one or two WDS systems and several new EDS systems are installed in Poland, usually attached to scanning or transmission electron microscopes.

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