

**prof. Ing. Radimír Vrba, CSc.**

### **Education**

1979 - Ph.D. (CSc.) - Brno University of Technology (Electrical and Electronic Technology)

1975 - M.S. (Ing.) - Brno University of Technology (Control Engineering, Measurement)

### **Academic Position**

1998 - Full Professor

1985 - 1998 Associate Professor

1975 - 1985 Assistant Professor

Faculty member in Undergraduate and Graduate Program in Electrical, Electronic, Communication and Control Technology, Education in Design of Electronic Circuits and Devices, Electronic Measuring Instruments for Microelectronics, Microelectronic and Optoelectronic Sensors, Programmable Logic Devices, Conversion of Analogue and Digital Signals, more than 80 Diploma students (31 of them with excellent classification), 25 research undergraduate students with published research papers, 14 PhD students.

### **Research interests**

Electronic systems, smart measurement systems, new types of integrated DA and AD converters, methods of their testing, analysis, simulation, smart industrial and special sensors, processing of sensor signals, networks of intelligent sensors for distributed applications, industrial and automotive communication buses, embedded systems, ASICs. Last few years focused to new embedded ASIC integrated measurement system for control responses from TFT sensors, behavioral and architectural specifications in embedded control system designs, security and safety frameworks, carbon nanotubes synthesized by plasma enhanced CVD for exploiting their electrical properties for application in pressure sensors, composite materials for electromagnetic interference shielding, smart sensors in wireless network system, artificial neural network for sensors data recognition, wireless communication in automation, executable specifications for embedded distributed systems.

### **Publications and research outputs**

1 monographs, 10 textbooks, over 80 journal and conference full text papers, 6 patents, 5 computer programs, 7 prototypes, 3 utility models; WoS citations 18 (autocitations excluded), h-index: 3

### **Management experience**

13 years (1980/92) Deputy Head of Dept. of Microelectronics, 5 years (1993/97) Head of Dept. of Microelectronics FEEC BUT (approx. 40 employees). In 1997, he established and become a CEO (1997-1999) of Moeller-Electric (100% Daughter Company of Klöckner-Moeller International Company seated in Bonn (about 20 employees), yearly turnover of about 10 mil Euro. In 1999, he returned to BUT FEEC as a full-professor and in 2000 he started as a Vice-Dean of FEEC BUT responsible for research and PhD study programmes, and in 2001 he was appointed as the Dean of the BUT FEEC (up to now, approx. 400 academic and supporting technical and administrative staff, more than 4300 students, yearly budget about 16 mil. Euro. Principal investigator of many national and international grants, yearly budget in average 1.5 mil. Euro including two successive long term Research Programs funded by the Ministry of Education, Youth and Sport of the Czech Republic. He has long and deep professional activities with industry in direct cooperation and common research projects (e.g. Megatron, Motorola, Flextronics, Honeywell, AMI Semiconductors, ON Semiconductor, Knobel, BetaControl, BD Sensors).

### **Further university and academic service**

- Group of experts to evaluate research and development proposals, Ministry of Industry and Trade of the Czech Republic (2001 - )
- Member of Research and Development Advisory Board for ministerial program TIP (since 2008)
- Member of Scientific Boards: Brno University of Technology (since 2001), Faculty of Electrical Engineering and Communication BUT (since 1995), Faculty of Information Technologies BUT (since 2001), Institute of Scientific Instruments Academy of Sciences Brno (2003 - 2006).
- Member of Doctoral Study Boards: Electrical and Electronic Technology; State examination commissions on undergraduate or doctoral level-chairman: education in Microelectronics and Technology, Microelectronics
- Vice President of A.M.S.E. Association for the Advancement of Modelling and Simulation Techniques in Enterprises, France (1994 – 2005)
- Member of Editorial Board of Sensors & Transducers Journal (since 1999)

### Faculty development

In 1997, he established and became a CEO (1997-1999) of Moeller-Electric industrial and development company; 1989 Institute of Scientific Instruments, Academy of Science of the Czech Republic - 1 year visiting researcher; 1982 University of Salford, Great Britain - 3 months research fellow.

### Running research projects (mostly research team leader and principal investigator)

- E3CAR Nanoelectronics for an Energy Efficient Electrical Car, ENIAC European Project funded by EC and Czech Ministry of Education, 2009 to 2012
- VAN Virtual Automation Networks, European Project funded by EC, 2005 to 2009
- Research and development of digitally tuned of ICs working in mix mode, project GA102/09/1628 funded by Czech Science Foundation, 2009 to 2011
- Methods of signal digitizing for smart sensors, project GA102/08/1116 funded Czech Science Foundation, 2008 to 2010
- KAAPS Research of universal and complex autentization and authorization for permanent and mobile computer networks, project 2C08002 funded by Czech Ministry of Education, 2008 to 2011
- Inteligent platform for wireless communication, project FI-IM4/034 of collaborative research with industrial company Microrisc, Ltd. co-funded by Czech Ministry of Industry and Trade, 2007 to 2010
- Multifunctional composites of extra properties based on inorganic nanocomponents, project FT-TA3/027 of collaborative research with industrial company VUSTAH, a.s. co-funded by Czech Ministry of Industry and Trade, 2006 to 2010
- New trends in microelectronic systems and nanotechnologies, long term project MSM0021630503 funded by Czech Ministry of Education, 2005 to 2011
- Research of new MEMS mechatronic structures applicable for pressure measurement, project 2A-1TP1/143 of collaborative research with industrial company BD SENSORS Ltd. co-funded by Czech Ministry of Industry and Trade, 2005 to 2011

### Selected publications

- [1] VRBA, R., VEČEŘA, I. An algorithmic A/D switched-current converter for smart signal digitization with self-test features. *MEASUREMENT, Journal of the International Measurement Confederation (IMEKO)*. 2004. 35(2). p. 153 - 160. ISSN 0263-2241. (IF=0,451, IF(2007)=0,5).
- [2] VRBA, R., ŠVĚDA, M. Integrated Smart Sensor Networking Framework for Sensor-Based Appliances. *IEEE SENSORS JOURNAL*. 2003. 3(5). p. 579 - 586. ISSN 1530-437X. (IF(2007)=1,34).
- [3] ŠVĚDA, M., LEGÁT, P., VRBA, R. ASI Instrumentation. *Microprocessing and Microprogramming (North-Holland)*. Vol.40(10-12). p. 879 - 879. ISSN 0165-6074. (IF(1998)=0,667).

- [4] FICEK, R., VRBA, R., KUČEROVÁ, Z., ZAJÍČKOVÁ, L., ELIÁŠ, M., MATĚJKA, F., MATĚJKOVÁ, J., JAŠEK, O., Klapetek, P. Carbon nanotubes synthesized by plasma enhanced CVD: Preparation for measurements of their electrical properties. *Czechoslovak Journal of Physics*. 2006. (53). p. 1 - 5. ISSN 0011-4626. (IF(2007)=0,423).
- [5] ŠVÉDA, M., VRBA, R. An Integrated Framework for Internet-Based Applications of Smart Sensors. *IEEE SENSORS JOURNAL*. 2003. 3(5). p. 579 - 586. ISSN 1530-437X. (IF(2007)=1,34).
- [6] ŠVÉDA, M., VRBA, R. Integrated smart sensor networking framework for sensor-based appliances. *IEEE SENSORS JOURNAL*. 2003. 5(3). p. 579 - 586. ISSN 1530-437X. (IF(2007)=1,34).
- [7] ŠVÉDA, M., VRBA, R. Executable Specifications for Distributed Embedded Systems. 2001. 34(1). p. 138 - 140. ISSN 0018-9162. (IF=1,062, IF(2007)=1,367).
- [8] ŠVÉDA, M., VRBA, R. Executable specifications for embedded distributed systems. *Computer*. 2001. 2001(1). p. 138 - 277. ISSN 0018-9162. (IF=1,062, IF(2007)=1,367).
- [9] HÁZE, J.; FUJCIK, L.; VRBA, R.; PAVLÍK, M.; MICHAELI, L. The Utilization of Novel Bandpass Sigma-delta Modulator for Capacitance Pressure Sensor Signal Processing. *Radioengineering*. 2008. 2008(4). p. 79 - 85. ISSN 1210-2512.
- [10] ŠVÉDA, M., VRBA, R. Actuator-Sensor-Interface Interconnectivity. *Control Engineering Practice*. 7(1). p. 95 - 100. ISSN 0967-0661. (IF(2007)=1,263).