

The Smart Sweat-Band

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Real-time analysis of sweat loss is an exciting prospect for the sports industry. Replacing the fluids and electrolytes lost during exercise is vital to ensure adequate hydration which affects health and performance. We have developed a wearable device to provide immediate feedback to the user regarding the pH level of their sweat. An array of pH indicators are used to create a coloured barcode onto thin layers of poly(methyl methacrylate) (PMMA). The barcode sensor is flexible and can adapt to the contours of the body easily. It is integrated into a sweat band to be placed on different body regions e.g. forearm, wrist or forehead. A visual colour change is observed depending on the sweat pH, providing immediate physiological information to the athlete or coach during physical exercise. This colour change could also be monitored by cameras which are often already in place for kinematic analysis. We have also developed a wearable microfluidic device to sample and analyse small quantities of sweat. This work follows on from the EU FP6 BIOTEX project.