

C H R O N I C L E

**The new president of the Polish Acoustical Society**



Prof. dr hab. Jerzy Ranachowski

The Polish Acoustical Society, founded in 1952, is one of the eldest European acoustical societies. Every year a General Convention of Deputies of this society takes place and every three years a new management of the Society is elected. In September last year, the outstanding Polish acousticians, Prof. Dr Jerzy Ranachowski, was elected President of the Polish Acoustical Society. On this occasion, it would be worthwhile acquainting the readers of the Archives of Acoustics with the scientific biography of Prof. Ranachowski.

Prof. Ranachowski was born in 1926, in 1951 he completed his study at the Electrical Faculty of the Wrocław University of Technology and also there he took his doctor's degree in technical sciences in 1964. In 1976 he was appointed full professor. In the years 1950-75 he held different scientific and didactic post at the Wrocław University of Technology. Since 1975 he has been active at the Institute of Fundamental Technological Research of the Polish Academy of Sciences holding of responsible positions; among other things, he has been assistant manager of this Institute and managing director of the Acusto-Electronic Centre.

The starting point of the scientific activity of Prof. Ranachowski was research concerning the relationship between the microstructure and texture of ceramic materials and composites and their mechanical and electrical mechanical and electrical properties.

Analysing different conventional measurement techniques suitable for this purpose, Prof. Ranachowski focused his attention particularly on the acoustic ones that provide a great quantity of information about those properties. However, he has been still active in the field of materials engineering. It is this junction of materials technology with acoustics which is typical of Prof. Ranachowski's research activity.

The research work of Prof. Ranachowski in the 1960s and 1970s concerned mainly the application of ultrasonics to non-destructive inspection of materials. To his main achievements belongs the correlation found between speed and attenuation of ultrasounds and the microstructure parameters of the material under test. From the practical and scientific points of view, the most important research of Prof. Ranachowski referred to the acoustic properties of porous and microporous materials. He succeeded in developing acoustic methods of determination of the microporosity parameters of ceramics and the estimation of the usefulness of those materials. He succeeded in developing acoustic methods of determination of the microporosity parameters of ceramics and the estimation of the usefulness of those materials. These methods have been of basic significance in the improvement of the inspection of electrical porcelain. Investigation of the interrelationship between the speed and the attenuation of ultrasonic waves and the mechanical parameters of the tested material furnish the only method providing information of its properties in the static state. In order to investigate dynamic states of ceramic materials, Prof. Ranachowski extended his research towards the acoustic emission (AE). AE signals generated inside a material, caused either by mechanical loading or thermal stresses, yield a unique source of information of the progress of cracking and microcracking processes and phase transitions. A number of his works during the last 6 years have concerned problems of this kind.

The following achievements of Prof. Ranachowski should be numbered among those of major importance:

- determination of the critical stress and "life-time" of materials and constructions on the grounds of the AE threshold value,
- complex evaluation of the long-lasting resistance of concrete constructions applying the AE method,
- application of the AE methods to the utilization inspection of high-voltage,
- connection of the AE method with direct crack measurement technics (DCM) for the determination of the critical stress intensity factor,
- monitoring of processes occurring in ceramics during thermal shocks by utilizing AE method,
- developing of AE methods of investigation of electric and electromagnetic attendant upon brittle cracking.

AE-analyzers constructed under the leadership of Prof. Ranachowski have found wide application in scientific and industrial laboratories.

Prof. Ranachowski is author of 60 papers published in scientific journals and of 5 books. He conferred 6 doctor's degrees. The fact that Prof. Ranachowski has been vice-president of the Acoustical Committee of the Polish Academy of Sciences of the European Society for Materials Testing has secured a good co-operation of the Polish Acoustical Society with those organizations.

**The new Authorities of Polish Acoustical Society  
elected on 15.10.1996 by the General Assembly of Delegates:**

**BOARD:**

Prof. Jerzy Ranachowski – President  
Aleksander Opilski – Vice-President  
Roman Bukowski – General Treasurer  
Tadeusz Pustelny – General Secretary  
Urszula Jorasz, Grażyna Łypacewicz, Aleksander Opilski, Maria Rabięga, Antoni Śliwiński – Members

**AUDITORS:**

Jacek Cieřlik, Henryka Czyż, Eugeniusz Soczkiewicz, Zbigniew Wesołowski

**ARBITRATION:**

Zygmunt Kleszczewski, Tadeusz Powalowski, Eugeniusz Kozaczka  
Also the Presidents of all Sections of Polish Acoustical Society are the members of General Management:

Grażyna Grelowska – Gdańsk Section of PAS  
Mieczysław Rocznik – Górnośląski Section of PAS  
Ryszard Panuszka – Cracow Section of PAS  
Marek Niewiarowicz – Poznań Section of PAS  
Witold Rdzanek – Rzeszów Section of PAS  
Ryszard Płowiec – Warsaw Section of PAS  
Andrzej Jaroć – Wrocław Section of PAS

**101 st AES Convention,  
Los Angeles 8–11 November 1996**

According to the well established tradition AES Conventions are held twice a year: in Europe – in Spring, and in America – in the Fall. Within this tradition the 101st Convention was an unusual one for many reasons. It was held in the Los Angeles Congress Centre newly rebuilt and perfectly well matched to the Convention requirements. In the six years since the 89th Convention last graced Los Angeles, the Centre was considerably expanded and modernized which made it one of the most modern and user-friendly convention halls in the world.

The huge exhibition area enabled 363 companies, competing on the world audio market, to display their products in conveniently arranged booths. More than 18 thousands visitors were expected to attend this exhibition – the greatest number ever recorded – during four Convention days. This was really a great event for the AES.

The Organizing Committee chose the following as a slogan for the Convention “Head out on the Highway” having in mind the highway of information. The choice was, however, decided by coincidence of numbers. Namely, a highway passing through the City of Los Angeles to the North-West bears the number 101, similar to the Convention number. At

any rate, the domain of electronics and informatics are increasingly tightly coupled and involved in the further progress of the audio industry, which is now expanding quickly in a vast area of sound and vision (multimedia) applications.

The Opening ceremony was very well organized. About a thousand participants gathered in a theatre-auditorium admiring an unusual musical introduction. On a darkened stage a dozen mute, immobile musicians were holding their brass-instruments, which glittered with reflected hall lights. In one, may be two minutes, the opened microphones sent to loudspeakers increasingly amplified noise-sounds from the darkness. Suddenly, the noise stopped, stage lights went on, and the powerful sounds of trumpets, horns, trombones and tubas, accompanied by kettles, cymbals and drums, began to play an original modern composition, recurring to a music signal, which had been presented during the opening ceremony of the 100th Convention in Copenhagen, by two players using brass instruments of special construction.

After this introduction, warmly applauded by the audience, followed short addresses of the AES President Mr Tim Shelton, and AES Director Roger Furness, as well Chairman of the 101st Convention Chairman Van Webster. Then, a ceremony of Awards and Fellowship presentations took place. Seventeen persons received high AES distinctions. A key address by John Strawn completed the ceremony.

Self-service lunch for all participants was ready in an adjacent hall, seating at one of the numerous round tables being available for everybody. The opening ceremonies were so efficiently arranged that Technical Sessions and other program events of the afternoon could take place without any delays.

The scientific part of the Conference debates, running parallel to the exhibition, boasted a variety of sessions. First of all, the sixteen Technical Sessions were devoted to reading and discussing papers contributed and edited, prior to the Convention, as AES Preprints. The following titles represented the Session subjects (number of papers – in brackets): Sound Reinforcement (4), Analog Electronics (4), Transducers (7), Musical Instruments, Acoustic/Electronic Music (4), Sound Perception and Quality Evaluation (7), Multimedia (4), Networks, Digital Audio, and Music (7), Spatial Perception and Processing (6), Signal Processing, Part 1 and 2 (13), Instrumentation and Measurements (6), Analysis and Synthesis of Sound and Music (5), Recording and Reproduction Systems (4).

The total number of papers was 93 (21 invited and 72 contributed). They were written by 172 authors and co-authors.

Sixteen other Sessions were devoted to the Workshops. The 69 panelists presented practical properties of particular techniques, technologies, systems, programs, designs and processes. These Sessions were especially instructive for those interested in the audio engineering practice.

Besides the regular Sessions several meetings were organized as Special Events (such as: An Afternoon with Leo Beranek; Film Sound in Next Millenium; Student Conclave; Education Fair; AES in Schools; Women in Audio; etc). Among other special events an organ concert was organized, this deserving special mention.

This concert was delivered by Graham Blyth, renowned organist and technical director of Soundcraft Company. He presented his recital at the First Congregational Church of Los Angeles, on November 10, at 8 p.m. All attending were transported from their

hotels to the Church by several shuttle buses. The Church houses one of the largest and very interesting pipe organs in the United States. Its description being impossible here, it may be sufficient to mention the number of divisions (20), ranks (almost 300) and pipes (above 16 thousand). The magnificent Gothic settings and acoustics of the Church interior enhanced the sound sensations and added to the grandeur of the music played. To explore the wealth of possible music styles and registrations attainable with this instrument Mr Blyth's program included works by Bach, Schumann, Jongen, Guilmant, Messiaen and Widor. His organ playing was very warmly applauded, and despite the late night, he was forced to encore several times.

Authors of Convention papers, coming from many countries all over the world, contributed decidedly to the high scientific level of the debates, thus confirming the leading role of AES Conventions in the world field of audio engineering. It might be interesting to compare contributions of authors from particular countries. Such statistics based on official Convention programs, composed for the last seven Spring- and six Fall-Convention years, yields the following results:

	Authors' country	Total numbers of Papers
1.	USA	366
2.	United Kingdom	198
3.	Germany	197
4.	Denmark	88
5.	Netherlands	79
6.	Poland	62
7.	Japan	60
8.	France	55
9.	Canada	48
10.	Switzerland	23
11.	Austria	22
12.	Greece	22
13.	Russia	20
14.	Finland	18
15.	Sweden	18
16.	Australia	15
17.	Italy	10
18.	Spain	9
19.	Belgium	9
20.	Czechia + Slovakia	9
21.	Hungary	7
22.	Ireland	7
23.	Portugal	7
24.	Yugoslavia	7
25.	Norway	6
26.	China	5
27.	Croatia	5
28.	Korea	4
29.	Malaysia	4
30.	New Zealand	4
31.	Israel	3
32-35.	Mexico, South Africa, Ukraine, Venezuela	at 2
36-40.	Argentina, Bulgaria, Hong-Kong, Serbia, Slovenia	at 1

These results show distinctly the role of the Central Europe Region in conceptual contribution to exchange of ideas animated and supported by AES activities. The total number of papers from the Central European countries exceeds that from those of America. The Polish contribution may also be easily distinguished there. At the 101st Convention it was illustrated by four papers and an organisational participation.

Let us hope that future Conventions, and first of all, the oncoming 102nd Convention in Munich (22-25 March, 1997) will strengthen the observed tendency towards the growing activity of several recently organized AES Sections, mostly in Central and Eastern Europe.

*Marianna Sankiewicz*

**The Acoustical Conferences organized in Poland in 1997  
(in co-operation with Polish Acoustical Society):**

1. XXVI Winter School on Molecular and Quantum Acoustics, 24-28.02.1997, Ustroń-Zawodzie, Górnośląski Section of PAS
2. XXVI Winter School on Noise and Vibration Control, 24-28.02.1997, Ustroń-Zawodzie, Górnośląski Section of PAS
3. Structural and Biomedical Acoustics, 21-26.04.1997, Zakopane, Cracow Section of PAS
4. International Symposium on Hydroacoustics and Ultrasonics (EAA Symposium, formerly 13th FASE Symposium), 12-16.05.1997, Gdynia-Jurata, Gdańsk Section of PAS
5. 7th Spring School on Acousto-Optics and Application, 18-22.05.1997, Gdańsk Section of PAS
6. Highway Traffic Noise, end of May 1997, Białowieża, Warsaw Section of PAS
7. Fechners Day (Psychological Acoustics), September 1997, Poznań, Poznań Section of PAS
8. XLIV Open Seminar on Acoustics OSA'97, 16-19.09.1997, Jastrzębia Góra, Gdańsk Section of PAS

**New doctoral thesis in acoustics**

*„Characteristics of back scattering ultrasonic signals from the floor of Southern Baltic”*  
Jarosław Tęgowski, Institute of Oceanology, Polish Academy of Sciences, Sopot  
Ph.D. Thesis in marine physics supervised, by Associate Professor Zygmunt Klusek.

Relationships between physical and statistical parameters of acoustic signal echo and properties and structure of sediments distributed in the Polish economic zone of Baltic Sea were studied and presented in the Thesis. The results of measurements of the sea

bottom reverberations of the ultrasonic with-modulation pulse signals of frequencies of 30, 50, 60, 120 and 210 kHz were collected from the board of the rv "Oceania" during several cruises to Southern Baltic in 1991–1994.

These experimental data were numerically processed and elaborated to withdraw from the signal these distinctive parameters which were related to the type of bottom and sediments. The parameters are of physical nature like:

- the pressure reflection coefficient at the water-sediment interface, the integral
- backscattering strength, the duration of reverberation, the attenuation
- coefficient for selected sediment layers and statistical ones like:
- the centre of gravity of the reflected pulse, the normalized moment
- of inertia of the echo, the skewness of the signal envelope.

In the Thesis, also, for interpretation purposes the numerical model correlating dependences between the space distribution of the scattered acoustic field and the statistical parameters of corrugated interface surface taking into account attenuation in the sub-bottom layer has been developed and discussed.

Main achievements of the Thesis have been presented on a number of drawings and few maps representing dependences examined and established by the author. In the majority of cases where only existing geological data allowed to do it the acoustical characteristics have been compared to the corresponding geological maps of the sea bottom based on the classical method of direct geological corer data sampling.

Applying the method of cluster analysis to the data sets of averaged acoustic signal characteristics the author classified them into four groups. The groups have corresponded to the four centres of clusters and were assigned to a given type of sediments. These most often met in the Southern Baltic types of sediments grouped in the four classes are: 1) marine clayey silts on silty clays (depth 70–80 m), 2) marine silty clays, silty sands, 3) marine fine sands on till, 4) marine gravel sands and marine sandy gravels (depth 20–30 m).

Examples of a good correlation between acoustical signal characteristics and different types of sediments determined for selected acoustical transects (across Słupsk Furrow and Southern Middle Bank or in the Gdańsk Bay) have shown that the method applied by the author is useful for the sea bottom characterisation.

*Antoni Śliwiński*

### Obituary

Ph.D Doc. dr inż Janusz Zalewski born on 3 of December 1926 in Brześć, died on August 9, 1966.

Doctor Zalewski completed his engineering studies at Wrocław Technical University in 1952, his MSc in 1954, and his Ph.D in 1964. He worked as assistant profesor and then as associate professor from 1953 till his retirement in 1992 and next worked part-time. Hew was an outstanding academic teacher, simultaneously carrying out scientific activity in the field of acoustics. He was an author of over thirty scientific articles. Under his supervision nine doctoral and large number of MSc thesis were written.

In the years 1987–1991 he held the post of the Director of the Institute of Telecommunication and Acoustics. He was a co-organizer of the Environmental Laboratory of Noise and Vibration and was its Head in the years 1973–1991.

Doctor Zalewski was repeatedly awarded Rector's Awards for his pedagogical, scientific and organizational achievements and also received the Award of Ministry of National Education.

He was decorated with a Medal of Board of National Education, Knight Cross of the Order of Poland's Revival, Golden Cross of Merits and Golden Badge of Wrocław University of Technology.