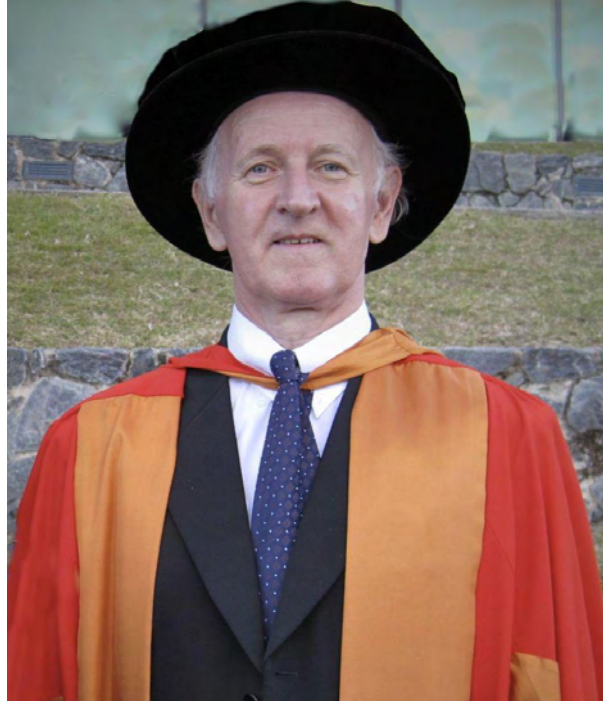


In Memoriam – Marek E. Bialkowski

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Professor Marek E. Bialkowski

Australia lost one of its most dynamic and respected researchers in the field of microwave antennas when Professor Marek Bialkowski passed away on October 27 2011. He is survived by his partner Grażyna and four children, one of whom, Konstanty, has followed Marek into our field and is making a name for himself. Marek has also left behind a body of research work and publications [1-10], which should ensure his future reputation.

Marek contributed to our general field in the form of theories and working prototypes of antennas and measurement systems, which have found application for terrestrial and satellite communications, and remote sensing. As a researcher, he provided vision and directions and produced new results of international standing. As an educator, he created new generations of engineers who are leaders in the microwave communication industry in Australia. Examples include companies such as Codan, GroundProbe, EM Solutions, Mireo, British Aersopace (Australia), DSTO, and Filtronic.

I first met Marek about 30 years ago when he was working as a Postdoctoral Research Fellow under the general guidance of Professor Morris Gunn at the University of Queensland. A little later he moved into my former position as a lecturer specialising in microwaves and antennas at James Cook University after I joined CSIRO at the end of 1983. Since then we have been in constant contact through several activities including the biennial Australian Symposium on Antennas to which he and his students were great contributors.

Marek had come to Queensland, by way of Univ. College Dublin, Ireland. Prior to that he was at Warsaw Univ. Technology, Poland where in 1979 he had gained his PhD degree. He had spent two years in Dublin as a Postdoctoral Research Fellow.

He re-joined the University of Queensland in 1989 when he became a member of Department of Computer Science and Electrical Engineering. Ultimately at this University he became a Chair Professor in microwaves, antennas and wireless communications.

Marek's technical contributions have found significant applications and have impacted generally in microwaves, antennas and propagation for wireless systems. These include: electromagnetic modelling of microwave circuits, microwave measurements and sensing, antennas for terrestrial and satellite communications, power combining of solid-state microwave sources, antennas for mobile computers, and medical and industrial applications of microwaves. The impact of his work is evident by practical implementation, in addition to citations of his work by the international research community.

For instance, his theoretical electromagnetic models and associated computer algorithms for waveguide diode mounts were used by US, British and German companies in the 1980's to develop new generations of microwave oscillators and amplifiers. In addition, these algorithms were used in many research institutions world-wide. As well, his electromagnetic models of coaxial to waveguide transitions and microwave combiners, including associated computer algorithms, were adapted by international companies to develop high power solid-state microwave sources in the 1990's.

His contributions to low-cost microwave measurement equipment in the form of six-port network analysers led, in the 1990's, to the development of remote sensing equipment for use in harsh environments. These devices were used to monitor levels of molten copper in Australian copper refineries. Also they were employed in the development of step-frequency ground probe radar. In particular, his and his research associates' work on step-frequency ground probe radar led to the formation of the commercial company GroundProbe in Brisbane. Research by him and his students on switched-beam and phased array antennas led to the development of antennas for mobile satellite communications by the Brisbane-based company, MITEC.

Other commercially related work, such as a radial slot array antenna, resulted in an international patent and a development of working prototypes of this antenna in Malaysia. His work on the design and development of microstrip reflectarray antennas has been cited by many US/European patents. Most recently his work on ultra wideband radar techniques for microwave imaging continues to show great promise as a new diagnostic tool for an early detection of breast cancer.

Marek is the author of more than 500 refereed national and international papers, 17 book chapters and one patent. This written work has been the result of research

activities which were supported by many research grants he received from the



Marek (Centre) and some of his students. A former student, Amin Abbosh, is on Marek's left-hand side.

Australian Research Council and other funding agencies. In recognition of his research contributions to the field of microwave and antenna engineering he received a higher doctorate (Doctor of Engineering degree) from the University of Queensland in 2000.

In addition to the research excellence, Marek has been an outstanding educator in the field of microwaves, antennas and propagation. At the University of Queensland, he successfully supervised 18 PhD students as a principal adviser, several PhD students as an associate adviser, and several MEng students as a principal adviser. Many of his students have been recipients of national and international research awards. At the time of his passing he was supervising 11 PhD students.

As a Research Leader of the Microwave and Optical Communication Group at the University of Queensland, Marek contributed to the vision and research directions of the group. Also he has contributed significantly to the establishment of research and teaching facilities in the area of microwaves, antennas, wireless communications, and microwave industrial and medical imaging, which led to the increased productivity of the Group and its eminent international status.

He maintained very strong professional and personal links with academic and research institutions around the world especially in Asia and Europe. He regularly visited the South-East Asia region as part of his visiting professorships (Singapore, Hong Kong, Malaysia, China) as well as an attendee, Technical Program and Steering Committees member of international conferences held in that region. Also he was a frequent visitor to the USA and Europe as part of conferences and scientific missions.

In 2003 Marek was elected an IEEE Fellow "for contributions to the modelling, design, and testing of microwave guiding and radiating structures". He was co-author of a paper that received an honourable mention for the H.A. Wheeler Award in 2000 for the Best Applications Paper published by our Transactions in the previous year [4]. He was the Inaugural Chair in 2002 of the IEEE Queensland Section MTT/AP Joint Chapter.

His international status was recognized by his Associate Editorship of several international journals. In addition, he contributed to numerous technical program and steering committees of national and international conferences.

In addition to his professional activities, Marek was active in promoting science and technology to the general community. He has given interviews to local media on topics of satellite communications and wireless communications. Also he has provided an expert opinion on health hazards associated with the presence of cellular base stations and the use of cellular phones.

A Special Session was held in Marek's honour at the 2011 Asia Pacific Microwave Conference held in Melbourne on December 7.

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