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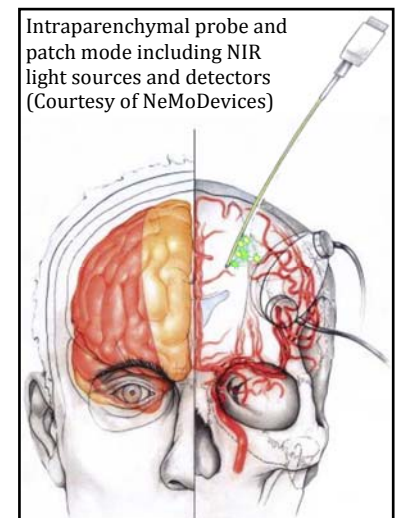
Exploiting new optical technologies to improve survival and outcome in stroke and brain injured patients

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Abstract

The availability of new brain tissue probes for near infrared extinction measurements allows measurements of cerebral blood flow (CBF) and oxygenation in brain injured patients. The further development of such technologies together with appropriate data evaluation algorithms requires the understanding of the underlying mechanisms of light propagation in biological tissues. Changes of the optical properties in the tissue within the volume illuminated, may influence the validity and clinical relevance of measurement values for oxymetry and CBF in the brain. Based on the results obtained with brain tissue probes, the clinical interpretation of measurements obtained non-invasively with optodes placed on the skin through the skull could be significantly improved.



Dirk Baumann received the Dipl.-Ing. degree in electrical engineering from the University of Karlsruhe, Germany, in 2001. In 2006 he received his Ph.D. degree in electrical engineering at the Laboratory for Electromagnetic Fields and Microwave Electronics (IFH), Swiss Federal Institute of Technology (ETH) Zurich, Switzerland. During spring and fall 2000 he did an internship at the Alaska SAR Facility (ASF) in Fairbanks, Alaska, working on the calibration of ASF's SAR processor. From 2007 to 2009, he was a Research Engineer at the Institute of High Performance Computing (IHPC), Agency for Science, Technology and Research (A*STAR), Singapore. Currently he is with the Laboratory for Electromagnetic Fields and Microwave Electronics (IFH), Swiss Federal Institute of Technology (ETH) Zurich, Switzerland as a Senior Researcher. His research interests include numerical methods, and electromagnetics in biology and medicine. Dr. Baumann's Ph.D. thesis on the Finite-Volume Time-Domain method was awarded the ETH Silver Medal of Excellence.

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Venue: Engineering South, room S111, North Terrace, The University of Adelaide