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CECRI designs wearable sensor capable of monitoring biomarkers from sweat

18 March 2021 | News

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Dr. Vinu Mohan A.M., scientist at CSIR-Central Electrochemical Research Institute (CECRI), Karaikudi, Tamil Nadu, a recipient of the INSPIRE Faculty Fellowship instituted by the Department of Science & Technology, Government of India, has introduced a flexible low cost, wearable sensor that can track sweat for monitoring the health and physiological status of the human body. It can obviate the necessity of blood and other invasive tests.

The wearable microfluidic sensor, which does not need a clean room, can be used for in situ monitoring of biomarkers such as lactate, Sodium ($Na^{+)}$, Potassium ($K^{+)}$, and Alkaline/acidic nature (pH) simultaneously from sweat samples. Using the INSPIRE Faculty fellowship, Dr. Vinu is improving upon the sensor to make it stretchable as well so that it can monitor the sweat during exercising and biking.

The sensor can analyse biomarkers from human sweat during exercise activities without transfer of signals. The high-throughput sweat sampling ability of the sensor facilitates continuous capture and transport of sweat over the surface of the device resulting in real-time analysis.

The flexible sensor can be attached on the irregular skin surface and monitors the dynamic biomarker levels, and are important for clinical diagnosis and personalized point-of-care analysis.

Dr. Vinu Mohan and his team are also exploring other reliable biofluids such as saliva and fluid in tissues as they contain abundant chemical markers that could reflect the underlying physiology of the human body. They are also in-parallel focusing on developing wearable energy storage devices as they are essential for powering wearable electrochemical sensors.