



ACMIT

Austrian Center for Medical Innovation and Technology

Main location	Wiener Neustadt, Niederösterreich
Other locations	-
Thematic field	R&D concerning sensors for tissue parameter investigations, Micro-Optics

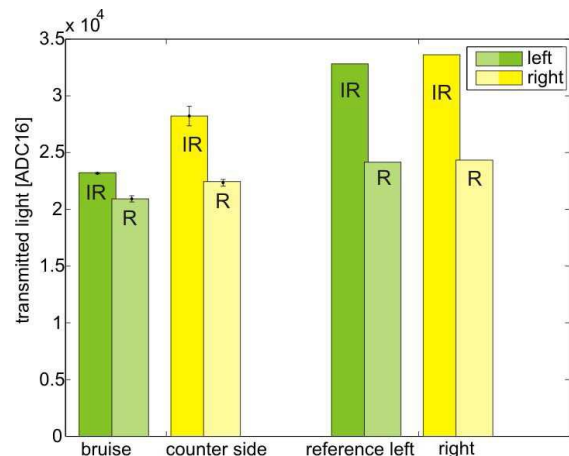
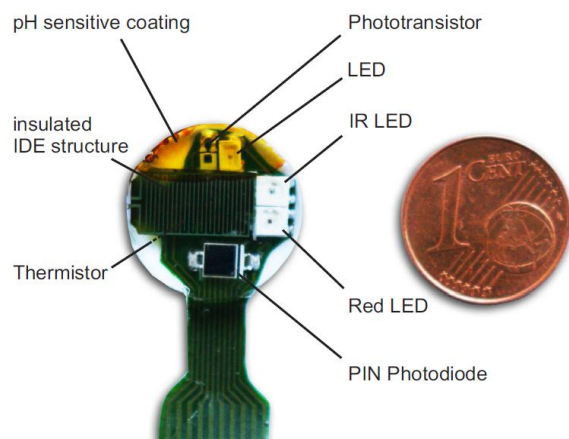
Success story summary

Novel multi-parameter sensor prototype for wound monitoring applications

A novel sensor system for integration into wound dressings has been developed for continuous assessment of healing-related parameters. Aim of this development is to improve the mainly subjective wound status characterization in today's clinical wound care management. To reveal wound status by dressing-integrated sensors without dressing removal could reduce risk for new inflammations and thus, promotes the healing process. Further, such a concept would be beneficial for the treatment of chronic wounds.

Success story

In context of ACMIT's sensor development for tissue property investigations a flexible sensor prototype has been designed for detection of various parameters at normal skin or at wound sites, respectively. The sensor prototype comprises a temperature sensor, a sensor for measuring impedance variations, as well as further optical sensor elements for detection of pH, pulse rate, and oxygen saturation. The picture below at the left shows the fabricated sensor prototype which is then integrated into wound dressings. Sensor control, processing of sensor data and data storage on a SD card is performed by a battery powered microcontroller. Thus, the total hardware system can be used in a self-sustaining and mobile way and sterilized sensor prototypes have already been successfully evaluated in a first clinical trial. The viewgraph below at the right shows selected results concerning optical sensor data which clearly indicate variations between healthy and damaged skin sites. One factor during development was the use of low-cost components so that a future product can be cheaply fabricated in mass production.



Impact and effects

Online wound status monitoring by a novel dressing-integrated sensor system targets at improving the mainly subjective assessment in today's clinical wound care management. Repeated removal of wound dressings at fixed time intervals disturbs the healing process and increases risk for new wound infections and inflammations. Thus, continuous monitoring of appropriate parameters for gaining insight into the healing progress without dressing removal would be of great benefit, in particular concerning wound infections as well as treatment of chronic wounds, which are two of the major problems in clinical wound management. Thus, such systems could have huge impact on health care systems and affected patients.

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