



Gerhard Artmann¹ F. Al-Saud¹ and N. Alkhalifah²

¹University of Applied Sciences Aachen, Institute for Bioengineering, Germany

²King Abdul Aziz City for Science & Technology, Saudi Arabia

Strategies in plant identification and sensing plant adaptation to hostile habitats

In the past decades, much scientific attention has been spent to the development of biomedical engineering devices and sensors applicable to humans in health and disease. At the same time, biology of eukaryotic cells including stem cells developed to an extent that nowadays we are able to think about curing diseases which we could not think of any time before. Many of us, scientists the same as engineers, are proud of these developments. However, mankind needs food, drinking water, and healthy living environments. In the past years we shed parts of our attention to 'sensing' - solutions in crop sciences, plant growths, and plant disease identification and -fighting. Topics of the talk will include examples of automated sensing devices and data for identifying plant cultivars from sensing cross-sectional and top-view leaf structures. The talk also will include strategies to investigate in vitro as well as in vivo the potential of scanners to evaluate the effect of hostile habitats and environmental plant stress. As result of a cooperative project with KACST, Riyadh, Saudi Arabia we present as good example data on palm tree gender and variety recognition. We will also include sensing water uptake of plants, time constants of water transport in leaves, plant leaf volume and geometry - a 'water' and 'palm tree' - issue which might be of high impact in particular in and around Las Vegas, Nevada, our conference site.

Biography

G.M. Artmann graduated in Physics from the University of Dresden in 1974, accomplished his PhD in Physics in 1988 at the RWTH Aachen. His Habilitation (Dr. sc.) in 1998 promoted him for a professor position at his current university. He chairs the Institute for Bioengineering with key expertise in Bioengineering, Physics, Chemistry, Biology, Microbiology, Genetics, Cell Biology, Biochemistry, and Biomechanics. Internationally he chairs the IFMBE working group Cell and Stem Cell Engineering. He worked for several years with Prof. Y.C. Fung und Prof. Shu Chien, UCSD, USA. In 1993, he was guest professor at the Fudan University and in 1998, Advisory Professor at the Chongqing University, China. He became Adjunct Professor at the Drexel University, Philadelphia, in 2004 and at the University College London in 2007. His scientific work was published in various peer reviewed international journals. He published the book "Bioengineering in Cell and Tissue Research", Springer 2008 and "Engineering Stem Cells" in 2010.

artmann@fh-aachen.de