

PhD Offer

Ultra-Flexible Organic Oxymeter (UFOO)

Context and Objectives

The last decade, numerous supplementary diabetes cases were declared around the World and growing drastically. Diabete is causing ulceration. Particularly, in cases of diabetic patient, such ulcerations are aggravated by a poor on-site oxygen distribution and provokes infection. Up today, no physiological parameters are periodically and locally on-site recorded to control and prevent such infection risks. Only a visual control is proceeded by human eye (physician or nurse). Nonetheless, we know that some localized-physiological measurements (such as Temperature, Pressure, humidity and oxygenation) could give numerous information to heal cutaneous ulceration and prevent amputation.

PhD objectives are the realization of a cutaneous patch to measure the ulceration oxygenation, by photoplethysmography (PPG) technique. Innovation will come by the realization of monolithic, ultra-flexible patches that include OLEDs (emitting in Green, Red or Near-InfraRed), Organic Photodetector (OPD) and organic read-out electronics (RC filters, amplifiers).

Laboratory Location

PhD is located to the Centre de Microélectronique de Provence, in the Georges Charpak Campus (Gardanne City, France).

<https://www.mines-stetienne.fr/en/research/scientific-departments/flexible-electronics-department-fel/>

Oxygenation ulceration measurements will be done in collaboration with INSERM Grenoble laboratory. OLEDs pixels will be co-realized with an industrial partner (TecMOLED company) that is embedded in the Georges Charpak Campus. The PhD lasts 3 years-long and starts in September 2020.

Candidate Profile

Applicant from Master degree in Materials Science and/or Nanosciences Engineering and/or Electrical Engineering that are willing to interface electronics with Living systems or biomedical devices. Knowledges in Biology and Organic Electronics are advantageously considered. (Under 30 years-old to the date of application).

Contact for further details

Send a CV and a motivation letter to apply to Dr. **Sébastien Sanaur** (sanaur@emse.fr) or Dr. **Daniel Ochoa** (ochoa@emse.fr)