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IFMBE

IFMBE Otto Schmitt Award 2015

Karin Wårdell, is Professor of Biomedical Engineering and Head of the Biomedical Instrumentation & Neuro-Engineering Group at the Department of Biomedical Engineering, Linköping University, Sweden. She received the PhD-degree in Biomedical Instrumentation from Linköping Institute of Technology in 1994. Present research interests are directed towards Biomedical Systems for Diagnostics and Therapy; Deep Brain Stimulation; Neuronavigation, Laser Doppler Techniques, Optical Spectroscopy, Microcirculation, and Clinical Implementations. Her international experience involves research visits at Yale Medical School, USA; University of New South Wales, Australia; RWTH Aachen University, Germany and FHNW, Switzerland as well as participation in EC-projects. She has more than ten years of experience in working with biomedical industry partners, mainly through the Swedish Competence Centre NIMED and NovaMedTech. She was one of the co-founders of Lisca AB a company marketing laser Doppler perfusion imagers. She is a fellow of IAMBE and EAMBES.

Neuro-engineering for navigation, intervention and implementation in neurosurgery

Neurosurgery and neuro-intensive care are clinical areas in which highly specialized interventional, navigational and monitoring techniques are imperative for patient care and improved health in society. The overall aim of our research is to develop and evaluate new methods and techniques for radical improvement of navigation, intervention and monitoring in neurosurgery. Topics of special interest are deep brain stimulation (DBS), optical techniques for intraoperative neuronavigation, brain microcirculation as well as the integration and translation of the new tools and methods for clinical use. In the DBS research we have developed a patient-specific modelling and simulation concept for investigation of the electric field around active DBS-contacts. This allows for visualization of the relative electric field changes in relation to the patient's anatomy by using MRI together with superimposed atlas structures. The simulation method has proven useful for clinical evaluations of movement and speech in Parkinson's disease and is now also introduced for new DBS-indications and brain targets. During the talk examples of both optical application in neurosurgery as well as projects related to DBS will be presented.