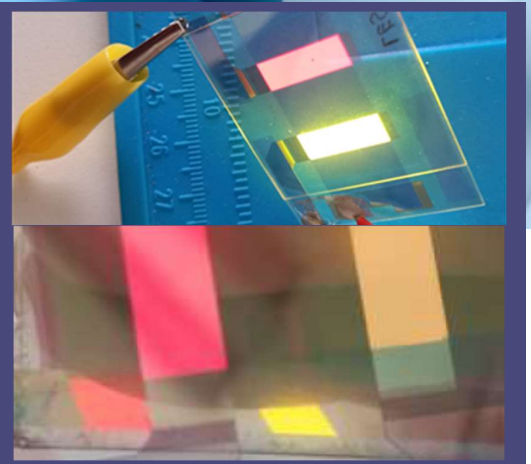


Flexible & Wearable Electronics Application Experiments



TECMOLED

Tecmoled is a start-up developing new e-health technologies. It is specialized in the development of connected intelligent products intended for the monitoring of vital parameters. In order to reduce the length of hospitalization and facilitate the care process at home, Tecmoled has created its first product OXYFLEX®. Ultra-compact, flexible and light, it ensures non-invasive, accurate and safe monitoring of physiological parameters.



Problem to be solved

Currently, the application of commercially available pulse oximeters is limited by the bulk, rigidity and high large-area scaling cost of conventional inorganic-based optoelectronics. Here we show a pulse oximeter sensor composed of organic LEDs (OLEDs) and a flexible organic polymer photodiode (OPD)⁵. We successfully demonstrate that the organic optoelectronic sensor provides accurate measurement capability and we anticipate that our application of organic optoelectronics in pulse oximetry will enable low-cost, disposable and wearable medical devices.

Solution provided by SmartEEs

Wearable medical sensors encourage healthy living by providing individuals feedback on personal vital signs and enable the facile implementation of both in-hospital and in-home professional health monitoring.

Here we developed a sensor composed solely of organic optoelectronics that measures both human pulse and arterial blood oxygenation. We anticipate that our results will inspire system-level integration of organic–inorganic electronics, where the large area, low cost and mechanical flexibility of organic sensors will be combined with the computational efficiency of inorganic electronics.

Business model & impact

Currently patients cannot be monitored outside of the hospital's intensive care units where patients are permanently monitored. The monitoring of these patients requires the presence of paramedical staff in the rooms, which is very time-consuming, costly and stressful. In addition, this is relatively inefficient, as patients are monitored in a discontinuous fashion with irregular reading frequencies. In this context, the contribution of the Oxyflex device® will save nursing time. The Oxyflex® device in hospital wards would make it the first monitoring device outside of intensive care and resuscitation units.



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