Ph.D. position on developing a textile sensor to monitor tissue oxygenation in humans based on near-infrared spectroscopy

**Topic:** Pressure injuries are injuries of the skin and the underlying tissue that result from a reduced blood circulation and tissue oxygenation due to pressure load. They affect in particular persons with impaired movement abilities, such as paraplegics or patients under anaesthesia or in an ICU. They are a severe burden for patients, heal slowly and the treatment is complex and costly. The aim of this interdisciplinary SNSF Bridge Discovery project is to build monitoring devices to prevent pressure injuries. We will build wearable, textile near-infrared sensor to monitor non-invasively skin and muscle oxygen concentration in healthy subjects and patients. The sensor needs to be precise, reliable and fully applicable in a clinical setting. The work consists of developing the novel device, hardware and software development, testing of the device first in phantoms and later in humans. The position is open starting June 2019 or by agreement.

**Requirements:** We are looking for physicist or engineer with a Master degree who will be able to pursue a Ph.D. thesis. The candidate (f/m) should have skills in numerical simulations (finite element methods), biomedical signal analysis, hardware development and practical workshop, mathematics (diffusion equation and its solutions, matrices) and in social interaction with the team and patients. If these skills are not available yet, there should be a strong interest to learn them. We seek a person with enthusiasm for leading-edge research, team spirit, and the capability for independent problem solving. **Language requirements:** Excellent English skills orally and in writing.

**We offer:** The project offers a vibrant interdisciplinary environment at the crossroad of medical applications, engineering and physics. The project is particularly attractive, because it includes the whole process from development to clinical application and because it will lead to a substantial improvement for the patients. You will be part of a team with an excellent spirit.

**Applications:** Please send your application in one merged PDF, including a short cover letter with a statement of research interest, CV, publication list, relevant certificates (degrees and grades) and the names and contacts of 3 references to ursula.wolf@ikim.unibe.ch and barbara.casanova@ikim.unibe.ch. Salary will be paid according to Swiss National Science Foundation standards.

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