

## JANUSZ MROCZKA

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### TENTH ANNIVERSARY OF CHAIR OF ELECTRONIC AND PHOTONIC METROLOGY WROCLAW UNIVERSITY OF TECHNOLOGY

This year the Chair of Electronic and Photonic Metrology from Wrocław University of Technology celebrates its 10th anniversary. The Chair was established by the Senate of Wrocław University of Technology on January 27, 1998 and Prof. Janusz Mroczka was appointed as its Head. The Chair began functioning on March 30, 1998.

The anniversary ceremony was honoured by the plenary meeting of the Committee M&SI of the Polish Academy of Sciences, which took place at Wrocław University of Technology on May 7–8. The members of the Committee, two Full Members of the Academy, Prof. Władysław Włosiński (Chairman of the IV Division – Technical Sciences) and Prof. Wiesław Woliński, and all the guests including a large group of students were welcomed by the President of the University, Prof. Tadeusz Luty. Professors T. Luty, Wł. Włosiński, W. Woliński and J. Mroczka opened also a new didactic Laboratory of Optoelectronics and Photonics.

During the celebration of the 10th anniversary, the Chair hosted an international group of students from the Electrical Engineering Students European Association (EESTEC). They took part in a workshop “Microcontrol Your Mind”, visited Chair laboratories and listened to the lectures on microprocessor-based systems and their programming.

The Chair of Electronic and Photonic Metrology manages the didactic specialization in Electronic Instrumentation, as well as takes care of the Student Scientific Circle “Microsystems Oriented Society” (MOS). This year the MOS joined the celebration of the anniversary and organised an open air entertainment called PIWO2. Using the lighting system of hostel windows, they presented an amazing show of animations, watched by thousands of Wrocław students.

The main tasks of the Chair include:

- education and development of metrological interests in undergraduate, graduate and Ph.D. students by managing the didactic specialization on Electronic Instrumentation at the Faculty of Electronics,
- preparation of didactic materials (printed courses, handbooks and lab exercises),

- initialisation and conducting research in the field of metrology, as well as co-operation with other technical universities and divisions of the Polish Academy of Sciences,
- co-operation with the national metrological service in putting into practice own scientific achievements and in the dissemination of achievements of other national and foreign institutions, as well as forecasting the development of metrology and its role in various areas of production,
- taking up the co-operation with foreign centres in the didactic process (joint Ph.D. theses), realization of joint grants (common publications), initialization of joint international conferences.

Activities of the Chair include:

- methodology of observation and experiment,
- algorithmization of the inverse problem,
- mathematical modeling of physical fields and their practical realisation by means of optical and impedance tomography,
- spectral and polarization analysis of dispersed radiation in scattering media and its practical application in the assessment of composite materials properties,
- methods of optical imaging and measurement data processing in 3D space and their fusion in image encoding,
- fusion of multisensor data with different spatial resolution with the use of deterministic and stochastic methods of digital processing to enhance the quality of reconstruction,
- use of time-frequency representations to transform measurement data and their practical realization with signal processors,
- methods of the parametric identification of static and dynamic models of complex objects together with their practical use in the measurement of properties of the human respiratory and cardiovascular systems,
- application of artificial intelligence methods to extract qualitative and quantitative information from measurement data,
- design, elaboration and optimization of computer-aided measurement and information systems for scientific research and technological processes,
- design and construction of intelligent measurement devices with the use of the microprocessor technique.

The Chair co-operates with the following foreign centres:

- Institut National des Sciences Appliquees, Rouen, CNRS unite 6614 DS10, France,
  - Department of Engineering and Product Design, University of Central Lancashire, Preston, UK,
  - Institut Universitaire des Systemes Thermiques Industriels, Marsylia, UMR CNRS 6595, France
  - Department of Biomedical Engineering, Boston University, Boston, USA,
  - Biomedical Physics Laboratory, Universite Libre de Bruxelles, Belgium,
- and keeps scientific contacts with:

- Centre for Health Informatics, City University, London, UK,
- Royal Brompton National Heart and Lung Hospital, London, UK,
- Physiologie Respiratoire et Sportive, Hopital Charles Nicolle, Rouen, France.

Theoretical and empirical activities performed in the Chair serve us to build a conviction that this way of successive approximations of particular truths leads us closer to this unattainable Absolute Truth that is hidden from us by the Nature. We continue this dialogue with Nature improving ourselves as well as our charges (undergraduate, graduate and Ph.D. students) and in this way we strengthen in the conviction that this way will not bring us to scientific defeatism. We believe that the scientific degrees achieved by us determine the range of our competencies in activities and our position in the cognitive process. They open the door to the society who the science is a privilege and a duty for. They remind us also that we have acquired the ability to perceive the truth as one of the sources of our subjectivity.