



**Prof. Dr hab. Eng. Leszek Stoch (1931-2015)  
Honorary Professor of AGH-UST in Cracow**



On 20th January 2015, in Wieliczka near Cracow, Professor Leszek Stoch passed away. He was an outstanding scientist whose innovative achievements have stamped an everlasting mark on Polish earth science, materials engineering and ceramics.

He began his scientific career in 1951 while still a student of the then Mineral Faculty of the Academy of Mining in Cracow and he was associated with his mother university till his death. After graduating in 1955 as a chemist-ceramist, Leszek Stoch, M.Sc., was employed at the Faculty of Geological Prospecting (currently the Faculty of Geology, Geophysics and Environment Protection, AGH University of Science and Technology) where, over 30 years, he climbed the academic ladder from associate assistant to a full professor. Subsequently, he worked for 21 years in the Faculty of Materials Engineering and Ceramics,

where he was Chair of the Glass and Enamels Department until his retirement in 2001 and, during which, he served two tenures as the Faculty Dean.

From the beginning, clay minerals and rocks became his major scientific passion, lasting for many years to come. Kaolinite-bearing ceramic clays were the first clay rocks in Poland for which the interrelationship between their mineral composition and technological properties were explained in detail by Professor Stoch.

In his investigations on the complex weathering processes of igneous rocks from Lower Silesia, Professor Stoch proved that the deposits of primary kaolin there represent remnants of old weathered covers on granites and gneisses. If originating on basalt, such covers would comprise either montmorillonite- or halloysite-rich rocks, depending on the chemical type of weathering. These various clay rocks have been widely utilized in the chemical- and foundry industries.

A series of multifaceted investigations on Lower Silesian kaolins initiated by Professor L. Stoch focused not only on recognizing the geological setting of these deposits but also on characterizing their mineralogy, chemistry and technological properties in detail. The results had a significant influence on the opening of mining operations in the kaolin deposit at Kalno and on the decision to exploit, as an associated mineral raw material, kaolin occurring in the lignite quarry in Turów.

Detailed studies on the Miocene clay rocks from the overburden of the sulphur deposit in Machów near Tarnobrzeg was the next large-scale scientific challenge faced by Professor Stoch. The results provided a basis for the technology of manufacturing specific clay-based sorbents, so-called *bleaching earths*, applicable to the decolouring of sulphur, and for the manufacturing of mineral and edible oils.

Professor Stoch's interest in clay minerals extended even more widely. Time was devoted to investigating, *inter alia*, the mineral composition of various types of Polish soils, and of the bottom sediments of the Baltic Sea.

Due to the activities of Professor Stoch and his research group, the Academy of Mining and Metallurgy (as it was named in those times) in Cracow became a leading scientific centre dealing with the problems of clay minerals and rocks. A rapid increase of interest in these issues in both scientific- and industrial circles in Poland induced him to organize all-Polish, cyclic conferences on *Clay minerals and clay raw materials*, attended by outstanding foreign scientists as invited speakers. As the organizer of the *Section of Clay Minerals*, a branch of the *Mineralogical Society of Poland*, Professor Stoch introduced this Section into the *European Clay Groups Association (ECCA)* and the *Association Internationale pour l'Étude des Argiles (AIPÉA)*.

Polish glass sands and vein quartz were other industrial minerals researched detail by Professor Stoch. Their mineral- and chemical characteristics enabled the preparation of silica-rich mineral raw materials with the purity required to manufacture whiteware ceramics and special glass types.

Professor Stoch was active in introducing new research methods to the earth sciences. In the 1960s, he was the first person in Poland to design and construct an apparatus for differential thermal analysis. His workroom-made DTA devices were used in many scientific laboratories not only within the AGH but also throughout Poland. Thermal differential analysis was initially applied as a method of phase analysis to identify the mineral composition of a variety of mineral raw materials, mainly those containing clay minerals. Later, it was also used to detect some of the chemical components of such materials and to measure their contents. Answering a growing interest in problems associated with the thermal methods, Professor Stoch organized interdisciplinary scientific conferences covering these subjects at the AGH. The conferences resulted in the establishment of the *Polish Association of Calorimetry and Thermal Analysis*. It should not be forgotten that Professor Stoch was one of the founding members of two other scientific bodies in Poland, i.e., the *Mineralogical Society of Poland* (including its *Section of Clay Minerals* and *Section of Thermal Analysis*) and the *Polish Ceramic Society*. As the token of recognition, all three associations conferred honorary memberships on Professor Stoch in appreciation of his scientific achievements and activities.

Professor Stoch was also highly regarded outside Poland for his work in the fields of mineralogy and mineral raw materials. In the light of his distinguished contributions, he

was a recipient of the Emanuel Boricky Medal from the Charles University in Prague and his name is listed on the commemorative plaque among the names of other mineralogists and geochemists of world renown.

The works of Professor Stoch on the nature of the glassy state and on the origin of glasses with a mixed framework are of high value. He developed an original theory on the glass structure pointing to its elasticity as a characteristic controlling the durability of the amorphous glassy structure. His pioneering work on the multistage crystallization of glassy materials, and on the development of unconventional, ecology-friendly glasses, was honored with a prestigious award in the field of technical sciences, the so-called “Polish Nobel”, by the Foundation for Polish Science.

The accomplishments of Professor Stoch are contained in more than 260 papers, 14 patents, two books (*Clay Minerals* and *Biomaterials*) and in voluminous, monothematic chapters in other textbooks, e.g., chapters on structural thermochemistry of thermal processes in *Flash Reaction Processes* and on thermal analysis in *Methods of Investigation of Minerals and Rocks*. He also took part in over a hundred domestic- and foreign conferences, many as an invited speaker.

His election to a membership by the *Polish Academy of Arts and Sciences*, his memberships of many other foreign- and domestic scientific bodies, and a whole range of state-, resort- and regional awards and decorations are, together, a further measure and recognition of the active- and diversified scientific activity of Professor Stoch.

Having been employed for so many years as an academic teacher, Professor Stoch supervised more than 100 B.Sc. and M.Sc. graduation projects, and 30 D.Sc. diploma dissertations. He also educated many graduates and younger scientists in both of the faculties in which he served, namely, the Faculty of Geological Prospecting and the Faculty of Materials Engineering and Ceramics.

In 2011, in recognition of his scientific- and teaching achievements, Professor Leszek Stoch received the title of Honorary Professor of the AGH University of Science and Technology in Cracow.

With the death of Professor Leszek Stoch we have lost a wonderful professor, a man of authority, an inexhaustible source of innovative ideas, somebody always ready to render help and advice, and, at the same time, a person joyful and bursting with humour, living a normal life.

We are filled with a deep sorrow that the person at whose side we had the opportunity to develop ourselves, work and be close to has departed. We will keep Professor forever in our memory and hearts, and the times we spent together.

*On behalf of Professor Leszek Stoch's alumni and colleagues: Irena Wacławska and Krzysztof Bahranowski.*

Kraków, 23.04.2015 r.