Introduction

Dehydration should be prevented during sport as this can cause performance loss, nausea and headaches, and even death if 10%-15% of the body weight is lost in fluid and not replenished. Hydration levels can be monitored via sweat. Sweat is a complex liquid containing different ions, like chloride (Cl), sodium (Na), potassium (K) and other compounds like lactate and glucose. During fitness exercise, increasing Na and Cl concentrations and changing pH level in sweat have been identified as sign of dehydration. We are currently developing a ‘sweat patch’ to monitor hydration during exercise. At a later stage the developed patch can also be adopted for dehydration monitoring of elderly people.

Project

The project consist of optimizing the design of the sweat patch for efficient transfer of the sweat across the sensors. Initial integration tests with Cl [1] and pH sensor [2] are done to show feasibility. The challenge is to integrate a microfluidic channel with both chloride and pH sensor in a reproducible and manufacturable way. The sensor will be printed on foil and microfluidic channels should be integrated in another foil, laminated on top of the sensor foil.

Besides the production of new sweat patches, part of the work will also be testing of the patches in lab and real field trials (sweating in the gym).