

## In Memoriam

### Professor Aleksander OPILSKI



31 August 1931 – 20 April 2012

Professor Aleksander Opilski has passed away on 20 April 2012.

Aleksander Opilski was born on 31 August 1931 in Zagórze in the then Śląskie Voivodship. He underwent his 1st level studies in the years 1950–1953 at the Faculty of Mathematics, Physics and Chemistry of the Jagiellonian University in Krakow. His 2nd level academic education was completed at the Adam Mickiewicz University in Poznań from which he graduated in 1958 as a Master of Science in Physics.

After graduation, Aleksander Opilski has got a job at the Agricultural University in Olsztyn. In the years 1962–1964 he was employed at the Dairy Industry Institute and worked with the Institute of Fundamental Technological Research of the Polish Academy of Sciences (IPPT PAN) in Warsaw.

In the year 1964, the Council of the UJ's Faculty of Mathematics, Physics and Chemistry has conferred on Aleksander Opilski the title of the Doctor of Philosophy in the Field of Physics for dissertation entitled *Acoustics of Media with Non-Newtonian Viscosity* (in Polish: *Akustyka ośrodków o lepkości*

*nienuetonowskiej*). In the year 1964, the Professor started his work with the Silesian University of Technology in Gliwice that remained his formal place of employment until his retirement in the year 2001. In 1976, on the grounds of his dissertation *The Effect of Surface States on Propagation of Surface Ultra- and Hypersound Wave in Semiconductors* (in Polish: *Wpływ stanów powierzchniowych na propagację powierzchniowej fali ultra- i hiperdźwiękowej w półprzewodnikach*), Aleksander Opilski has obtained the degree of a habilitated doctor from the Scientific Council of IPPT PAN in Warsaw.

Aleksander Opilski was awarded an associate professorship in the year 1978 and a full professorship in 1980.

#### Professor Aleksander Opilski's scientific activities

The area of the Professor's scientific activity was very diverse and included many disciplines, with acoustics, optoelectronics and applied physics always re-

maining his main fields of interest. Academic achievements of Professor Opilski include an impressive range of research projects results of which were published in about 150 papers, mostly in reputed scientific journals.

In the activity of Professor Opilski one can single out the three main periods.

In the first period, encompassing the years 1957–1964, the Professor's scientific interest was focused mainly on the molecular acoustic of liquids and the search for relation between structure of molecules, molecular interactions, and acoustic parameters of the medium. Professor Opilski's original achievements of that time include also development and construction of a unique apparatus dedicated for experiments in the above-mentioned field.

The second period falls on the years 1965–1985. At that time, the Professor worked on application of acoustical methods in the physic of solid state, especially semiconductors.

For many years of his later scientific work, Professor Opilski remained faithful to acoustical methods. The subject matter of his inquiries in that period was both very extensive and diverse, and always relating to topical issues of acoustics, electronics, and semiconductor physics. The Professor's most important scientific achievements of that time include:

- development of new acoustical methods in examination of solid state materials,
- development of a theory of acoustoelectronic phenomena in semiconductors,
- studies on surface states and laminar structures by means of acoustic methods, especially with the use of acoustic surface waves,
- examination of acoustoelectric systems by means of surface waves,
- research work on acoustic emission effect and application of the phenomenon to examination of stresses in rock masses,
- inventing sensors for different physical quantities.

In each field of his scientific interest, Professor Aleksander Opilski noted outstanding achievements. In that period, he was able to gather around him a large body of young people starting their scientific careers with the Silesian University of Technology and establish a scientific centre recognised both domestically and abroad. Under the Professor's scientific leadership, numerous research projects were carried out in the framework of government and centrally managed R&D programs.

Professor Opilski's achievements were recognised by rewarding him in the 1980s with the PAN Scientific Secretary's Joint Prize and the Minister of Science, Higher Education and Technology Prize.

A characteristic feature in the Professor's scientific activity consisted in undertaking important and topical scientific problems. In the 1970s, quantum acoustics saw increasing interest for both international and

Poland's scientific centres. Domestically, the research work in that field was carried out at IPPT PAN in Warsaw by groups managed by Prof. Ignacy Malecki, Prof. Wincenty Pajewski, Michał Dobrzański, and Mikołaj Aleksiejuk. The research work in the field was also carried out by Prof. Mieczysław Szustakowski and Prof. Eugeniusz Danicki of the Military University of Technology.

At the Silesian University of Technology, studies on the subject were developed by Prof. Aleksander Opilski in co-operation with the then Doctor T. Pustelny, Dr. Marian Urbańczyk, and the then PhD and future Director of the Institute of Physics — the late Zygmunt Kleszczewski. In Poznań, research work on problems of molecular and quantum acoustics was carried out in that period by a group headed by Mikołaj Łabowski, a Reader, and Tomasz Hornowski, a MSc at that time (both nominated professors in the following years).

The best example of a researcher keeping up with the latest world trends in applied physic is Professor Opilski's third period of scientific activity. It can be assumed symbolically that this period starts in mid-1985s. It is characterised with development of research work in the field of optoelectronics, and in particular:

- technological processes related to optical waveguides and optical planar and strip structures,
- fibre-optic and optoelectronic sensors.

In the field of planar technologies, a mathematical model of ion exchange in glasses was developed under direction of Professor Opilski in the then Institute of Physics' Department of Acousto- and Optoelectronics of the Silesian University of Technology. Based on the model, an analysis was carried out of the effect of the technological process parameters on characteristics of the obtained optical waveguide structures.

At the same time, the team led by the Professor continued the research work on possibility to use acoustic surface waves in examination of semiconductor materials' surface and detection of gases, including toxic ones. The studies resulted in getting the degree of a habilitated doctor by Prof. Tadeusz Pustelny (in the year 1996) and Prof. Marian Urbańczyk (in 1998). Research work on subject undertaken in previous years and concerning the use of acoustic emission in power engineering, was also continued at that period.

Professor Opilski has promoted 17 PhDs. His doctoral students once were: the late Prof. Zygmunt Kleszczewski, Dr. Józef Finak, Prof. Stanisław Kochowski, Prof. Janusz Berdowski, Prof. Jacek Szuber, Prof. Tadeusz Pustelny, Prof. Marian Urbańczyk, Dr. Hubert Jerominek, Dr. Zdzisław Jakubczyk, Dr. Zdzisław Kubik, Dr. Andrzej Klimasek, Prof. Marek Błahut, Prof. Sergiusz Patela, Prof. Roman Rogoziński, Dr. Wiesław Jakubik, Dr. Paweł Karasiński, and Dr. Kazimierz Gut.

In the Silesian University of Technology's Institute of Physics, Professor Aleksander Opilski has created

a widely recognised scientific centre. Importance and advancement of scientific issues undertaken and carried out there was confirmed by winning numerous research grants managed by the Professor and his collaborators.

For the whole period of his work with the Silesian University of Technology, Professor Opilski has carried out an intensive teaching activity. He drew up and delivered specialist lectures on semiconductor physics, optoelectronics, and acoustics. Under the Professor's leadership and on his initiative, specialist labs were organised for students of the Mayor of Applied Physics of the Faculty of Mathematics and Physics at the Silesian University of Technology. For many years, the Professor was a tutor for the Optoelectronics specialisation within the Mayor of the Applied Physic. He has also developed a syllabus for post-graduation studies in Optoelectronics.

### Professor Aleksander Opilski's organisational activities

The scope of Professor Opilski's organisational activities was both very extensive and diverse. In the period 1968–1969 he was the key organiser of the Faculty of Mathematics and Physics at the Silesian University of Technology. After establishment of the Faculty of Mathematics and Physics in 1969, Professor Opilski was nominated its first Dean. At the time, the Faculty of Mathematics and Physics comprised three departments: the Department of Technical Physics, the Department of Applied Mathematics and the Department of Descriptive Geometry. In the period 1971–80, the Professor was the first Director of the Institute of Physics newly established at the Faculty. Later, for many years, he was the Institute's Deputy Director for Scientific Affairs.

Professor Opilski's organisational activity in the field of acoustics cannot be overestimated. Contacts between Polish acousticians in the form of casual meetings and scientific sessions started in the early 1950s. The first Seminar on Acoustics has been organised in Poznań in the year 1954 on the initiative of Professor Marek Kwiek and the Professor attended the event. The next four Seminars were organised in Olsztyn (in the years 1955–1958) by Prof. Franciszek Kuczera and the team of his collaborators. The group included the then student, Aleksander Opilski. Two subsequent editions of the Open Seminar on Acoustics (OSA) were held in Silesia, namely in Zabrze-Rokietnica (1959) and Gliwice (1960), with significant scientific and organisational contribution of Aleksander Opilski.

During the next Seminar on Acoustic held in Szczecin, on 22 August 1961, 38 individuals involved in scientific and/or professional activity in the field of acoustics have established the group of founder members of the Polish Acoustical Society (*Polskie*

*Towarzystwo Akustyczne*, PTA). The group included Aleksander Opilski, a young Master of Sciences at that time. On 4 March 1963, the PTA General Founding Assembly was held in Poznań. The group of participants of the General Founding Assembly of 1963 included, among others, several later professors: Ignacy Malecki, Aleksander Opilski, Antoni Śliwiński, Andrzej Rakowski, and Czesław Cempel. Composition of the first PTA's Main Board included: Prof. Leszek Filipczyński, Assoc. Prof. Halina Ryffert, Dr. Andrzej Szwarz, and Dr. Antoni Śliwiński. The Polish Acoustical Society was one of the first scientific organisations affiliated to the Division Four: Engineering Sciences of the Polish Academy of Sciences.

One year later (in 1964), the Committee on Acoustics of the Polish Academy of Sciences has been founded. Since 1972, and for the next thirty years, Professor Opilski was the Member of that honourable body.

In 1971, during the Seminar on Acoustics held in the Holiday Centre "Kolejarz" in Zakopane, a proposal has been put forward to establish cyclic conferences on quantum acoustics, molecular acoustics and sonochemistry, new disciplines developing intensively at that time. The initiative has been taken by a group of physicists from the Silesian University of Technology. The new conference was scheduled for the winter season (OSAs were already held each year in September). The initiative group included: Assoc. Prof. Franciszek Kuczera, Assoc. Prof. Aleksander Opilski, and Dr. Stanisław Szyma – all of them from the Department of Physics, Faculty of Mathematics and Physics of the Silesian University of Technology in Gliwice. The group has established an annual conference – the Winter School on Molecular Acoustics, Quantum Acoustic and Sonochemistry. The first School was held in the year 1972 in the "Relaks" Holiday Centre in Ustroń-Jaszowiec. Later, the conference took on the nature of an international event as the Winter School on Molecular and Quantum Acoustics (WSMQA), transformed into the Winter School on Wave and Quantum Acoustics OSA a few years ago.

In the course of the 23rd OSA held in Wisła in 1976, the Section of Molecular and Quantum Acoustics has been established, chaired then for many years by Professor Opilski. During the 7th WSMQA, IPPT PAN has released the first volume of *Akustyka Molekularna i Kwantowa*, a journal replaced later by *Molecular and Quantum Acoustics* that, besides *Archives of Acoustics*, is a major scientific periodical publishing works of Poland's acoustical milieu. For many years, Professor Opilski was the MQA's Editor-In-Chief and the Member of the journal's Scientific Committee.

For many years, the Professor was also a Member of the Main Board of the Polish Acoustical Society. For two terms of office (1996–2001), Professor Opilski was the Deputy Chairman of the PTA's Main Board. In the

period 2001–2002, he acted as the Main Board Chairman. The recognition of Professor's accomplishments has been expressed by the Polish acoustic milieu by granting him in 1997 the rank of PTA Honorary Member – the Society's highest distinction.

Another evidence of Professor Opilski's high scientific position was a large number of important functions performed by him outside his parent University. In the period from 1978 to 1981, the Professor was the Member of the Scientific Council of the Fundamental Technological Research of the Polish Academy of Sciences in Warsaw. As it was already mentioned above, from 1972 to 2003, Professor Opilski remained incessantly the Member of the Committee on Acoustics of the Polish Academy of Sciences. Professor Opilski was the member of the Section of Optoelectronics at the

Committee on Electronics and Telecommunication of the Polish Academy of Sciences and the Member of the Presidium of the Polish Optoelectronics Committee. He was also appointed to scientific committees of numerous conferences.

Death of Professor Aleksander Opilski on 20 April 2012 is an irreparable loss to the Polish science. We have said goodbye not only to eminent Scientist, Professor, Teacher and Organiser, but also – to a Friend and Colleague. And this is Professor Aleksander Opilski of whom we will retain a fond memory.

On behalf of the Professor's  
Pupils, Students, Collaborators and Friends

*Tadeusz Pustelny*